Master's Thesis of Public Administration

Food Safety Culture and International Market Access: An Empirical Analysis for Bangladesh

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식품 안전 문화 및 국제 시장 접근:

방글라데시에 대한 실증분석

February 2023

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Submitting a master's thesis of Public Administration

October 2022

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December 2022

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Abstract

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Bangladesh's export sector accounts for 12.25% of its annual GDP growth (2021–2022), with ready-made clothing accounting for 85% of all exports of goods. Bangladesh will have to deal with some difficulties in this area if it leaves the LDCs, though. The current administration has developed a new export policy (2021–24), and various actions have been done to modernize the export industry and liberalize trade. For instance, Bangladesh is currently working to diversify its export goods, and one of those varied export industries might be agriculture and agro-processed food. Food safety in this scenario is one of the key concerns for exporting food products. Exporters must be knowledgeable about and capable of following any applicable laws governing food safety. The expansion of SPS measures has led to an increase in Bangladesh's overall food exports, both at the company and individual sector levels; however, we have a different picture. There are still several challenges with exports; some businesses perform better than they did previously, while others perform worse. To this date, there is very limited

study regarding linkage between Food Safety Culture and International Market Access, specifically in Bangladesh. The goal of this study is to identify the critical success factors in each functional area of a company that support the right emergence of a food safety culture for export. The author made an effort to correlate international market access and Food Safety Culture in this study. The online survey was made available to 239 exporter representatives, and 71 of them/their representatives completed it. An analysis was conducted using SPSS (Chi-square test) based on the questionnaire and multinomial logistic regression analysis for proposed model. This study employed both a quantitative research approach and an explanatory strategy. The study found a high correlation between Food Safety Culture and export performance. The research found that food safety certificate, training for the employee, budget allocation for food safety training, Annual expenditure for food safety, regularly reviewed food safety-related rules and procedures, implemented the SOP for traceability as well, commitment of top management to continuous development of food safety has a strong association with export performance. The study also revealed that Export performance has positive association with some demographic information (age, size, market activity), but no association with location. Comparatively big companies perform better than the small company does. The full model is a significant improvement in fit over a null model based on "Model Fitting Information". According to the survey, developed countries are more aware of food safety issues, and access to the market is more challenging in developed countries than in developing countries.

Besides this, the study found that COVID-19 made some impact on food exports. Separately, the study made a list of recommendations for a company, a developed nation, and the government, based on the responders' suggestions. According to respondents' suggestions, a company should prioritize food safety measures above everything else, developed nations to promote the improvement of facilities for R&D and capacity building for knowledge of food safety through training. On the other hand, the government should give full synchronization and implementation of international food standards as the top priority and make a strong alliance with other countries through free trade agreements (FTAs) and other trade agreements. The study may have some drawbacks. Collecting data from commercial organizations was one of the main obstacles. Someone's unwillingness to take chances could be impacted by the current economic crisis. The data was gathered through an online survey. Small enterprises haven't yet become used to electronic data collection techniques, nevertheless. There is a need for more research on the subject because the study is not frequently discussed in the context of Bangladesh and because the poll had a small sample size. To meet the Global Food Security Strategy (GFSS) and Sustainable Development Goals (SDGs) of the United Nations, food safety is becoming an increasingly important development concern. Bangladesh really wants to boost up his export and in that case, the first and foremost requirement is to promote Food Safety culture.

Keywords: (Bangladesh, Food Safety, Market Access, Export, COVID-19, SDG)

Student Number : 2021-21791

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List of Abbreviations

ALOP = Appropriate Level of Protection
AU = African Union
BBS = Bangladesh Bureau of Statistics
BFSA = Bangladesh Food Safety Authority
BIDA = Bangladesh Investment Development Authority
CDP = The Committee for Development Policy
EPB = Export Promotion Bureau
EPZs = Export Processing Zones
EU = European Union
FAO = Food and Agriculture Organization
FY = Financial Year
GDP = Gross Domestic Products
GFSS = Global Food Security Strategy
HACCP= Hazard Analysis and Critical Control Point
IDA = International Development Association
IPPC = International Plant Protection Convention
ISO = International Standard Organization
LDCs = Least Developed Countries
MRLs = Maximum Residue Limits
OECD = Organization for Economic Co-operation and Development
OIE = International des Epizooties (World Organization for Animal Health)
RMG = Ready Made Garments
SDGs = Sustainable Development Goals
SPS = Sanitary and Phytosanitary
TBT = Technical Barriers to Trade
TRIPS = Trade-Related Intellectual Property Rights
UN = The United Nation
US = United States
WHO = World Health Organization
WTO = World Trade Organization

Chapter 1. Introduction

1.1. Study Background

The numbers of achievement of the war-torn and nearly devastated nation in 50 years of independence are not limited. A long-term strategic plan and the hard labour of the Bangladeshi people have resulted in significant improvement in the economic, social, and environmental sectors. Bangladesh is making strides in all areas, including education, health, gender equality, agricultural productivity, poverty reduction, and life expectancy, established special economic zones for export-oriented industries, RMG, the pharmaceutical sector, export revenues, and remittances. Bangladesh has overcome extreme poverty to receive The World Bank's "model for poverty reduction" designation in 2020 (World Bank, 2020). Its aggregate growth rate of GDP between 2010 and 2020 was the one of the greatest in the world, and it is currently on course to achieve developed nation status by 2041. Bangladesh has emerged as one of the world's fastest-growing economic powers over the past decade (World Bank, 2022). Bangladesh is known around the world as the "Development Surprise". (Asadullah *et al.*, 2014) or new 'Asian Tiger' (Garber, 2017).

With a population of over 160 million and an agriculture-based economy, Bangladesh is a country in South Asia, which has more than 61% of Bangladesh's citizens and 77% of its workforce live in rural areas. About 87 percent of rural families in Bangladesh dependent on agriculture with at least some of their income (World Bank 2016), and approximately 40.6% of all employees in Bangladesh are employed directly in agriculture (BIDA, 2022). Agriculture's proportion of Bangladesh's GDP was 11.52 percent (BBS, 2022). In fiscal year 2021, the

agricultural industry ranked fourth in export revenues with $1.02 billion, trailing the garment, jute, and home textile sectors (Wardad, 2021). Food accounts for 8% of imports, mostly as low-risk products and 28% of exports, including tea, fish, and tobacco to the US, the EU, and other regional partners (BBS, 2020). According to Study Academy (2022), Low-risk foods are preserved food such as jam; Dried foods or food with little available moisture, such as flour, rice, bread and biscuits; Acid food, such as vinegar or products stored in vinegar; Fermented products, such as salami; Foods with high fat/sugar content, such as chocolate; Canned foods, whilst unopened.

One year ago, the government passed a new export policy to inject vitality into export operations, boost competitiveness in trade and commerce, and therefore reinforce the country's position in a competitive world (Export Policy 2021-2024). Exports account for 12.25% of Bangladesh's GDP growth in 2021-22 (BBS 2022) and have increased by roughly 120% over the last decade (Chowdhury, 2022). To modernize the export industry and liberalize commerce, a number of actions have been made. The current administration has developed a new Export Policy, establishing the US$80 billion export objective from the current US$60 billion to be realized by FY 2024, in order to strengthen the country's position in the global market, speed up economic activity, and improve trade capacity. Bangladeshi exports have reached a new high, with an annual average growth rate of 11% since 2001. Ready-made clothing account for a significant sector of the export economy, accounting for 85% of goods export (Chowdhury, 2022). The sale of processed agricultural, footwear, and medicinal products to overseas partners has also significantly expanded in this period.

Bangladesh has been officially classified by the UN Committee on Economic and Social Development Policy (CDP) as being suitable for transition from the LDCs by 2021. In carrying out the government's vision 2021, this is a great achievement. Bangladesh is presently on track to become a developed and happy nation by 2041. Although the pandemic (COVID-19) would cause the typical three-year transition time to be delayed by two years, Bangladesh would formally become a Developing Country in 2026. (UN, 2022). However, as it departs the LDCs, Bangladesh will run into some issues in this regard. With the biggest economy and exporter among all graduating LDCs, Bangladesh stands out as the one that would likely face the most difficulties and predicted to exports fall by 14% (WTO, 2020). For instance, Bangladesh would no longer be allowed to export to countries in the European Union without having to meet any duties or quotas, but instead would be charged fees and receive fewer benefits. Bangladeshi Exporters may additionally tighten regulations governing Trade-Related Intellectual Property Rights (TRIPS). Foreign aid conditions (from bilateral and multilateral sources) may grow more stringent, and some importing nations may no longer accept export subsidies and cash help. Bangladesh used to be an "IDA only" nation at one point, and was taking out loans from the World Bank with stricter conditions. The advantages of being an IDA-only country will likewise diminish after graduation. Other multilateral aid organizations will undergo similar reforms. Bangladesh must examine free trade pacts like the one between Vietnam and the EU. Additionally, the nation will need to employ its Export Processing Zones (EPZs) and Economic Zones more effectively and efficiently, ideally in conjunction with Export Diversification.

Agriculture and Agro-processed food industries might be one of the varied export sectors, according to the new export policy. Agriculture and agro-processed food has now become important export items for Bangladesh. Despite the impact of the global pandemic, the frozen and live fish sector recorded export revenue of US$ 532.94 million during the FY 2021-2022 (July to June), which is 11.64% higher than the revenue of US$ 477.37 million during the same period last year. Contrarily, the sector of agricultural products saw export revenues for the months of July to June of the fiscal year 2021–2022 of $1,162.25 million, an increase of 13.04% over the $1,028.14 million in revenue during the same period the previous year. However, these two sectors' combined contribution to the period's total exports was only 3.25 percent (EPB, 2022). The government offers a number of incentives to promote the export of agricultural goods, such as tax rebates and cash incentives of 20% on the sale of agricultural and processed foods. The primary exports include tea, spices, fruits, particularly dry fruits, frozen fish, shrimp, and other frozen food goods, as well as certain other processed agricultural products. The EU, the US, the Middle East, and the Gulf are the main export markets. There are currently 486 agricultural processors in the nation, among which 241 are exporter and 235 cater to domestic economy (BIDA, 2022).

Bangladesh is an agricultural nation with a tropical climate and fertile soil that produces an abundance of agricultural goods. Unfortunately, increased access to external markets is hampered by a lack of adherence to international Food Safety Culture. A large amount of agricultural products is wasted in the country every year due to lack of conservation and good agricultural practice. Several agricultural products are produced in excess of the country's demand. Nevertheless, they cannot

be sold in foreign markets. As can be said about potatoes, at present, about 10 million tons of potatoes are produced in the country annually. Out of this, 2 to 3 million tons of potatoes are wasted due to lack of storage (Mahmud, 2022).

Even though frozen fish and prawns are still a common export, processed food sectors including oil products, snack, juice, sauce, candy confectionery, and noodles are one of those that are growing the fastest. Frozen and Fresh fruit and vegetable shipments during the preceding four years have also shown a robust growth pattern, reaching over 7% yearly. Over the next ten years, it is anticipated that commerce in the major agricultural products and processed goods will increase in step with production (OECD-FAO, 2022). According to the OECD-FAO Agricultural Outlook (2022), until 2028, there will be a 15% average annual growth in the demand for agricultural and food products worldwide. This predicted expansion raises the possibility of yet another market diversification chance for Bangladesh's agro-processing sector. Having privileged entry to 52 foreign markets, as well as the substantial demand for locally made foodstuff between many Bangladeshi communities overseas, are additional sources of revenue for this industry. Food can become more readily available and more reasonably priced through trade, giving consumers a larger variety of options. Particularly, nations with limited resources rely heavily on the importation of agricultural products. Agriculture exports are a significant contributor to local production and a significant source of income in a number of other nations.

A young, devoted, and competitive labor force, as well as the government's significant incentive plan in the form of income tax deductions and export subsidies, are the main reasons why Bangladesh has one of the lowest costs of

production in the world. The cost-competitiveness of Bangladesh must be used to increase the trade opportunities of locally processed food products. With a large population of farmers and fertile soil, Bangladesh is able to produce a wide range of crops, including Rice, Sugarcane, Jackfruit (the second-largest producer in the world), Mango (9^{th}), Guava (8^{th}), and Vegetables like Potato (6^{th}), Eggplant, and Tomato, as well as Fisheries and Livestock (12^{th} largest cattle inventory) (BIDA, 2020). Bangladesh, as one of the top tropical fruit and fresh vegetable producers in the world, ranked 10^{th} and 15^{th}, respectively (FAO 2018), presents enormous opportunity to engage in the local processing of different fruits and vegetables, thereby satisfying the expanding and untapped international market.

During the last twelve month from July 2021 to June 2022, Bangladesh's agro-products emerged as the second-largest export earner after garments (EPB, 2022b), indicating the country's ability to thrive further. Economists and industry insiders believe it has the potential to fuel a larger boom if sufficient value addition is ensured through right regulatory support and incentives. The export of agricultural products (without fisheries) surpassed the $1 billion barrier for the first time in the FY 2020-21 (Figure-1), and the trend stilled to continue in the last fiscal year 2021-22. On the other hand, frozen and live fish export increased 11.64% from 477.37 million USD (2020-21) to 532.94 million USD (2021-22). Shrimps lead the market in terms of share, with other processed agricultural products and dry food gaining ground (Table-1). Despite falling year over year, shrimp remains the most popular export. After 10 years, first time shrimp export has increased (23.84%) in the year 2021-22 (EPB, 2022b).

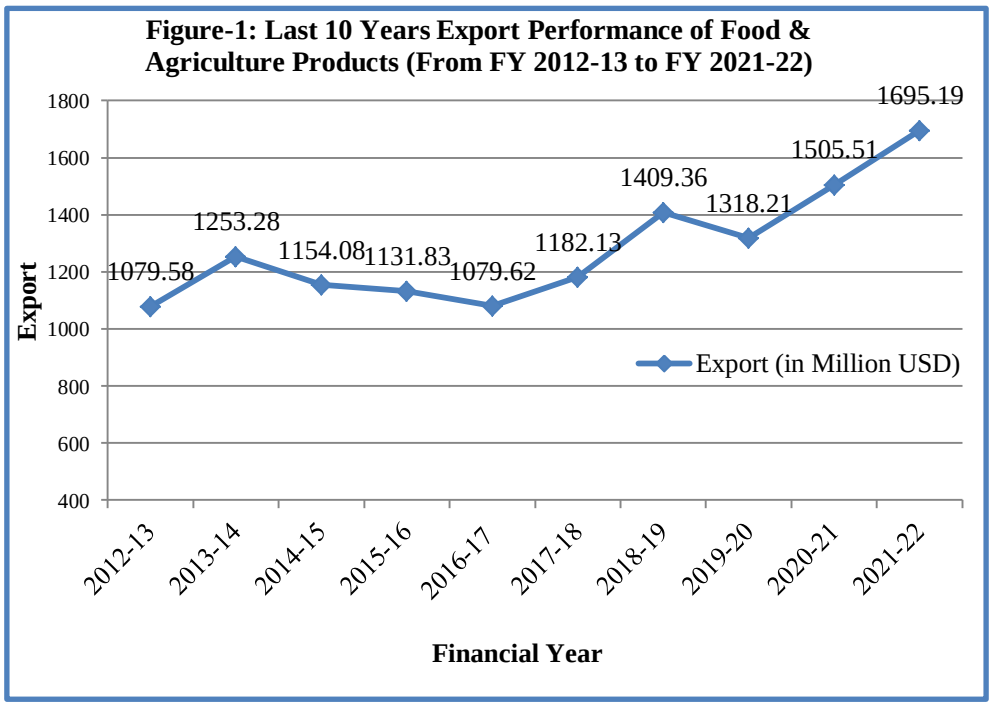


Table-1: Export Performance of Agro Sector during the FY 2012-13 to FY 2021-22 (Value in million US$): (Source: Export Promotion Bureau, 2022)

Sl	Products	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
1	Live Fish	18.20	19.36	2.81	9.14	8.05	8.73	17.53	11.43	8.38	6.43
2	Frozen Fish	57.99	52.46	49.08	47.07	44.04	58.3	63.81	75.29	115.57	91.87
3	Shrimps	439.09	527.25	509.72	472.37	446.04	408.71	361.14	332.65	328.84	407.25
4	Crabs	15.83	22.91	7.65	23.81	18.27	17.38	42.93	24.85	12.38	11.82
5	Other Fish	8.44	8.26	6.42	7.19	10.04	15.31	14.99	11.93	12.2	15.57
6	Tea	2.44	3.71	2.63	1.83	4.47	2.77	2.82	3.12	3.56	2.14
7	Vegetables	110.34	147.55	103.24	104.34	81.03	77.98	99.68	164.0	118.73	99.91
8	Tobacco	60.18	58.68	68.45	54.98	46.62	56.39	63.33	80.36	86.2	107.22
9	Cut Flower, bulb	41.43	39.34	11.36	4.73	0.08	0.09	0.03	0.03	0.09	0.08
10	Fruits	71.89	61.84	38.48	20.23	2.69	2.24	0.33	0.49	0.58	5.29
11	Spices	21.13	21.96	23.24	29.06	34.95	42.92	41.31	33.28	43.29	39.66
12	Dry Food	45.24	72.60	94.25	96.04	109.61	201.37	227.09	193.71	283.38	249.96
13	Other Agro products	187.69	217.36	244.4	284.85	273.72	289.94	469.02	387.07	492.31	657.99
	Total	**1079.58**	**1253.28**	**1154.08**	**1131.83**	**1079.62**	**1182.13**	**1409.36**	**1318.21**	**1505.51**	**1695.19**

On the other hand, dried food and frozen fish rank second and fourth in terms of food exports, respectively, and both are rising steadily. However, unfortunately, this year (2021-22), both exports are fallen down 20.51% and 11.79% respectively (Table-1). In addition to this, although little development has been accomplished, the vegetable market is also promising and after 5 years fruits market increased (5.29 million USD) in the year 2021-22 (EPB, 2022b). Bangladesh has a significant competitive advantage over other countries, when it comes to agro processing, one of the main drivers of economic growth. Food exports, meanwhile, are still quite low for whatever reason.

Foods including cookies, candies, beverages, and dry goods like chanachur and puffed rice are exported by more than 60 enterprises to various South Asian, Middle Eastern, African, American, and European countries. According to insiders, this increase in shipments is caused by increasing demand for locally produced processed foods and vegetables, the reopening of EU markets, and gradually improving local Phytosanitary infrastructure (Wardad, 2021). Due to improvements in the Phytosanitary and certification concerns, certain exporters have been performing well in the exportation of fresh vegetables. However, according to government data, processed foods accounted for more than 81 percent, or $376 million, of all agricultural exports during the time period under consideration.

Fruits exports, excluding processed foods, have performed well since the previous last two years fiscal year. In FY'2021-22, fruits brought in over $ 5.29 million, a more than 812.07 percent increase over FY'2020-21 (Table-1). Vegetables market also growing over the last two years although this year it is fall

down little bit. Betel leaf import restrictions from Bangladesh have been lifted by the European Union (EU), however the United Kingdom (UK) has not yet done the same. Following improvements in Bangladesh's Phytosanitary system and secure food supply, the UK is considering completely lifting the embargo. The Bangladeshi government recently started a plan to generate $2.0 billion from agricultural goods by the end of the 2023 fiscal year.

In order to make sustainable progress toward the Global Food Security Strategy (GFSS) and United Nations Sustainable Development Goals (SDGs), food safety is becoming a more important development issue. Food safety will be a key component of public health. Trade is important because it helps people to escape from poverty. It promotes economic expansion. It aids in the search for better employment opportunities for people, new markets for firms and more affordable products for customers. Consumers must have the same level of confidence in imported food as they do in domestically produced food. Food importation contributes to price reductions, especially for commodities used by the most vulnerable members of society who require assurance that their food is secure. Exporters must also be aware of and capable of adhering to the applicable food safety regulations. The WTO and its extensive set of regulations and standards make all of this possible. A good example is the WTO's agreement on Sanitary and Phytosanitary measures. This Agreement has had a significant impact since it came into force 24 years ago. By ensuring that food safety regulations are supported by science and are appropriate for their intended use, it protects the public's health while avoiding excessive trade costs and barriers.

The First FAO/WHO/AU International Food Safety Conference was held in Addis Abeba, Ethiopia, on February 12, 2018. Director-General Roberto Azevêdo stressed the importance of food safety for public health. He noted that “the WTO's rules, such as the Sanitary and Phytosanitary Agreement and the Trade Facilitation Agreement, play a key role in ensuring food is traded safely and called on the international community to harness new technologies and information tools to support food safety and the achievement of the SDGs”.

Bangladesh is encouraging the adoption of improved food safety practices throughout the food system in order to make the most of investments and move closer to the GFSS goals of agriculture-led economic growth, boosting human and system resilience, and fostering well-nourished communities, especially for women and children (USAID, 2021). However, Bangladesh serves as an illustration of how SPS measures might restrict the market. In fact, its unwillingness to adhere to SPS and TBT standards in the recent past has hurt the nation's export business. From Bangladesh's perspective, the key challenges include capacity building to ensure adherence to the agreed-upon terms in the WTO as well as modifying the game's rules as they apply to SPS and TBT. Due to Bangladesh's small-scale economy and limited technology capabilities at the corporate level, the challenges are amplified. (Rahman, 2002). For instance, Bangladesh ranks seventh in the world for production of potatoes. Bangladesh produced 9.61 million tons of potatoes in 2020 (FAO, 2019), but not enough of them were exported. Although in FY 2021-22, Bangladesh exported 27.52 million USD of Potato, which is 45.8% decrease than FY 2020-21 (EPB, 2021). Bangladesh made US$50.78 million during the 2020–21 fiscal year by exporting just 55,000 tons of potatoes. According to FAO, domestic

demand for potato is only about 7.7 million tons (FAO, 2022). When Russia opened its market to Bangladeshi potatoes in FY2013-14, the country's annual potato exports surpassed the 100,000 ton level. The next year, Bangladesh lost the Russian market since the latter country deemed its export shipments to be of inferior quality. Russia declared that it would stop importing potatoes until Bangladesh improved its Phytosanitary system, stopped the falsification of Phytosanitary certificates, and assured that the product was properly inspected at ports prior to export (Ahmed, 2022).

The export market, however, necessitates the adoption of SPS measures that will protect human health and prevent the spread of harmful illnesses or pests carried by animal and plant goods. Exporters need to understand SPS rules in order to take advantage of opportunities presented by international trade (USDA, 2012). Bangladesh generally adopts SPS measures in accordance with the recommendations of CODEX Alimentarius, IPPC, and OIE. As of right now, only the applicable international standards are used as a higher level of SPS protection. Bangladesh is therefore exempt from notifying its SPS measures. Since 1995, Bangladesh has not enacted any anti-dumping, countervailing, or safeguard duties. However, it has informed the investigative authority's name and the pertinent statutes (Rashid, 2019)

By providing Fit for Human Consumption certificates, Bangladesh might increase its exports of agricultural and food products by ten times and make US$13 billion annually, but there is a catch (Kashem, 2001). Additionally, there isn't a certified lab in the area that can grant certificates while guaranteeing international

standards. Due to improper quality assurance during export and the discovery of hazardous bacteria, viruses, and heavy metals, some countries have ceased importing a variety of products from Bangladesh. Due to the inclusion of chicken and pork bones in fish feed, Saudi Arabia has ceased importing freshwater fish, and the European Union has stopped importing betel leaf. In a similar vein, China and Russia have banned the import of Cuchia and Crab, respectively. As a result, Bangladesh remains at the bottom of the list of exporting nations while being one of the top nations in terms of producing various agricultural and food goods, including vegetables and fishes. At current exchange rates, the value of products shipped globally in 2021 was almost 22.3 trillion USD. This amount was around 6.45 trillion USD higher than the amount in 2000 (Sabanoglu, 2022). Globalization, technological advancements, and changes in international trade are all factors contributing to an increase in the value of commodities sent around the world. Unfortunately, Bangladesh only accounts for 0.23% of that total exports in the world.

Given their superior technical and analytical capabilities, developed nations actually have more negotiating power when deciding on "acceptable" norms. Developed nations frequently apply SPS regulations with excessive rigor and discrimination, which goes beyond what is required to safeguard both human life and the environment (Rahman, 2002). Bangladesh suffered a revenue loss of almost US$65.1 million in 1997 as a result of the EU's restriction on the import of shrimp from Bangladesh (Houssa and Verpoorten, 2015). The EU embargo was enacted as a result of two factors: first, concerns about the Bangladeshi producers' use of quality assurance procedures; and second, a decline in confidence in cost-

effective strategies for minimizing shrimp loss during shipping. Despite any claims to the contrary, the SPS measures proposed by the EU ban were not equivalent to the requirements set by the Codex, even though the EU is free to decide their ALOP under the SPS Agreement against reasonable concerns about the health and safety of its imports (Alam & Tomossy, 2017).

According to Rahman (2002), Bangladesh has three issues that make it difficult for it to uphold its SPS and TBT duties. First off, the infrastructure for evaluating food quality is insufficient to meet the strict quality control standards established by affluent nations. Second, the nation's capacity to adhere to SPS measures is weakened by a lack of scientific competence needed to create a monitoring system and enforce compliance with rules. Thirdly, Bangladesh's capacity to address complicated and highly technical issues connected to food safety, including the creation of suitable rules and regulations, is undermined by insufficient investment in health- and hygiene-related research and development (R&D). It is therefore extremely difficult to file a complaint against any modern nation. LDCs like Bangladesh are forced to adjust in order to satisfy the standards and requirements of overseas consumers. Even so, meeting the requirements imposed by wealthy countries continues to present significant challenges for developing nations, and particularly LDCs. Concerns have been raised over how the TBT and SPS accords have been carried out up to this point.

The nation's regulatory structure and mechanism for ensuring food safety are still developing. The new Food Safety Authority is developing the necessary infrastructure and mechanisms, including a skilled labor force and testing facilities.

Food Safety Act (2013) of Bangladesh led to the establishment of the Bangladesh Food Safety Authority (BFSA) under the Ministry of Food in 2015. At this moment, BFSA is engaged in agency coordination, rulemaking, and defining maximum residue limits (MRLs) for chemicals and other pollutants (Suman *et al.*, 2021). The BFSA is tackling challenges like workforce development, interagency collaboration, and infrastructure. To effectively handle food safety issues and create a strong food safety system, it is crucial to take into account the current gaps and obstacles in the current situation.

With rising demand, improved access to markets, and less technological barriers, the food trade will keep growing. Improving food safety is crucial for customer welfare and brand reputation. In fact, when customers discover the food safety risk and the harmful food could be linked to a specific company, customers may decide to stop buying that kind of food entirely. Government regulation aims to raise the degree of food safety offered by the market since, in most cases, the market cannot deliver the level of food safety that society finds acceptable (Buzby, 2003). Regulations can dictate the specific procedures that a company must follow in order to make safe food, or they may simply stipulate the safety level for the finished goods. Companies are motivated to provide safer food because consumers require a certain level of food safety (Holleran *et al.*, 1999).

1.2. Purpose of Research

Bangladesh will eventually move from being an underdeveloped nation to one that only exports ready-made clothing. For a economy, reliance on a single product is perilous. Thus, the choice to establish a quality assessment committee is being made as part of the commerce ministry's numerous measures to diversify the export portfolio. Ready-made clothing accounts for 85% of goods exported from Bangladesh, which makes up a significant share of the export sector. However, Bangladesh will encounter some difficulties in this area as it leaves the LDCs. The current Government has developed a new Export Policy (2021-24) and taken a number of actions to modernize the export industry and liberalize trade. For instance, Bangladesh is currently working to diversify its export goods, and one of those varied export sectors might be agriculture and agro processed food. In this case, Food safety is one of the vital issues for exporting the food items.

Food safety is currently a top priority on the list of "concerns" that the economic actors involved in the food chain must address. Because it safeguards their brand, their customers, and their employees, businesses must foster a culture of food safety. It is not only a prerequisite but also a smart place to start when putting management systems in place, especially when trying to foster a healthy company culture.

Bangladesh's overall food exports have increased with the rise of SPS measures. At the individual sector level as well as company level, however, we have a different picture: Some sector has an increasing trend (like agro-processed foods) and some sector has a decreasing trend (like Shrimp), but most of the

sectors are going ups and down. On the other hand, still lots of challenge been in terms of export, some companies do better while others do worse than before. To this date, there is very limited study regarding linkage between Food Safety Culture and International Market Access, specifically in Bangladesh. Therefore, it is essential to study the food safety as a factor that the business considers when deciding how much to export in order to establish an organizational culture of food safety. The goal of this study is to identify the critical success factors regarding food safety of a company that support the right emergence of a food safety culture for export (international market access). This paper will try to analysis different company wise food export and try to figure out gap between big and small companies in International Market access. Besides this, the author will try to figure out some challenges and recommendations from the viewpoint of Exporters in Bangladesh for accessing to the International Market.

In this regard, my research questions are-

1. What is the relation between Food Safety Culture and International Market access?
2. Why do some food companies perform (export) relatively better than others under the growing constraints of Food Safety measures?
3. Is there any difference between Big Company and Small Company in following the food safety standard?
4. Is there any difference between Developed and Developing Countries regarding access to food market?
5. What are the major challenges for accessing the food market of Developed countries?

1.3. Limitation of the Study

While this study offers insightful information on Food Safety Culture in a company and their export performance, the study is not without its limitations.

First, the outcomes could be impacted by the state of the economy. Many traders might not have taken part or offered accurate information given the current COVID-19 situation and economic downturn. In a turbulent market, taking risks is often not advisable.

Second, the study did not precisely assess the magnitude and scope of the moderator variables' influence on the dependent variable.

Third, Time was another limited factor for conducting the research. Within this period, it is really a tough job to collect data, analyze them and interpret.

Finally, through an online survey, the information was acquired. However, small businesses have not yet adapted to electronic data collection methods. There is a need for more research on the subject because the study is not frequently discussed in the context of Bangladesh and because the poll had a small sample size (only 71).

Despite limitation, I hope that this master’s thesis will be beneficial to the government of Bangladesh, especially policy makers, Food Safety Authorities, and Food safety academics as well as Food Exporters.

Chapter 2. Literature Review

2.1 Goals for Sustainable Development and Food Safety

A crucial need of the 2030 Agenda for Sustainable Development Goals is universal access to healthy food (FAO, 2021). One of the main focuses of the 2030 Agenda for Sustainable Development Goals is food safety. All SDGs can be achieved with the help of safe food. It is necessary for SDG 3. (good health and well-being). It significantly affects SDGs 1 (no poverty), 2 (zero hunger), and 6 (clean water and sanitation). It supports SDGs 5 (gender equality), 8 (decent work and economic growth), 9 (industry, innovation, and infrastructure), 10 (reduced disparities), 11 (sustainable cities and communities), 12 (responsible consumption), 14 (life below water), and 15 (life on land). In order to achieve SDGs 4 (excellent education), 7 (affordable and clean energy), 13 (climate action), and 16 (peace, justice, and strong institutions), it is only a minor factor to be taken into account (Grace, 2017). Food safety is a really cross-cutting issue, as seen by the fact that it is connected to so many SDGs.

All of these elements are important for ensuring the safety and quality of human diet and for sustaining life (Lovelock, 2003). The ecosystem and the food chain must be taken into consideration in a more comprehensive manner.

2.2 Food Security and Food Safety

The science of handling, preparing, and storing food in a way that prevents food-borne illnesses is known as food safety. These diseases typically have an abrupt start and have a known vector. Contrarily, having "access at all times to sufficient and nutrient-appropriate food to provide the nutrition and energy needed

to support an active and healthy life" is what is meant by food security (Rush, *et al.,* 2007). Chronic diseases linked to poor nutrition are caused by a lack of food security.

Every year, 200,000 people in New Zealand suffer from food poisoning, with Campylobacter infection being the most prevalent type (Pattish, *et al.* 2017). Therefore, how are food security and safety governed? A safe food supply that "protects and supports the health of people in Australia and New Zealand" is what Food Standards Australia New Zealand (FSANZ) aspires to.

The SDGs 2030 include a target of achieving affordable and accessible food. For the immediate and long-term health of both the population and the globe, the ideas of food security and safety must be taken into account jointly. As the proportion of children who live in poverty keeps rising, the claim that the money from food exports will boost everyone's standard of life in New Zealand is unfounded (D'Souza et al., 2017).

2.3 Food Borne Diseases

Food handlers' inadequate food handling and sanitation methods have been connected to the rise in foodborne infections, which have become a worldwide threat to public health (Haileselassie, *et al.,* 2013 and Todd *et al.,* 2008). Assefa, *et al.,* (2015) stated that a significant fraction of foodborne disease outbreaks in the population are caused by improper food handling procedures and cleanliness. Additionally, evidence suggests that food can spread more than 200 different diseases. (Loukieh, *et al.,* 2018). According to Munasinghe et al. (2015), problems with food safety continue to be problematic for public health. Although there is a

trend toward an increase in food-borne illnesses, many still go unreported, and domestic market public awareness of food safety and practices for risk management remains poor.

Bangladesh has a high incidence of foodborne illnesses and other food safety risks because of the country's dense population, insufficient infrastructure, and inadequate WASH conditions (Noor & Feroz, 2016). Khairuzzaman, *et al.*, (2014) mentioned that Bangladesh is home to almost 30 million people who contract a foodborne illness every year.

According to FAO (2016), the majority of foodborne illnesses in Bangladesh are diarrheal, followed by enteric fever and hepatitis. According to data from a research by the Institute of Epidemiology, Disease Control and Research (IEDCR) in Dhaka, the country's most common consequence of food poisoning, with around 0.28 million cases in 2015, is acute watery diarrhea. (IEDCR, 2015 & Suman *et al.*, 2021).

Therefore, acquiring a foodborne illness may also have extra consequences that could harm a person's health and wellbeing (such as permanent disability or death) or place a financial burden on them. (Akbar and Anal 2013). WHO, (2020) expressed that Foodborne disease outbreaks can hinder socioeconomic growth in many low- and middle-income nations, including Bangladesh, by taxing local health care systems, debilitating the national economy (such as trade and tourism), and, at the individual level, reducing individual productivity. However, Bangladesh's present food safety system, which includes testing tools, labs, and health and sanitation review systems, is insufficient to find and eliminate these infections and other food safety risks. (Suman *et al.*, 2021).

2.4 Food Safety Culture

Among the most crucial things a company can do is to develop a strong culture around food safety. According to Canadian Institute of Food Safety, the importance of food safety in an organization is reflected in its food safety culture. Both management and employees adhere to the same set of ideals. A company with a strong, supportive food safety culture consistently displays that providing safe food is a priority for both its staff and their customers. Manning, L. (2018) stated that food safety culture is different from the food safety knowledge. Therefore, further empirical research in the hospitality industry is necessary to fully understand the knowledge-experience-attitude-behavior combination of food safety culture.

Griffith, *et al.*, (2010) identified Six categories were identified as "Food safety culture" elements that can affect food safety performance: “food safety management systems and style; food safety leadership; food safety communication; food safety commitment; food safety environment and risk perception.”

2.5 Food Standard

“Hazard Analysis and Critical Control Point (HACCP)” is a crucial food safety method that removes potential physical, chemical, and biological risks. (Oloo, *et al.*, 2017). Countries such as the USA (Goodrich-Schneider, *et al.*, 2021) and Serbia (Tomasevic, *et al.*, 2016) have strict HACCP guidelines. The implementation of nationwide, required HACCP systems, however, comes with a significant start-up cost, which has slowed the advancement of HACCP in Bangladesh (Kiilholma, 2018). About 600 agriculture and food standards,

including the instructions for implementing the HACCP system, have been created by Bangladesh Standards and Testing Institution (BSTI) (Food standards examples are BDS CAC GL 18:1998, which addresses the HACCP system) (BSTI, 2020, FAO, 2017). In general, Bangladesh's food processing industries—such as those in the seafood industry, which represent significant exporters of foods like frozen fish and shrimp—are better prepared to adhere to the requirements of the "International Standard Organization (ISO) 22000" and "HACCP" certifications for food safety. (Suman *et al.*, 2021).

2.6 'Sanitary and Phytosanitary (SPS) Measures' and Export

The SPS Agreement deals with the privileges and duties that WTO members have in relation to measures that safeguard the health of people, animals, and plants (www.wto.org.). SPS creates new window for food product and sometimes it creates some barrier for the developing countries. Gibson & Wang (2018) proposed that SPS regulations have served as a *"trade catalyst rather than a trade barrier"* for Chinese fruit and vegetable exports, possibly because they advertise improved quality and hence boost demand.

Calvin and Krissoff (1998) looked at the effects on trade and welfare of abolishing SPS restrictions and tariffs on US apple shipments to Japan. Using survey data, Henson and Loader (2001) discovered that SPS policies in wealthy nations restrict the export of food and agricultural products from developing nations. Murina and Nicita (2017) discovered that whereas SPS policies place a disproportionately greater burden on low income nations, participation in extensive trade agreements appears to ease these burdens. The standard-setting process takes

into account the impact on developing markets because the implementation of SPS by exporting nations can harm those nations' economies. This is mainly because many states lack the resources and technology necessary to easily meet some SPS requirements (Rashid & Hanif, 2019).

According to Crivelli and Groeschl. (2016), SPS measures have a detrimental effect on the likelihood of exporting to a target market. Trades to markets having SPS regulations are more common, even if they are dependent on market entrance. The provision of information to the customer may be consistently greater than the price of the producer, they added, which is a plausible reason for the beneficial effect. SPS policies improve commerce for foreign exporters who succeed in overcoming the fixed price of entering a market by boosting consumer confidence in imported goods.

2.7. International Market Access

Gazia, *et al.*, (2014) stated that the strategies of major global companies and the dominant food safety governance models ultimately determine the scope of market access restrictions. Indeed, a number of intriguing research propose a "de facto market segmentation" based on how strict the food safety criteria are (Aloui and Kenny, 2005, Jaffee, 2003). Aloui and Kenny (2005) categorize markets at the worldwide level according to the rigor of sanitary and SPS measures, dividing them into ‘high-level market standard’ (Canada and Scandinavia), ‘medium-level market standard’ (EU), and ‘low-level market standard’ (Eastern Europe and Middle East). Okello, *et al.* (2011) contend that stringent controls over compliance with European food safety requirements exist only within the supermarket chain.

Chapter 3. Research Subjects and Methods

3.1. Study Design and Research Subjects

This study used a quantitative research method with an explanatory approach. With this strategy, the numerous circumstances, scenarios, or variables that make up the study topic are explained or summed up.

Based on the theoretical understanding, the proposed design are as follow-

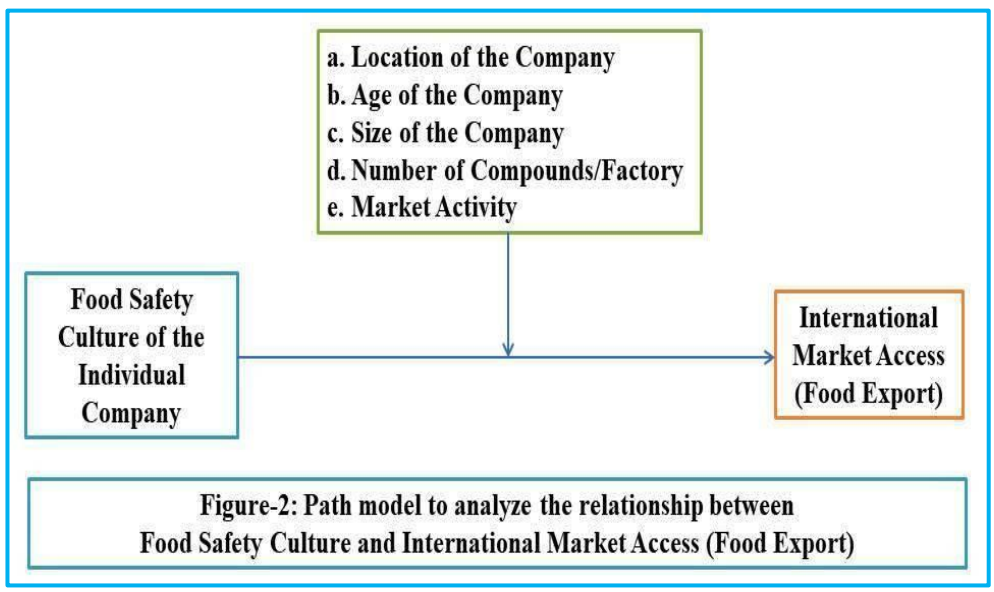


Figure-2: Path model to analyze the relationship between Food Safety Culture and International Market Access (Food Export)

Considering the research model, the list of the measuring variables are-

- Independent Variable: Food Safety Culture of the Individual Company
- Dependent Variable: International Market Access (Export Performance last 10 year-Downward trend, Upward trend and Ups and down trend)
- Moderator Variable (Qualitative): Location & Market Activity of the individual Company
- Moderator Variable (Quantitative): Age, Size and Compound/Factory/Establishment of the individual Company

3.2. Hypothesis

Based on the research questions and the path model, the research hypotheses are-

Hypothesis 1	Food Safety Culture and International Market Access (Export Performance) has positive association
Hypothesis 2	Location of the company can affect the association between Food Safety Culture and International Market Access (Export Performance)
Hypothesis 3	Age of the Company can amplify the association between Food Safety Culture and International Market Access (Export Performance)
Hypothesis 4	Number of compound/factory/establishment of an individual Company may influence the association between Food Safety Culture and International Market Access (Export Performance)
Hypothesis 5	Market Activity of the company can affect the association between Food Safety Culture and International Market Access (Export Performance)
Hypothesis 6	Size of the Company can amplify the association between Food Safety Culture and International Market Access (Export Performance)

3.3. Indicators for research

First, I looked at the literature and the data that were available for the indicators in Bangladesh before choosing them. The choice determined based on metrics for safeguarding food safety as well as elements affecting how easily food products can be export. Food Safety Culture offers a methodical and beneficial approach to the country's food safety culture that does not interfere with already-existing systems and can be customized to meet particular demands and circumstances. Food Safety Culture is the result of a system or approach that supports nations in attaining their food safety objectives rather than aiming to

provide specific results or statistics. (FAO, 2021). The World Health Organization (WHO) adheres to metrics for food safety through addition to Codex Alimentarius in the scope of a 'joint external review' that is how global health laws are implemented and evaluated. (WHO, 2005). The study considered some major aspects of a food exporter what they usually do and how much they consider the food safety importantly. The selected measurements of Food Safety Culture are-

Table-2: List of Measurements of the study

Sl	Indicator	Measurement
1	**Food Safety Culture**	1. Number of Food Safety related Certificate 2. Percentage of employee has completed Food Safety related Training 3. Percentage of training dedicated to Food Safety area based on total Training Program 4. Percentage of implemented and understood Standard Operating Procedures for Traceability 5. Percentage of regularly reviewed Food Safety Rules and Procedures with the staffs 6. Percentage of address the root cause of food safety incidents to make sure it doesn't happen again 7. Annual Expenditure related to food Safety management as a percentage of total annual expenditure 8. Top management commitment to continuous improvement of food safety 9. Food Safety knowledge for the recruitment process 10. Performance evaluation in Food Safety-related activities 11. Food Safety is the high priority than Employee Safety for the food industries 12. Sufficient knowledge related to food safety among farmers and exporters. 13. Level of Food Safety Culture (overall)

2	**International Market Access**	1. Export Performance of last 10 years
3	**Other Factor (Moderating Variable)**	1. Location of the Company 2. Age of Business 3. Size of the Company 4. Compounds/Factory/Establishment of the Company 5. Market Activity of the Company
4	**Market Accessibility**	1. Developed Country 2. Developing Country

(Written by the author after reviewing each measurement based on review of literature)

According to Ministry of Industries, Based on the number of employees or the value of the property (the value of the permanent property other than land and buildings), the industries are divided into five groups.

Sl No.	Category	Property Value (BDT)	No of the Employee
1	Big Industry	Greater than 50 crore	more than 300
2	Medium Industry	15 crore to 50 crore	121-300
3	Small Industry	75 lac to 15 crore	31-120
4	Micro Industry	10 lac to 75 lac	16-30
5	Cottage Industry	not more than 10 lac	not more than 15

For understanding the size of the company, the have been considered only the number of employee and put this question into the survey for understanding the size of the company.

3.4 Data Collection

An empirical analysis was first carried out to evaluate the essential elements of Bangladesh's current Food Safety Culture. The analysis is conducted using a comprehensive approach to data collecting, taking into account Bangladesh's complex Food Safety Culture and the large range of exporters active in this sector. Data has collected from the Exporter's interviews through a survey questionnaire as well as an external desk review was conducted based on Government Data.

3.4.1 Desk Review

The external desk review's main objectives were to locate and evaluate publicly available data on export performance. All export data (Commodity wise and country wise) collected from Bangladesh Export Promotion Bureau. Official of Export Promotion Bureau send the data through email to the author. The Export data can also be found in their website (EPB, 2022c). Based on the data series from FY 2012-13 to FY 2021-22, the author found that there are lots of ups and down in the export performance, some commodity was increased in one country and other commodity was decreased. On the other hand, export performance was widely differed from country to country.

3.4.2 Key Informant Interviews (KII)

A cross-sectional study was conducted among 321 exporters who are the active member of Bangladesh Agro-Processors' Association (BAPA). The list was collected from BAPA website (BAPA, 2022a) and it is last updated on July 2022. BAPA is a non-profit organization that will unite and represent processors of all types of agricultural products and supporting industries, such as field crops,

horticultural products, mushrooms, fruits and vegetables, dairy and poultry, fisheries, and other agricultural items, as well as act as their members' representative to the government, public bodies, organizations, and other authorities. (BAPA, 2022b). Besides this, the author collected list of Tea exporters from Bangladesh Tea Board (BTB, 2022). I got only six exporters name from BTB. Therefore, I enlisted Total 327 exporters and send them Survey Questionnaire through email.

3.4.3 Survey:

A survey questionnaire (Annexure) was made from earlier research in light of the target sample's particular socio-demographic profile (i.e., location, age, size, market activity, etc.) and the divergent viewpoints of people in Bangladesh compared to those in other nations where earlier studies had been conducted. According to feedback from test participants, several of these questions or statements about knowledge of food safety were altered as a result of the questionnaire's pre-testing. Besides this, in association of Thesis Supervisor, the questionnaire has been finalized. The questionnaire has three sections with a total of 27 questions. A. General Information, B. Export Information, C. Information on Food Safety Culture, and D. Recommendation.

Socio-demographic factors including location, age, business size, number of establishment or compound of the company, market activity (international only or international and domestic both), and food safety certificate were included in the first part. Export related information included in the second part through total 14 questions. A closed-ended question with three options (such as "ups and down

trend," "Only upward trend," "Only downward trend") was used to evaluate the performance of export.

The third section of the questionnaire focused on the Culture of the respondents with regard to food safety, highlighting food safety training, food safety related expenditure, SOP, addressing the food safety incidents, etc. The third section, which consisted of 11 questions, gathered knowledge data. Six (6) questions in this section had four answer options on the percentage base: "Up to 25%, 26%-50%, 51%-75% and above 75%". This section, which had five questions, gathered information about attitudes. This section's questions had five answer options: "Strongly Disagree," "Disagree," Neither Agree nor Disagree", "Agree," and "Strongly Agree."

3.5 Sample Size and Process of sampling

For data collection, sample size was determined to examine critically the list of active member of Bangladesh Agro-Processors' Association (BAPA). Out of 321, some members has similar email or similar office address has found. It was interesting that they have separate member number, but they used the same email address. Mostly they interconnected or sister concerned who have the same email or office address. Due to avoiding duplication and determined to collect single response from each company, 80 out of 321 exporters excluded who has similar type of address. Beside this, on the list, eight companies has no information regarding email address. Based on the calculation, the exact population size was 233. Including tea exporters, the total population of the survey was 239. A survey questionnaire (Google Form) which was developed earlier under the guidance of

the Thesis Supervisor was sent to 239 exporters through email. As per Delivery Status Notification, 78-email message was not delivered because the address could not be found, or unable to receive message. Initially, 15 days were fixed for giving feedback, but due to lack of expected response, the period was extended by another 15 days. The entire month of October is awaited for data collection. Several government agencies such as EPB, BFSA, Ministry of Agriculture, Ministry of Fisheries and Livestock, Bangladesh Bank along with private associations FBCCI, BAPA, SME Foundation were requested to encourage participation of exporters in this survey. However, out of 161 delivered email, only 71 exporters participated in the survey. The lack of proper experience with Google Forms and the apathetic attitude of small companies undoubtedly reduced the level of participation in the survey. However, the number of 60 exporters was fixed keeping in mind the issues, at the initial stage (while preparing the research proposal).

3.6 Data Analysis

After the receiving was completed, the data was examined quantitatively. With the aid of the Statistical Package for Social Sciences, the study was completed (SPSS IBM Version 25). A contingency table, also known as a two-way table, is produced using the Crosstabs process and it summarizes the distribution of two categorical variables (Kent State University, 2022).

The dependent variable is Export performance and it is categorical variable with three different categories such as upward, downward and ups and down. To see the association between categorical dependent variable with other categorical independent variable like Food safety culture, the author perform the association

test using “chi-square test”. Because the “chi-square test” is employed to determine whether two categorical variables are related.

Most frequently, two categorical variables are tested for independence using the “Chi Square” statistic. The author display the data in a cross-table and perform the “Chi-square” test on it. The Test of Independence establishes if there is a relationship between the two variables by comparing the empirical framework of cell responses with the structure that would be predicted if the two factors were truly independent of one another (Statistical Solution, 2022).

The frequency distribution and percentages used in the summary of results were utilized to calculate the percentage of respondents who selected each response. To make the analyses simple to tables, charts, and graphs were used. Statistical models of the “Pearson chi-square test” were used to establish the causal association between the independent and dependent variables. The “Chi-Square Test of Independence” is a tool in SPSS's Crosstabs technique. The cut-off value specified for statistical significance tests is generally *P-value* 0.05.

The full factorial model fits well with a multinomial logistic regression model. Through the use of an iterative maximum-likelihood approach, parameter estimation is carried out. For understanding the model which is fit or not, then the author conducted Multinomial Logistic Regression Analysis.

Chapter 4. Result & Discussion

4.1. The Respondents' Demographic Information

239 representatives of Exporters were asked to complete the survey through online, and as per Delivery Status Notification, 78-email message wasn't delivered because the address couldn't be found, or was unable to receive mail. Out of 161 delivered email, only 71 (44.1%) of those exporters/their representatives responded. As shown in Table 3, demographic information was gathered on the Location of the Company, Age of Business, Size of the Company, Compounds/Factory/Establishment of the Company, Market Activity of the Company and Food Safety related certificate.

36.6% of food factory, according to the findings, located at Urban area and 33.8% at Rural area, whereas 29.6% are located both in rural and urban area. By this result, it revealed that probably communication or some other facilities, most of the company prefer to establish their factory in Urban area.

The majority of the respondents' company age (28.2%) are between ages 6 to 10 years, followed by 11 to 20 years (22.5%), while company with age 1 to 5 are very few at 7.0 %. Food Export performance of Bangladesh for last 10 years, are doing well. Therefore, many new players come to the export market. Beside this, Government of Bangladesh give a cash incentive (20%) for exporting agricultural products. Cash incentives, according to Deb and Bairagi (2009), helped increase the exporting of frozen vegetables, fish, and shrimp.

Table-03: Demographic Information of Respondents of the Food Exporters

General Information	Category	Frequency	%
Location of the Company (Factory)	Urban	26	36.6%
	Rural	24	33.8%
	Both	21	29.6%
Age of Business	1-5 years	5	7.0%
	6-10 years	20	28.2%
	11-20 years	16	22.5%
	21-30 years	15	21.1%
	31-40 years	6	8.5%
	More than 40 years	9	12.7%
Size of the Company	Up to 15 employees (Cottage Industry)	8	11.3%
	16-30 employees (Micro Industry)	17	23.9%
	31-120 employees (Small Industry)	8	11.3%
	121-300 employees (Medium Industry)	11	15.5%
	301 and above (Big Industry)	27	38.0%
Establishment of the Company	11 or more establishments	6	8.5%
	6-10 establishments	5	7.0%
	2-5 establishments	30	42.3%
	One establishment	26	36.6%
	No establishment (only digital platform)	4	5.6%
Company's market activity	Domestic and International Market	38	53.5%
	International Market only	33	46.5%
Export Performance	Upward	33	46.5%
	Ups & Downward	31	43.7%
	Downward	7	9.9%

According to the number of employees, the following categories apply to the size of the responding businesses: 11.3% of the businesses have fewer than fifteen employees, 23.9% have between 16 and 30, and 11.3% have between 31 and 120, all treated as Small industries. Whereas 15.5% have 121-300 employees and 38% have 301 and above employee, that are treated as big company. According to respond, it is clear that big company are more responsive than the small company. On the other hand, last 20 years, may big industry entered into the export market of Bangladesh with huge investment. According to ADB (2006), recent advances in quality standards and large investments in modernizing manufacturing lines have allowed the industry to reclaim the export market share it had previously lost due to quality issues.

Number of Establishment indicates that 42.3 % of the exporters have 2-5 establishments, while 36.6% have only one establishment. 8.5% of the respondents have more than 11 establishments and 7% have 6 to 10 establishment. Surprisingly, 5.6% have not any facilities or establishment, but they are exporting the food products by using online platform. 53.5% of the responders are doing their business both domestic and international market, while 46.5% only perform in the international market.

In terms of Export Performance, within the respondent 46.5% has Upward trend export, 43.7% has Ups & Downward and only 9.9% has Downward trend.

4.2. Research finding based on hypotheses related to Export Performance

The study's findings are given in this section in accordance with the five research questions. This study examines different variables and compare with the dependent variable. In addition to addressing the five research objectives, the statistical results from the testing of the five hypotheses created for this study are presented and discussed.

4.2.1. Hypothesis-1: Food Safety Culture and International Market Access (Export Performance) has positive association

In this study, Food Safety Culture measured by 13 (thirteen) measurements which was set in the questionnaire. On the other hand, International Market Access has considered by Export Performance (Upward Trend, Ups & Downward Trend and Downward Trend) of last 10 years. Based on the responses of food exporters (71), the findings are summarized below:

4.2.1.1. Food Safety Related Certificate and Export Performance

In the questionnaire, the author mentioned different name of the food safety related certificates (like ISO 9000/9000:2000, ISO 9001:2015, ISO 14000, ISO 22000, HACCP, All of the Above, None of them and others). Some respondents have not any certificate related to food safety. The study tried to find out the association between Food Safety Certificates and Export Performance. For finding the association between food safety certificates and Export performance, the certificate categories are sub-classified like all of them (who has all type food safety certificates), any of them (who has any of the certificate) and none of them (who has no certificate). The result was found that *P-value* is 0.001 i.e. Food Safety

Certificates has highly associated with Export performance. More certificates have positively increased the export performance in food sector. According to analysis, the null hypothesis is rejected because the *P-value* is less than our specified significance level of 0.05 and draw the conclusion that there is a correlation between Food Safety Related Certificate and Export Performance. It can conclude the following from the findings: Food Safety Related Certificate and Export Performance had a strong association (χ^2 = 138.9, p=0.001).

Table-04: Association between Food Safety Certificates and Export Performance

Certificate		Export Performance					
		Only Downward	**Only Upward**	**UP & Down**	**Total**	χ^2	***P-value***
All of them	Count	0	9	5	14	18.082	0.001 ***
	% within Certificate	0.0%	64.3%	35.7%	100.0 %		
	% export volume	0.0%	27.3%	16.1%	19.7%		
Any of them	Count	1	20	19	40		
	% within Certificate	2.5%	50.0%	47.5%	100.0 %		
	% export volume	14.3%	60.6%	61.3%	56.3%		
None of them	Count	6	4	7	17		
	% within Certificate	35.3%	23.5%	41.2%	100.0 %		
	% export volume	85.7%	12.1%	22.6%	23.9%		
Total	Count	7	33	31	71		
	% within Certificate	9.9%	46.5%	43.7%	100.0 %		
	% export volume	100.0%	100.0 %	100.0 %	100.0%		

** Level of Significance = 5%
*** Level of Significance = 1%

As per data analysis, 19.7% of companies have all type of certificates, which is needed for their exports, and within this category, 64.3% has an increasing trend of export. On the other hand, 23.9% of company has no certificate. According to the HACCP principle, food enterprises must validate and verify their hazard control procedures (Schmidt & Newslow, 2007). Because they guarantee food safety and demonstrate that the HACCP system is functioning successfully, the validation and verification processes help food establishments control hazards (Leaper & Richardson, 1999). The relevance of HACCP adoption was also seen in a study conducted by Maldonado *et al.* (2005) and found that Companies with fully operational HACCP reported 43% of their export and with implementing HACCP that 34% of their sales came from international markets. Whereas 18% of sales, according to companies that were just starting to organize their operations and had not yet created their processes, were generated in foreign markets. Non-certified companies export less than certified companies (Ehrich & Mangelsdorf, 2018).

4.2.1.2. Food Safety Training for the Employee and Export Performance

Table-5 described the association between Percentage of employee has completed Food Safety related Training and Export Performance. The result shows that trained employee is highly significant ($P<0.001$) to the export performance. Therefore, if a company considers arranging more training for the employee, then business will be expanded. From the table, we found that, 51.5% of only upward export performer have completed food safety training for their staffs (50-75%). Kahindi (2016) stated that the frequency of training enhances managers' and staff' food safety expertise and he also mentioned that training are necessary for efficient HACCP management. HACCP is an important system for export expansion.

Table-05: Association between Percentage of employee has completed Food Safety related Training and Export Performance

Category		Export Performance					
		Only Downward	**Only Upward**	**UP & Down**	**Total**	χ^2	***P-value***
Up to 25%	Count	5	6	16	27	28.486	<0.001 ***
	% within completed Training	18.5%	22.2%	59.3%	100.0 %		
	% export volume	71.4%	18.2%	51.6%	38.0%		
26%-50%	Count	0	8	9	17		
	% within completed Training	0.0%	47.1%	52.9%	100.0%		
	% export volume	0.0%	24.2%	29.0%	23.9%		
51%-75%	Count	0	17	1	18		
	% within completed Training	0.0%	94.4%	5.6%	100.0%		
	% export volume	0.0%	51.5%	3.2%	25.4%		
Above 75%	Count	2	2	5	9		
	% within completed Training	22.2%	22.2%	55.6%	100.0%		
	% export volume	28.6%	6.1%	16.1%	12.7%		
Total	Count	7	33	31	71		
	% within completed Training	9.9%	46.5%	43.7%	100.0%		
	% export volume	100.0%	100.0%	100.0%	100.0%		

** Level of Significance = 5%
*** Level of Significance = 1%

4.2.1.3. Association between Percentages of training dedicated to Food Safety area based on total Training Program and Export Performance

Many companies are arranging training program for their employee and it is essential for a business organization. Effective training can improve the performance of the organization. McFarland *et al.*, (2019) mentioned that Adequate training in food safety is essential to lowering outbreaks, incidence rates, and foodborne illnesses.

Based on the analysis, the null hypothesis is rejected since the *P-value* less than the level of significance we determined to be significant (0.05). Instead, we draw the conclusion that there is a link between Percentage of training dedicated to Food Safety area based on total Training Program and Export Performance. The study can conclude the following from the findings: dedicated training to Food Safety and export performance had a strong association (χ^2 = 15.550, P =0.016).

According to Table-06, the results show that only 8.5% of the companies conducted above 75% of dedicated food safety training. On the other hand, most of the companies (47.9%) have managed less than 25% food safety training based on total training program. The review also shows that among those whose exports are growing steadily, only 9.1% of companies have food safety training rates above 50% of total training. The companies wants to arrange training for their employee, but very less percentage for food safety related training happened. The result suggests that organizations should conduct more food safety training.

Table-06: Association between Percentages of training dedicated to Food Safety area based on total Training Program and Export Performance

Category		Export Performance					
		Only Downward	**Only Upward**	**UP & Down**	**Total**	χ^2	***P-value***
Up to 25%	Count	5	11	18	34	15.550	0.016 **
	% within dedicated Training	14.7%	32.4%	52.9%	100.0%		
	% export volume	71.4%	33.3%	58.1%	47.9%		
26%-50%	Count	0	19	8	27		
	% within dedicated Training	0.0%	70.4 %	29.6%	100.0%		
	% export volume	0.0%	57.6 %	25.8%	38.0%		
51%-75%	Count	0	1	3	4		
	% within dedicated Training	0.0%	25.0%	75.0%	100.0%		
	% export volume	0.0%	3.0%	9.7%	5.6%		
Above 75%	Count	2	2	2	6		
	% within dedicated Training	33.3%	33.3%	33.3%	100.0%		
	% export volume	28.6%	6.1%	6.5%	8.5%		
Total	Count	7	33	31	71		
	% within dedicated Training	9.9%	46.5%	43.7%	100.0%		
	% export volume	100.0%	100.0%	100.0%	100.0%		
** Level of Significance = 5% *** Level of Significance = 1%							

4.2.1.4. Percentage of implemented and understood Standard Operating Procedures (SOP) for traceability and Export Performance

According to Table-07, the result shows that only 15.5% of the companies implemented and understood the SOP for food safety above 75%. On the other hand, 28.2% companies have implemented less than 25% of SOP for traceability. The review also shows that among those whose exports are growing steadily, 69.7% of companies implemented and understood the SOP for traceability above 50% (51% to 100%). This suggests that companies should implement and understood the SOP for Traceability.

Based on the analysis, the null hypothesis is rejected since the *P-value* very less than the level of significance we determined to be significant (0.01). Instead, we draw the conclusion that there is a link between SOP for Traceability implementation and Export Performance. The study can conclude the following from the findings: SOP for Traceability implementation & understood and export performance had a strong association (χ^2 = 19.004, *P*=0.004).

Miarka, *et al.*, (2019) analysis the traceability based on the SOP and they stated that all actors in the food chain are required by law to allow for the possibility of "tracing" the path taken by a food product. It provides for the identification and tracking of raw material, waste, and final goods movement and use across the whole supply chain. Traceability assists in decreasing food counterfeiting by giving consumers security and transparency. Therefore, meat that conforms with traceability may obtain ample market popularity and make it easier to export in order to obtain higher prices (Gadekar et al., 2021).

Table-07: Association between Percentage of implemented and understood Standard Operating Procedures for Traceability and Export Performance

Category		Export Performance					
		Only Downward	Only Upward	UP & Down	Total	χ^2	*P-value*
Up to 25%	Count	4	5	11	20	19.004	0.004**
	% within implemented SOP	20.0%	25.0%	55.0%	100.0%		
	% export volume	57.1%	15.2%	35.5%	28.2%		
26%-50%	Count	1	5	12	18		
	% within implemented SOP	5.6%	27.8%	66.7%	100.0%		
	% export volume	14.3%	15.2%	38.7%	25.4%		
51%-75%	Count	0	17	5	22		
	% within implemented SOP	0.0%	77.3%	22.7%	100.0%		
	% export volume	0.0%	51.5%	16.1%	31.0%		
Above 75%	Count	2	6	3	11		
	% within implemented SOP	18.2%	54.5%	27.3%	100.0%		
	% export volume	28.6%	18.2%	9.7%	15.5%		
Total	Count	7	33	31	71		
	% within implemented SOP	9.9%	46.5%	43.7%	100.0%		
	% export volume	100.0%	100.0%	100.0%	100.0%		

** Level of Significance = 5%
*** Level of Significance = 1%

4.2.1.5. Percentage of regularly reviewed Food Safety Rules and Procedures with the staffs and Export Performance

According to the analysis, rejecting the null hypothesis since the *P-value* less than the level of significance we determined to be significant (0.05). Instead, the study concluded that there is an association between regularly reviewed Food Safety Rules and Procedures and Export Performance. The study can explain the following from the findings: regularly reviewed Food Safety Rules & Procedures, and export performance had a strong association (χ^2 = 12.696, *P*= 0.048).

Table-08 shows that only 18.3% of the companies regularly reviewed the food safety rules & procedures with the staffs above 75%. On the other hand, 22 companies (out of 71) have regularly reviewed the food safety rules & procedures below than 25%. The result also shows that among those whose exports are growing increasingly, the analysis also shows that 5 out of 7 exporters with continuous decline in exports do not discuss food safety regulations more than 25% regularly.

Figure-2: Category wise number of respondents according to % of regularly reviewed Food Safety Rules & Procedures and Export performance

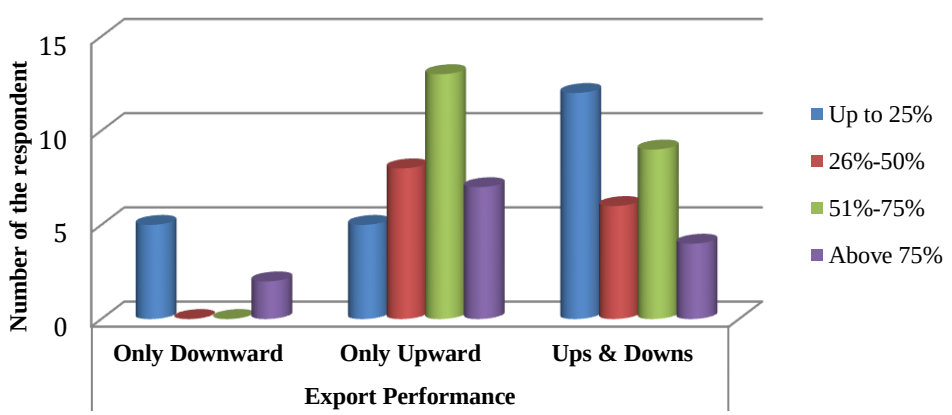


Table-08: Association between Percentage of regularly reviewed Food Safety Rules and Procedures with the staffs and Export Performance

Category		Export Performance					
		Only Downward	**Only Upward**	**Ups & Downs**	**Total**	χ^2	***P-value***
Up to 25%	Count	5	5	12	22	12.696	0.048**
	% within regularly reviewed	22.7%	22.7%	54.5%	100.0%		
	% export volume	71.4%	15.2%	38.7%	31.0%		
26%-50%	Count	0	8	6	14		
	% within regularly reviewed	0.0%	57.1%	42.9%	100.0%		
	% export volume	0.0%	24.2%	19.4%	19.7%		
51%-75%	Count	0	13	9	22		
	% within regularly reviewed	0.0%	59.1%	40.9%	100.0%		
	% export volume	0.0%	39.4%	29.0%	31.0%		
Above 75%	Count	2	7	4	13		
	% within regularly reviewed	15.4%	53.8%	30.8%	100.0%		
	% export volume	28.6%	21.2%	12.9%	18.3%		
Total	Count	7	33	31	71		
	% within regularly reviewed	9.9%	46.5%	43.7%	100.0%		
	% export volume	100.0%	100.0%	100.0%	100.0%		

** Level of Significance = 5%
*** Level of Significance = 1%

4.2.1.6. Percentage of address the root cause of food safety incidents to make sure it doesn't happen again and Export Performance

In a factory, food safety incidents may be occurring in any time. Nevertheless, most importantly, immediate after the incidents, the company should find out the root cause of the incidents and address it properly. Pew Charitable Trusts (2020) found that, in order to implement corrective measures, it is crucial to understand what went wrong in a food safety operation from the results of RCAs. Findings from RCAs should also point out what worked well, such as instances in which safety precautions and other components of the production system were functioning as intended and lessened the impact of an incident.

Based on the analysis, the null hypothesis is rejected since the *P-value* is marginally significant at the 5% level of significance (0.05). Instead, we draw the conclusion that there is a link between Percentage address the root cause of food safety incidents and Export Performance. The study can reveal the following from the findings: address the root cause of food safety incidents and export performance had a minimum association (χ^2 = 15.550, *P*= 0.016).

According to Table-09, the results show that 42.3% of the companies address the root cause (above 75%) of food safety incidents to make sure it doesn't happen again. On the other hand, majority (57.7%) have addressed the root cause below 75%. The review also shows that among those whose exports have an increasing trend, 19 companies (out of 30) addresses above 75% of total incidents.

Table-09: Association between Percentage of address the root cause of food safety incidents to make sure it doesn't happen again (% of address) and Export Performance

Category		Export Performance					
		Only Downward	**Only Upward**	**Ups & Downs**	**Total**	χ^2	***P-value***
Up to 75%	Count	5	14	22	41	5.933	0.051 = 0.05**
	% within incidents measure	12.2%	34.1%	53.7%	100.0%		
	% export volume	71.4%	42.4%	71.0%	57.7%		
Above 75%	Count	2	19	9	30		
	% within incidents measure	6.7%	63.3%	30.0%	100.0%		
	% export volume	28.6%	57.6%	29.0%	42.3%		
Total	Count	7	33	31	71		
	% within incidents measure	9.9%	46.5%	43.7%	100.0%		
	% export volume	100.0%	100.0%	100.0%	100.0%		

* Level of Significance = 10%
** Level of Significance = 5%
*** Level of Significance = 1%

4.2.1.7. Annual Expenditure related to food safety management as a percentage of total annual expenditure and Export Performance

Based on the analysis, the null hypothesis is rejected since the *P-value* less than the level of significance (0.05). Instead, we draw the conclusion that there is a link between Annual Expenditure related to food safety management as a percentage of total annual expenditure and Export Performance. We can conclude the following from the findings: Annual Expenditure related to food safety management and Export Performance were associated ($\chi^2 = 19.664$, *P*= 0.003).

Table-10 shows that only 9.9% companies expended more than 75% of total expenditure for food safety management annually. On the other hand, 32 companies (out of 71) have expenses the minimum amount (less than 25%) for food safety management. The result also shows that among those whose exports are growing increasingly, it appears that even those whose business is booming are unwilling or unable to afford to spend heavily on food safety. Many businesses still spend very little money each year on food safety.

Akerlof, (1970) and Antle (1996) described that Consumers may not purchase the products of other companies even though they invest a lot in producing safe food. Companies investing in food safety won't be reimbursed for their additional costs by rising consumer demand or willingness to pay for their safer products. Depending on how much more expensive it is to operate the machinery, the safer food may cost more. When this occurs, the business may use a less expensive, less secure production procedure to offer cheaper food on the market (Donovan *et al.*, 2001).

Table-10: Association between Annual Expenditure related to food safety management and Export Performance

Category		Export Performance					
		Only Downward	**Only Upward**	**Ups & Downs**	**Total**	χ^2	***P-value***
Up to 25%	Count	5	6	21	32	19.664	0.003***
	% within annual expenditure	15.6%	18.8%	65.6%	100.0%		
	% export volume	71.4%	18.2%	67.7%	45.1%		
26%-50%	Count	2	15	7	24		
	% within annual expenditure	8.3%	62.5%	29.2%	100.0%		
	% export volume	28.6%	45.5%	22.6%	33.8%		
51%-75%	Count	0	6	2	8		
	% within annual expenditure	0.0%	75.0%	25.0%	100.0%		
	% export volume	0.0%	18.2%	6.5%	11.3%		
Above 75%	Count	0	6	1	7		
	% within annual expenditure	0.0%	85.7%	14.3%	100.0%		
	% export volume	0.0%	18.2%	3.2%	9.9%		
Total	Count	7	33	31	71		
	% within annual expenditure	9.9%	46.5%	43.7%	100.0%		
	% export volume	100.0%	100.0%	100.0%	100.0%		
** Level of Significance = 5% *** Level of Significance = 1%							

4.2.1.8. Importance of Top management commitment to continuous improvement of food safety and Export Performance

According to data analysis (Table-11), top management commitment to continuous improvement of food safety has highly significant (*P-value* <0.0001) with Export performance. As per observation, 62% of respondents strongly agree with Top management commitment to continuous improvement of food safety is important for Market expansion. Among those whose exports are on the increasing trend, 87.9% strongly agreed that top management commitment to continuous improvement of food safety has an important role for business expansion. Therefore, management can play a vital role for improving Food Safety Culture.

Bristow (2022) did regarded management commitment as the most critical factor in making "a food safety culture live and breathe in a business". Food safety should never be a footnote at the end of a management meeting; it should be the main topic and addressed in a way that is engaging for all levels of leadership. Similarly Mensah, & Julien, (2011) stated that it is critical to obtain senior management commitment because most international food safety standards expressly identify management criteria (BS EN ISO 22000, 2005). As a result, disregarding the function of senior management would doom the entire process.

Table-11: Association between Importance of Top management commitment to continuous improvement of food safety and Export Performance

Top management commitment		Export Performance					
		Only Down ward	Only Upward	UP & Down	Total	χ^2	*P-value*
Neither agree nor disagree	Count	0	1	1	2	21.610	<0.001 ***
	% within top management commitment	0.0%	50.0%	50.0%	100.0%		
	% export volume	0.0%	3.0%	3.2%	2.8%		
Agree	Count	6	3	16	25		
	% within top management commitment	24.0 %	12.0%	64.0%	100.0%		
	% export volume	85.7 %	9.1%	51.6%	35.2%		
Strongly Agree	Count	1	29	14	44		
	% within top management commitment	2.3%	65.9%	31.8%	100.0%		
	% export volume	14.3 %	87.9%	45.2%	62.0%		
Total	Count	7	33	31	71		
	% within top management commitment	9.9%	46.5%	43.7%	100.0%		
	% export volume	100.0 %	100.0%	100.0%	100.0%		

** Level of Significance = 5%
*** Level of Significance = 1%

(No one responded to 'Disagree' and 'Strongly Disagree', so I excluded it from the table)

4.2.1.9. Importance of Food Safety knowledge at the recruitment level and Export Performance

According to data analysis, Food Safety knowledge is important for the recruitment process has statistically not significant (*P-value* 0.136) with Export performance. So, we can concluded that there are no association with food safety knowledge for the recruitment process and export performance As per observation from Table-11, 16.9% of respondents strongly agree and 46.5% are agree with food safety knowledge for the recruitment process is important for Export performance. However, a significant number of respondents (32.4%) are 'Neither agree nor disagree' with this statement. Among those whose exports are on the increasing trend, 21.9% strongly agreed that food safety knowledge for the recruitment process is important.

Jubayer *et al.*, (2020) found that the newly hired unskilled workers' knowledge, attitude, and self-reported practices were subpar in Bangladesh. When the asked to the management then they mentioned that they frequently hire people with little formal education. Compared to production output, the company had a lack of workers. the employees were paid extremely cheap wages, and when employing new staff, the owner/manager "would take the first person off the street, with no credentials or sense.". Inadequate facilities for personal hygiene and hand washing were provided, the workers received no hygiene training, and (Pennington, 2009). But Griffith (2010) stated differently that the initial understanding and attitudes of a prospective employee regarding food safety should be assessed at the interview together with any other assessments, such as their look or personal cleanliness, of how hygienically they may behave.

Table-12: Association between Importance of Food Safety knowledge at the recruitment level and Export Performance

Importance of Food Safety knowledge		Export Performance					
		Only Down ward	Only Upward	UP & Down	Total	χ^2	*P-value*
Dis-Agree	Count	1	0	2	3	9.730	0.136 NS
	% within importance	33.3%	0.0%	66.7%	100.0%		
	% export volume	14.3%	0.0%	6.5%	4.2%		
Neither agree nor disagree	Count	4	7	12	23		
	% within importance	17.4%	30.4%	52.2%	100.0%		
	% export volume	57.1%	21.2%	38.7%	32.4%		
Agree	Count	2	19	12	33		
	% within importance	6.1%	57.6%	36.4%	100.0%		
	% export volume	28.6%	57.6%	38.7%	46.5%		
Strongly Agree	Count	0	7	5	12		
	% within importance	0.0%	58.3%	41.7%	100.0%		
	% export volume	0.0%	21.2%	16.1%	16.9%		
Total	Count	7	33	31	71		
	% within importance	9.9%	46.5%	43.7%	100.0%		
	% export volume	100.0%	100.0%	100.0%	100.0%		

* Level of Significance = 10%
** Level of Significance = 5%
*** Level of Significance = 1%
NS = Non Significant

(No one responded to 'Strongly Disagree', so I excluded it from the table)

4.2.1.10. Importance of Performance evaluation in Food Safety-related activities and Export Performance

Based on the analysis, the null hypothesis is rejected since the *P-value* is significant at the 5% level of significance (0.05). Instead, we draw the interpretation that there is a link between Importance of Performance evaluation in Food Safety-related activities and Export Performance. The study can conclude the following from the findings: Performance evaluation in Food Safety-related activities and export performance had an association ($\chi 2 = 9.894$, $P = 0.042$).

According to Table-13, the results show that 40.8% of respondents are agreed with the statement of Performance evaluation in Food Safety-related activities is important for Food Export, followed by strongly agreed (38.0%), whereas no one 'disagreed' or 'strongly disagreed' with the statement.

Table-13: Association between Importance of Performance evaluation in Food Safety-related activities and Export Performance

Performance evaluation in Food Safety-related activities		Export Performance					
		Only Down ward	Only Upward	UP & Down	Total	χ^2	*P-value*
Neither agree nor disagree	Count	3	4	8	15	9.894	0.042 **
	% within Performance evaluation	20.0%	26.7%	53.3%	100.0%		
	% export volume	42.9%	12.1%	25.8%	21.1%		
Agree	Count	4	11	14	29		
	% within Performance evaluation	13.8%	37.9%	48.3%	100.0%		
	% export volume	57.1%	33.3%	45.2%	40.8%		
Strongly Agree	Count	0	18	9	27		
	% within Performance evaluation	0.0%	66.7%	33.3%	100.0%		
	% export volume	0.0%	54.5%	29.0%	38.0%		
Total	Count	7	33	31	71		
	% within Performance evaluation	9.9%	46.5%	43.7%	100.0%		
	% export volume	100.0%	100.0%	100.0%	100.0%		
** Level of Significance = 5% *** Level of Significance = 1%							

(No one responded to 'Disagree' and 'Strongly Disagree', so I excluded it from the table)

4.2.1.11. Food Safety is the high priority than Employee Safety for the food industry and Export Performance

In the questionnaire, the companies are responded regarding high priority of food safety than employee safety for the food industries. As per Table-14, the results showed that 43.7% of respondents agreed with the statement of Food Safety is the high priority than Employee Safety for the food industry, followed by strongly agreed (42.3%), whereas no one 'disagreed' or 'strongly disagreed' with the statement. Only 14.1% of respondents supported to 'Neither agree nor disagree'. From the table, it revealed that people perception commonly agreed with the statement. However, when we consider it with export performance, then the result is non-significant.

According to the analysis (chi-square test), the null hypothesis is rejected since the *P-value* is not significant at the 5% level of significance (0.05). Instead, we draw the interpretation that there is a no association between High Priority of Food Safety than Employee Safety for the food industry and Export Performance. The study can conclude the following from the findings: High Priority of Food Safety than Employee Safety for the food industry and export performance had no association ($\chi 2 = 3.898$, $P = 0.420$).

White (2022) also mentioned that accountability is required for food safety from a regulatory, customer, and business perspective; employee safety should be no different. Bangladesh's shrimp exports faced a significant market access barrier in 1997 when the EU forbade the import of shrimp from Bangladesh because shrimp cultivation and processing did not adhere to the rules for health and hygiene (Khatun, 2004). Therefore, we can conclude that employee safety is the highest priority as like Food safety for food industries.

Table-14: Association between high priority of Food Safety than Employee Safety for the food industry and Export Performance

High priority of Food Safety than Employee Safety		Export Performance					
		Only Down ward	Only Upward	UP & Down	Total	χ^2	*P-value*
Neither agree nor disagree	Count	2	2	6	10	3.898	0.420 NS
	% within High priority	20.0%	20.0%	60.0%	100.0%		
	% export volume	28.6%	6.1%	19.4%	14.1%		
Agree	Count	2	16	13	31		
	% within High priority	6.5%	51.6%	41.9%	100.0%		
	% export volume	28.6%	48.5%	41.9%	43.7%		
Strongly Agree	Count	3	15	12	30		
	% within High priority	10.0%	50.0%	40.0%	100.0%		
	% export volume	42.9%	45.5%	38.7%	42.3%		
Total	Count	7	33	31	71		
	% within High priority	9.9%	46.5%	43.7%	100.0%		
	% export volume	100.0%	100.0%	100.0%	100.0%		

* Level of Significance = 10%
** Level of Significance = 5%
*** Level of Significance = 1%
NS= Non Significant

(No one responded to 'Disagree' and 'Strongly Disagree', so I excluded it from the table)

4.2.1.12. Sufficient knowledge related to food safety among farmers and exporters and Export Performance

The analysis concludes that since the *P-value* is extremely significant at the 5% level of significance, the null hypothesis is not true (0.05). Instead, we infer that there is a connection between export performance and sufficient understanding of food safety among farmers and exporters. The study's findings allow it to draw the following conclusions: There was a link between export performance and sufficient knowledge of food safety among farmers and exporters ($\chi 2 = 14.355$, $P= 0.006$).

Table 15's findings reveal that 53.5% of respondents strongly agreed with the statement that farmers and exporters have sufficient knowledge of food safety, followed by agreed (36.6%). No one 'disagreed' or' strongly disagreed' with the statement, but seven respondents indicated that they "Neither agree nor disagree" with it.

The secret to a company's competitiveness is knowledge (Perez-Aleman, 2012). Pekkirbizli Zemestani (2020) stated that an employee who lacks the requisite expertise or knowledge of the technique and process could be counterproductive because it would increase operating costs and foster risk perception. Montiel *et al.* (2019) discovered that enterprises in underdeveloped countries experience significant uncertainties during the adoption of numerous standards due to a lack of resources and knowledge.

Table-15: Association between Sufficient knowledge related to food safety among farmers and exporters and Export Performance

Sufficient knowledge related to food safety		Export Performance					
		Only Down ward	Only Upward	UP & Down	Total	χ^2	*P-value*
Neither agree nor disagree	Count	0	3	4	7	14.355	0.006 ***
	% within Sufficient Knowledge	0.0%	42.9%	57.1%	100.0%		
	% export volume	0.0%	9.1%	12.9%	9.9%		
Agree	Count	6	6	14	26		
	% within Sufficient Knowledge	23.1%	23.1%	53.8%	100.0%		
	% export volume	85.7%	18.2%	45.2%	36.6%		
Strongly Agree	Count	1	24	13	38		
	% within Sufficient Knowledge	2.6%	63.2%	34.2%	100.0%		
	% export volume	14.3%	72.7%	41.9%	53.5%		
Total	Count	7	33	31	71		
	% within Sufficient Knowledge	9.9%	46.5%	43.7%	100.0%		
	% export volume	100.0%	100.0%	100.0%	100.0%		

** Level of Significance = 5%
*** Level of Significance = 1%

(No one responded to 'Disagree' and 'Strongly Disagree', so I excluded it from the table)

4.2.1.13 Level of food safety culture (overall) of the organization/company and Export Performance

According to the analysis, the null hypothesis is rejected since the *P-value* less than the level of significance we determined to be significant (0.05). Instead, the study concluded that there is an association level of food safety culture (overall) of the organization/company and Export Performance. The study can explain the following from the findings: level of food safety culture (overall) of the organization/company and Export Performance had a strong association ($\chi 2$ = 17.136, p .029).

Table-16 shows that most of the companies has level of food safety culture (overall) are 'a lot' (38.0%) followed by Maximum (28.2%) and medium (14.1%). On the other hand, only 6 companies believe that their level of Food Safety Culture (overall) are minimum (8.5%) and 8 respondents marked 'a few' (11.3%). From the finding, it has revealed that food exporters (80.3%) follow the Food Safety Culture medium to maximum. Besides this from the table-11, we found that the company who maintain the level of Food Safety Culture in their organizations, their export volume never goes down. We cannot say this is universal, but it understood that how the level of Food Safety Culture positively affect the export performance.

Table-16: Association between Level of Food Safety Culture (overall) of the organization/company and Export Performance

what level of food safety culture		Export Performance					
		Only Downward	Only Upward	Ups & Downs	Total	χ^2	*P-value*
Minimum	Count	0	5	1	6	17.136	0.029**
	% within FS culture	0.0%	83.3%	16.7%	100.0%		
	% export volume	0.0%	15.2%	3.2%	8.5%		
A few	Count	2	1	5	8		
	% within FS culture	25.0%	12.5%	62.5%	100.0%		
	% export volume	28.6%	3.0%	16.1%	11.3%		
Medium	Count	3	3	4	10		
	% within FS culture	30.0%	30.0%	40.0%	100.0%		
	% export volume	42.9%	9.1%	12.9%	14.1%		
A lot	Count	2	11	14	27		
	% within FS culture	7.4%	40.7%	51.9%	100.0%		
	% export volume	28.6%	33.3%	45.2%	38.0%		
Maximum	Count	0	13	7	20		
	% within FS culture	0.0%	65.0%	35.0%	100.0%		
	% export volume	0.0%	39.4%	22.6%	28.2%		
Total	Count	7	33	31	71		
	% within FS culture	9.9%	46.5%	43.7%	100.0%		
	% export volume	100.0%	100.0%	100.0%	100.0%		

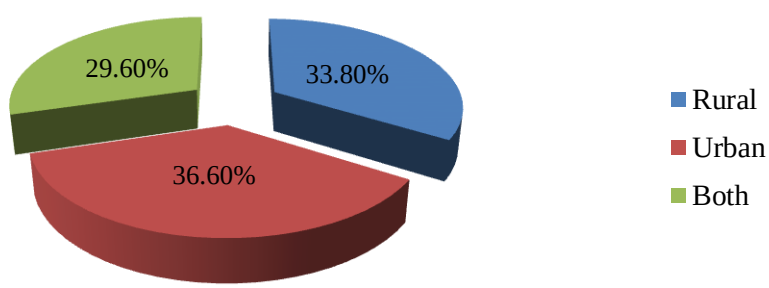
** Level of Significance = 5%
*** Level of Significance = 1%

4.2.2. Hypothesis-2: Location of the company can affect the association between Food Safety Culture and International Market Access (Export Performance)

Location of the factory is one of the basic information for the responding organization. Location has sometimes the moderating effect on the association between two variables (Javed, 2021). Table-18 shows that 36.6% of the factory located in urban area, whereas 33.8% in rural area. However, 29.6% of the company's factory located both in urban & rural area (Figure-3).

The study shows that the null hypothesis is accepted because the *P-value* is over the level of significance, which we considered to be significant (0.05). Instead, the study came to the conclusion that there is no connection between Export Performance and Factory Location. The study's findings can be used to explain the following: Export Performance and Factory Location did not correlate ($\chi 2$ = 6.371, p 0.173). There are no significant difference between urban and rural area. Some food company like to establish the factory in rural area due to available resource. Freeman, *et al.* (2021) contends that firm location has an indirect impact on a firm's export performance through influencing firm resources and capabilities development.

Figure-3: Percentagewise Location of the factory



Contrasted with, research from Belso-Martinez (2006) suggested a strong association between the performance of companies based in industrial districts and exports. Therefore, it stands to reason that increased competitive rivalry would lead to the development of both general competitive talents and those particular competitive abilities required to succeed in the export market. Due to this reason, may be highest number of factory located in urban area.

Table-17: Effect of Location on the Association between Food Safety Culture and Export Performance

Location of the company		Export Performance					
		Only Downward	Only Upward	Ups & Downs	Total	χ^2	*P-value*
Urban	Count	3	9	14	26	6.371	0.173 NS
	% within Location	11.5%	34.6%	53.8%	100.0%		
	% within export	42.9%	27.3%	45.2%	36.6%		
Rural	Count	4	13	7	24		
	% within Location	16.7%	54.2%	29.2%	100.0%		
	% within export	57.1%	39.4%	22.6%	33.8%		
Both	Count	0	11	10	21		
	% within Location	0.0%	52.4%	47.6%	100.0%		
	% within export	0.0%	33.3%	32.3%	29.6%		
Total	Count	7	33	31	71		
	% within Location	9.9%	46.5%	43.7%	100.0%		
	% within export	100.0%	100.0%	100.0%	100.0%		

** Level of Significance = 5%
NS= Non Significant

4.2.3. Hypothesis-3: Age of the Company can amplify the association between Food Safety Culture and International Market Access (Export Performance)

Numerous research have included firm age as a moderator (e.g., Aziz and Samad, 2016; Rafiq *et al*., 2016 and Bedi and Vij, 2015;). Company age is frequently used as a categorical variable to represent the duration of an organization's existence. (Farooq & Vij, 2017). Figure-4 shows that 28.2% of the factories are very new (6-10 years), whereas only 12.7% are old (more than 40 years). Actually, most of the company started their journey in 1990s.

According to the analysis (Table-19), the null hypothesis is rejected since the *P-value* less than the level of significance we determined to be significant (0.05). Instead, the study concluded that there is an association age of the firm and Export Performance. The study can conclude the following from the findings: Age of the firm and Export Performance had a strong association ($\chi 2 = 19.292$, $P = 0.037$).

The association between ISO 14001 certification and a company's financial performance is positively correlated with firm size and age (Wang and Zhao, 2020). The age of the companies is a positive significant factor in influencing corporate success, according to the findings of the interactive panel data that was conducted. (Pervan, *et al.,* 2017). Similarly Dong, *et al.* (2022) stated that the amount of information and expertise a company has accrued over time might have an impact on its ability to export. The number of years since the company's founding is used to calculate its age. Therefor form the research finding. It can be revealed that age of the company has significant association with Export performance.

Table-18: Effect of Age of the firm on the Association between Food Safety Culture and Export Performance

Age of the firm		Export Performance					
		Only Downward	Only Upward	Ups & Downs	Total	χ^2	*P-value*
1-5 years	Count	1	4	0	5	19.292	0.037**
	% within Age of the firm	20.0%	80.0%	0.0%	100.0%		
	% within export	14.3%	12.1%	0.0%	7.0%		
6-10 years	Count	4	3	13	20		
	% within Age of the firm	20.0%	15.0%	65.0%	100.0%		
	% within export	57.1%	9.1%	41.9%	28.2%		
11-20 years	Count	2	8	6	16		
	% within Age	12.5%	50.0%	37.5%	100.0%		
	% within export	28.6%	24.2%	19.4%	22.5%		
21-30 years	Count	0	9	6	15		
	% within Age of the firm	0.0%	60.0%	40.0%	100.0%		
	% within export	0.0%	27.3%	19.4%	21.1%		
31-40 years	Count	0	5	1	6		
	% within Age of the firm	0.0%	83.3%	16.7%	100.0%		
	% within export	0.0%	15.2%	3.2%	8.5%		
More than 40 years	Count	0	4	5	9		
	% within Age of the firm	0.0%	44.4%	55.6%	100.0%		
	% within export	0.0%	12.1%	16.1%	12.7%		
Total	Count	7	33	31	71		
	% within Age of the firm	9.9%	46.5%	43.7%	100.0%		
	% within export	100.0%	100.0%	100.0%	100.0%		

** Level of Significance = 5%

Figure-4: Percentagewise Age of the company

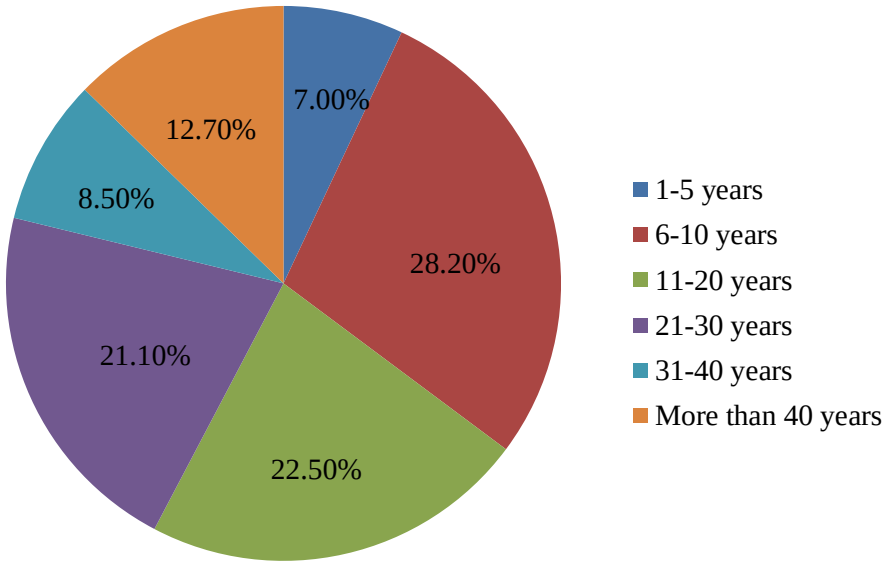
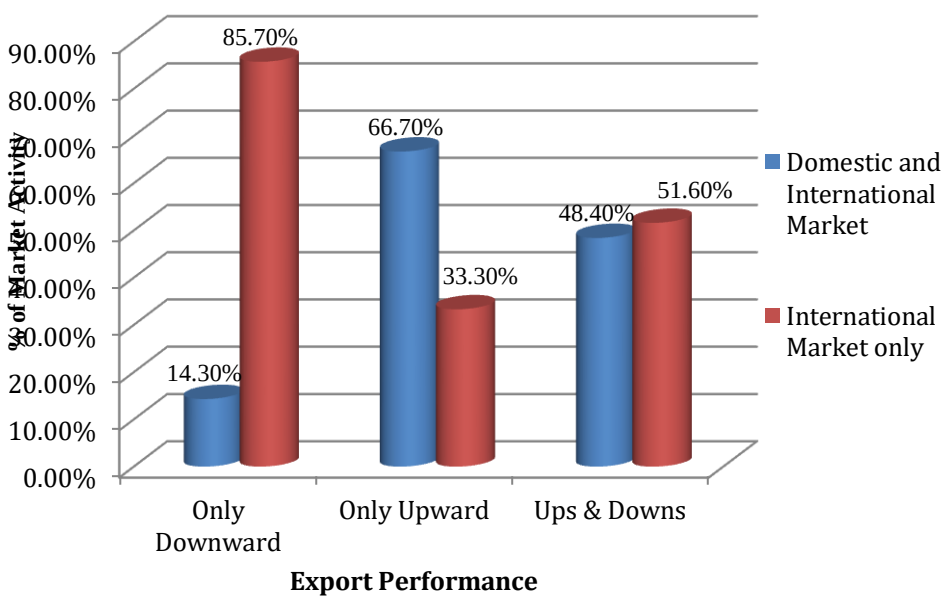


Figure-5: Market Activity wise Export Performance of the respondents



4.2.4. Hypothesis-4: Number of compound/factory/establishment of an individual Company may influence the association between Food Safety Culture and International Market Access (Export Performance)

Based on analysis, the null hypothesis is rejected since the *P-value* less than the level of significance we determined to be significant (0.10). Instead, the study concluded that there is an association with number of compound/factory/ establishment of the individual company and Export Performance. The study can conclude the following from the findings: Number of compound/factory/ establishment and Export Performance had a mild association ($\chi 2$ = 14.292, *P*= 0.074).

According to Table-20 & Figure-6, there are only 11 respondents (15.5%) mentioned that they have more than five (05) establishment/compound/factory and more than 60% of the company out of 11, are showing an increasing trend of export. In addition, anyone from these 11 companies are no downward in terms of export. From this finding, it can be revealed that big or multi-type Company has more export potentiality than others company, who has less compounds.

Figure-6: Compound wise Export Performance of the respondents

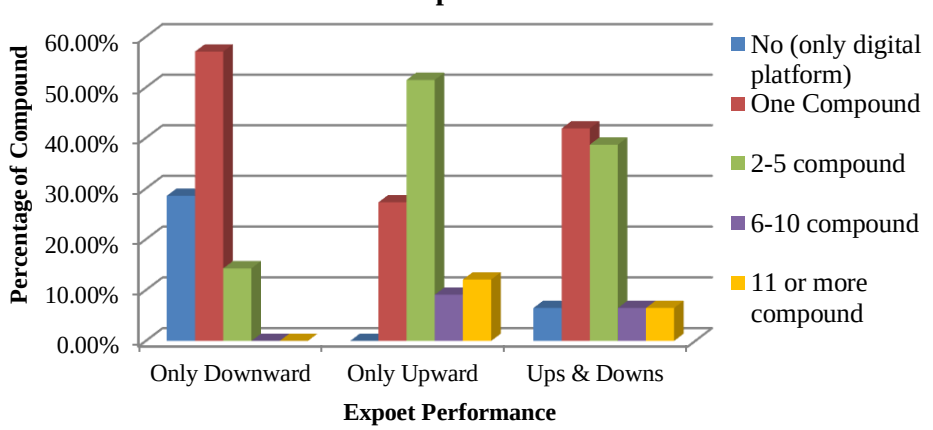


Table-19: Effect of number of compound of the company on the Association between Food Safety Culture and Export Performance

Number of compound		Export Performance					
		Only Downward	Only Upward	Ups & Downs	Total	χ^2	*P-value*
No (only digital platform)	Count	2	0	2	4	14.292	0.074*
	% within compound	50.0%	0.0%	50.0%	100.0 %		
	% within export volume	28.6%	0.0%	6.5%	5.6%		
One	Count	4	9	13	26		
	% within compound	15.4%	34.6%	50.0%	100.0 %		
	% within export volume	57.1%	27.3%	41.9%	36.6%		
2-5	Count	1	17	12	30		
	% within compound	3.3%	56.7%	40.0%	100.0 %		
	% within export volume	14.3%	51.5%	38.7%	42.3%		
6-10	Count	0	3	2	5		
	% within compound	0.0%	60.0%	40.0%	100.0 %		
	% within export volume	0.0%	9.1%	6.5%	7.0%		
11 or more	Count	0	4	2	6		
	% within compound	0.0%	66.7%	33.3%	100.0 %		
	% within export volume	0.0%	12.1%	6.5%	8.5%		
Total	Count	7	33	31	71		
	% within compound	9.9%	46.5%	43.7%	100.0 %		
	% within export volume	100.0%	100.0%	100.0 %	100.0 %		

* Level of Significance = 10%
** Level of Significance = 5%
*** Level of Significance = 1%

4.2.5. Hypothesis-5: Market Activity of the company can affect the association between Food Safety Culture and International Market Access (Export Performance)

The null hypothesis is disproved by analysis since the P-value is below the level of significance that we judged to be meaningful (0.05). Instead, the study came to the conclusion that there is a link between a company's market activity and its export performance. The study's findings allow it to draw the following conclusions: There was a correlation between the company's market activity and its export performance ($\chi 2 = 6.953$, $P = 0.031$).

According to Table-21 & Figure-5, there are 66.7% companies has upward trend of export who's market activities both inside and outside the country. On the other hand, out of 71, 6 respondents mentioned about their downward trend of export who deals only the international market. Therefore, we can conclude that company who has the market activities in both domestic as well as international; they perform better than whom operate the international market only.

Table-20: Effect of market activity of the company on the Association between Food Safety Culture and Export Performance

Company's market activity		Export Performance					
		Only Downward	Only Upward	Ups & Downs	Total	χ^2	*P-value*
Domestic and International Market	Count	1	22	15	38	6.953	0.031**
	% within market activity	2.6%	57.9%	39.5%	100.0%		
	% within export volume	14.3%	66.7%	48.4%	53.5%		
International Market only	Count	6	11	16	33		
	% within market activity	18.2%	33.3%	48.5%	100.0%		
	% within export volume	85.7%	33.3%	51.6%	46.5%		
Total	Count	7	33	31	71		
	% within market activity	9.9%	46.5%	43.7%	100.0%		
	% within export volume	100.0%	100.0%	100.0%	100.0%		
** Level of Significance = 5%							

4.2.6. Hypothesis-6: Size of the Company can amplify the association between Food Safety Culture and International Market Access (Export Performance)

Several strategic management researchers have started to pay attention to company size as a moderator (e.g., Varum & Rocha, 2012; Bedi & Vij, 2015; Vij & Farooq, 2015; Beyene *et al.*, 2016; and Vij & Bedi, 2016). The correlation between Knowledge Sharing Orientation (KSO) and company performance was strongly affected by firm size. The need for stronger KSO to improve business performance grows as the organization's size in terms of the number of people does (Farooq & Vij, 2017).

Based on the analysis, the null hypothesis is disregarded because the *P-value* is below the level of significance that we determined to be significant (0.05). Instead, the study found a connection between export performance and firm size. The study can make the following deductions from its findings: The relationship between company size and export performance was substantial ($\chi 2$ = 17.759, *p* 0.023). Similar result found by De Noni and Apa (2015) and they mentioned that size is correlated with performance for both domestic and exporting enterprises, according to the correlation matrix.

According to Holtbrügge & Berning (2018), performance can be impacted by an operation's size in a variety of ways. Larger businesses are able to implement operations more effectively and produce higher returns on their assets and sales because they have a wider range of capabilities and the capacity to take advantage of economies of scale. In this study, the number of employees' natural logarithm was transformed to determine the firm size (Brouthers 2002).

Table-21: Effect of Size of the company on the Association between Food Safety Culture and Export Performance

Size of the business organization		Export Performance					
		Only Downward	Only Upward	Ups & Downs	Total	χ^2	*P-value*
Up to 15 employees	Count	2	2	4	8	17.759	0.023**
	% within size	25.0%	25.0%	50.0%	100.0%		
	% within export volume	28.6%	6.1%	12.9%	11.3%		
16-30 employees	Count	4	3	10	17		
	% within size	23.5%	17.6%	58.8%	100.0%		
	% within export volume	57.1%	9.1%	32.3%	23.9%		
31-120 employees	Count	1	3	4	8		
	% within size	12.5%	37.5%	50.0%	100.0%		
	% within export volume	14.3%	9.1%	12.9%	11.3%		
121-300 employees	Count	0	7	4	11		
	% within size	0.0%	63.6%	36.4%	100.0%		
	% within export volume	0.0%	21.2%	12.9%	15.5%		
301 and above	Count	0	18	9	27		
	% within size	0.0%	66.7%	33.3%	100.0%		
	% within export volume	0.0%	54.5%	29.0%	38.0%		
Total	Count	7	33	31	71		
	% within size	9.9%	46.5%	43.7%	100.0%		
	% within export volume	100.0%	100.0%	100.0 %	100.0%		

** Level of Significance = 5%
*** Level of Significance = 1%

As per Table-22, highest number of upward trend export performer from the Big Company (54.5%) followed by Medium Enterprise (21.2%) and the both has no response to downward trend. It also revealed that size of the company has significantly link with export performance due to Large company have many resources at their disposal to innovate throughout time. Given their substantial

financial resources, Large Enterprise can pay higher wages and provide more security in order to entice skilled employees, particularly scientists and engineers. For SMEs, this is more difficult (Rothwell and Zegveld 1982). Additionally, Large company typically possess the sufficient financial resources to withstand the failures or subpar outcomes of R&D projects (Karlsson and Olsson 1998). Beside this, performance at export is a company's first step toward internationalization and a source of revenue. International trade has been viewed as being fueled by innovation. Through the use of both product innovation and process innovation, Large company were able to improve their export performance (Hwang, *et al.* 2015).

However, some researchers have discovered no connection between company size and export performance (Wolff and Pett, 2000; Contractor et al., 2005). According to Sousa et al. (2008), these discrepancies may be caused by unevenly applied company size metrics and differences in the definitions of SME and large firm among nations.

However, Umali-Deininger and Sur (2006) expressed that the small farm structure further restricts farmers' ability to satisfy escalating SPS and domestic and international food safety regulations. Based on the discussion and finding, It can be conclude that, The relationship between a company's food safety culture and access to international markets (Export performance) can be influenced by its size.

4.3. Summary of the Research Findings:

In the above finding, there were 13 measurements of Food Safety Culture, which are individually effect on Export performance as per respond from the Survey. Summary of the results are-

Table-22: Association between Food Safety Culture and Export Performance

Sl. No	Hypothesis (Measurement of Food Safety Culture)	Result with *p-value*
1.	Food Safety related Certificate has positive association with Export Performance	0.001 Highly Significant
2.	Trained employee regarding food safety has positive association with Export Performance	<0.001 Highly Significant
3.	Dedicated training only for Food Safety has positive association with Export Performance	0.016 Significant
4.	Implemented and understood SOP for food safety has positive association with Export Performance	0.004 Highly Significant
5.	Regularly reviewed Food Safety Rules and Procedures has positive association with Export Performance	0.048 Significant
6.	Address the root cause of food safety incidents has positive association with Export Performance	0.051 Marginally Significant
7.	Annual Expenditure related to food Safety management has positive association with Export Performance	0.003 Highly Significant
8.	Top management commitment to continuous improvement of food safety has positive association with Export Performance	<0.001 Highly Significant
9.	Food Safety knowledge for the recruitment process has positive association with Export Performance	0.136 Non-Significant
10.	Performance evaluation in Food Safety-related activities has positive association with Export Performance	0.042 Significant
11.	Food Safety is the high priority than Employee Safety for the food industries has positive association with Export Performance	0.420 Non-Significant
12.	Sufficient knowledge related to food safety among farmers and exporters has positive association with Export Performance	0.006 Highly Significant
13.	Level of food safety culture (overall) of the organization has positive association with Export Performance	0.029 Significant

According to the analysis, only two hypotheses (measurements) are shown non-significant (out of 13 measurements). For during the recruitment, food safety knowledge may not be much important in Bangladesh. Bangladesh is a labour intensive country. Labor-intensive industries typically thrive in least developed or emerging nations with large populations. This industry pays the lowest wage possible to keep its production costs as low as possible (Hassan, 2018). Al Banna, *et al.* (2022) found in their study, that a majority of respondents (76.4%) was unaware of HACCP, and nearly half of respondents (43.5%) had never received any instruction on food safety. Additionally, Hashanuzzaman, *et al.* (2020) discovered that their respondents did not provide accurate answers to questions about food safety, which revealed a lack of training and adequate food safety documents. Therefore, the management of the company doesn't care too much about food safety knowledge during the recruitment process for new staffs. But, several researchers stated that Food safety knowledge also important during the fresh recruitment.

Considering high priority between food safety and employee safety, it was non-significant. Because many researchers believe that there are no difference between Employee safety and food safety, both are equally important for Food industries.

As per findings, it can be conclude that there are a positive association between Food Safety Culture and International Market Access (Export Performance). If company consider the Food Safety Culture in their premises (e.g. Achieving food safety certificate, Conducting More training for the staffs,

allocation of more budget for food safety training, expenses more for food safety issues, regularly reviewed food safety related rules and procedures, implemented the SOP for traceability as well, top management high commitment to continuous development of food safety, etc.), export can be increased and the company will find the new market for smooth access.

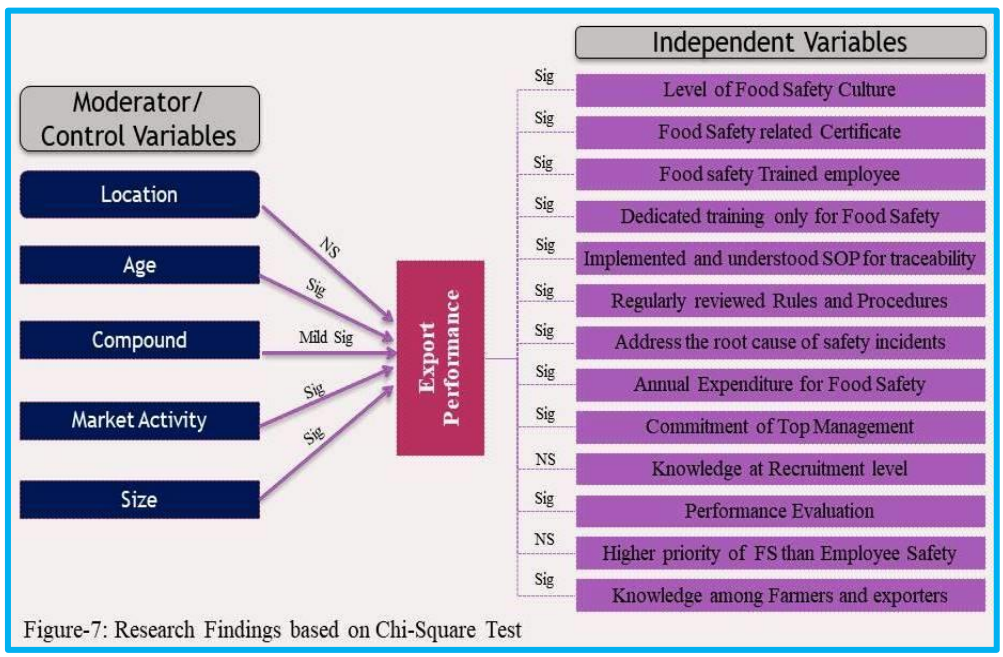


Figure-7: Research Findings based on Chi-Square Test

Beside this, Age & Size of the company and market activity has significant association with Export performance and Number of compound has mild association. On the other hand, location has no association with Export performance.

4.4. Analysis of Fitness of the Model

Multinomial logistic regression models can be helpful for determining whether or not the model is accurate because my dependent variable is composed of categories that are unordered (the variable is nominal) and have more than two. To compare all other categories in this research, I used the reference category "Only Downward (Decreasing) Trend" as the baseline. The results from the Multinomial Logistic Regression Analysis are summarized below:

4.4.1. Model Fitting Information:

Table-23: Model Fitting Information

	Model Fitting Criteria			Likelihood Ratio Tests		
Model	AIC	BIC	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	138.381	142.906	134.381			
Final	208.000	443.319	.000	134.381	102	.017

The "Model Fitting Information" table includes a Likelihood Ratio chi-square test that compares the whole model (i.e., all predictors) to a null model (or intercept only model). Statistical significance shows that the entire model outperforms the null model in terms of fit. According to this study, the entire model significantly outperforms the null model in terms of fit [χ^2 (120)=134.381, P=.017].

4.4.2. Goodness of Fit:

The Deviance and Pearson chi-square tests are included in the "Goodness of Fit" table and can be used to assess how well a model fits the data. Results from non-significant tests show how well the model fits the data (Field, 2018; Petrucci, 2009).

Table-24: Goodness-of-Fit

	Chi-Square	Df	Sig.
Pearson	.000	36	1.000
Deviance	.000	36	1.000

As per result, The Pearson's [χ^2 (36)= 0.000, *P*=1.00], and the Deviance [χ^2 (36)=0.000, *P*=1.00] chi-square test indicates that the model fit the data well.

4.3.3. Likelihood Ratio Tests:

These results contain likelihood ratio tests of the overall contribution of each independent variable to the model (Note: if a variable is added in as a factor, the result for that variable is treated as an omnibus test of that factor). Using the conventional α=.05 threshold, we see that there are no significant predictor in the model. The variables do not significantly affect the result overall because the *P* value is more than 0.05 in each case (Table 25).

The Survey data is too small to predict a good result. Since overall Model is fit based on Model Fitting Information (Table 23) and also the data is good fit to the model according to The Deviance and Pearson chi-square tests result (Table 23), then it is assume that Food Safety Culture has positive relation with Export Performance.

Table-25: Likelihood Ratio Tests

Effect	Model Fitting Criteria			Likelihood Ratio Tests		
	AIC of Reduced Model	BIC of Reduced Model	-2 Log Likelihood of Reduced Model	Chi-Square	df	Sig.
Intercept	208.000	443.319	.000[a]	.000	0	.
Level of FSC	192.000	409.217	.000[b]	.000	8	1.000
Location	200.000	426.268	.000[b]	.000	4	1.000
Age	188.000	400.692	.000[b]	.000	10	1.000
Market Activity	204.000	434.793	.000[b]	.000	2	1.000
Compound	192.000	409.217	.000[b]	.000	8	1.000
Size	192.000	409.217	.000[b]	.000	8	1.000
Certificate	200.000	426.268	.000[b]	.000	4	1.000
Employee Training	196.000	417.743	.000[b]	.000	6	1.000
Dedicated Training	196.000	417.743	.000[b]	.000	6	1.000
SOP for traceability	196.000	417.743	.000[b]	.000	6	1.000
Rules and Procedures	196.000	417.743	.000[b]	.000	6	1.000
Incidents Address	196.000	417.743	.000[b]	.000	6	1.000
Annual Expenditure	196.000	417.743	.000[b]	.000	6	1.000
Management commitment	200.000	426.268	.000[b]	.000	4	1.000
Knowledge at Recruitment	196.000	417.743	.000[b]	.000	6	1.000
Performance Evaluation	200.000	426.268	.000[b]	.000	4	1.000
Higher priority of FS	200.000	426.268	.000[b]	.000	4	1.000
Knowledge among Farmers and exporters	200.000	426.268	.000[b]	.000	4	1.000

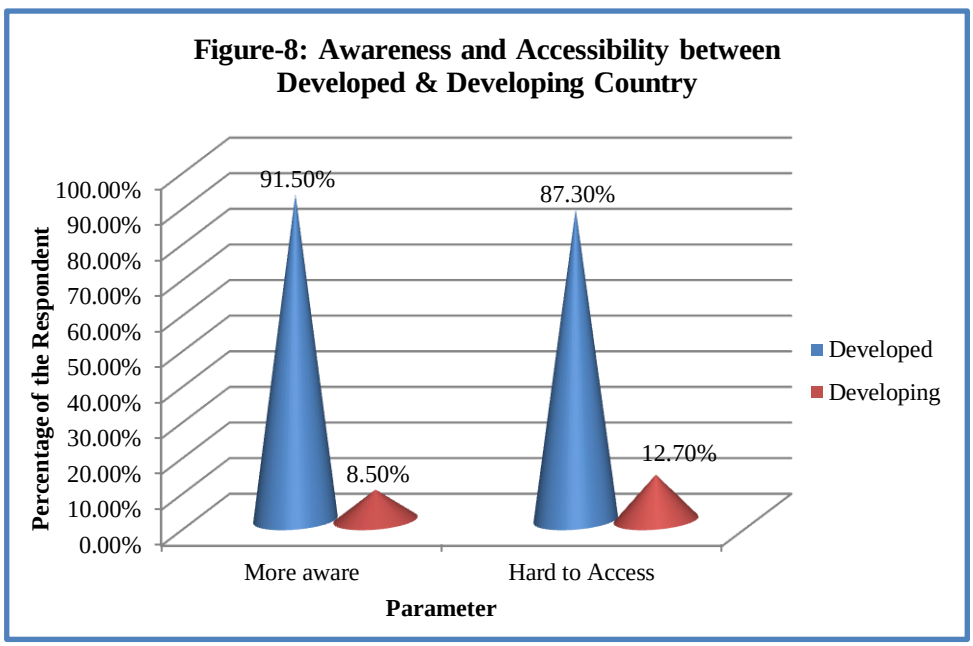
The chi-square statistic is the difference in -2 log-likelihoods between the final model and a reduced model. The reduced model is formed by omitting an effect from the final model. The null hypothesis is that all parameters of that effect are 0.

a. This reduced model is equivalent to the final model because omitting the effect does not increase the degrees of freedom.

b. Unexpected singularities in the Hessian matrix are encountered. This indicates that either some predictor variables should be excluded or some categories should be merged.

4.4. Research finding related to Developed and Developing Market

All participants were asked which country's market was difficult to enter and which market was more vocal about food safety. Based on Awareness and Accessibility, the author tried to compare between Developed and Developing country.



According to Figure-8. It is found that most of respondents informed that Market of Developed countries (91.5%) are more aware than developing countries (8.50%) regarding food safety issues. Similar findings were made by Stratev, *et al.* (2017), who discovered that more than half of the students (63.3%) believed that developing countries experience food poisoning more frequently than developed ones due to a lack of awareness.

However, King *et al.* (2017) noted that as the global food trade grows, food safety has become a common priority for rich and developing countries.

Based on analysis, it is also found that 87.30% respondents believe that access to market from developed countries is very challenging i.e. hard to access. The findings support the hypothesis of Ferro, *et al.* (2015) that less developed nations encounter difficulties in meeting more stringent import requirements from developed nations due to supply-side constraints, such as a lack of adequate financial and technological resources.

New legal criteria for traceability have been introduced in many developed countries, and developing countries are now under pressure to adhere to the rules laid forth by importing nations. Rahman, (2002) also expressed the same notion and he stated that LDCs in particular, and developing nations in general, are still encountering numerous challenges in meeting the criteria that are determined by developed nations. He also stated that when the poor countries did not follow a developed country's SPS, TBT, or both requirements, they were frequently refused entry to the market.

However, proving that some nations' through-chain approaches to food safety norms and criteria are equivalent to those of other, sometimes developing countries still poses many difficulties globally and could obstruct free trade (King, *et al.* 2017). Grace (2015) mentioned that there is a common understanding that the majority of governments in developing countries are unable to guarantee of safe food. From the finding, it can be conclude that access to market in Developed countries are more challenging than developing countries.

4.5. Additional Research findings

To further investigate our findings, several more question were asked to exporters and analyses were conducted as follows-

4.5.1. Reason behind if export volume is decreasing trend or decline in a particular year

In the survey questionnaire, respondents were asked to list at least three reasons for the company's decline in exports. According to Figure-9, 24.14% of exporters told that reason behind for declining the export for "Food Safety issue (Failure in following the Food Safety instructions-)", followed by 21.55% for "Disaster or any other emergency/incidents (COVID-19)", and Financial Issue (19.83%). It is fact that, due to COVID-19, overall export as well as food exports also more or less hampered. Although initially (FY 2019-20), COVID-19 affected the food market, it continued to grow from 2020-21.

Haque, *et al.* (2022) conducted a review on impacts of COVID-19 on global agricultural system and Scope for Bangladesh after pandemic and they stated that the COVID-19 pandemic has had a significant impact on international ties that reaches far beyond the agro-food profession. Export restrictions imposed by several governments constitute a barrier to agricultural product entry into the market. Flight and port closures disrupt the worldwide supply chain. By means of 'Food sovereignty, few states really impacted the global agro-marketing system. Bangladesh has experienced significant difficulties with the marketing and shipment of all fruits, vegetables, eggs, chicken meat, and milk. The export of vegetables lost $20 million in revenue.

Ahmed, and Azra, (2022) also mentioned that Production, marketing, distribution and consumption of seafood are impacted by lockdowns, social isolation, supply chain interruptions, and transportation limitations brought on by the COVID-19 pandemic. Engemann & Jafari, (2022) analyzed the COVID-19 impact and they revealed the commerce in basic goods held up the best, whereas that in other agro-food products drastically decreased. In their analysis of COVID-19's effects on the food trade among Commonwealth nations, Vickers *et al.* (2020) make the case that trade logistics and domestic economic activity were impacted by national lockdowns.

4.5.2. Reason behind if export volume is an increasing trend

In the survey questionnaire, the respondents were asked to mention at least three reasons which are (is) behind the increase of export of the company. As per Figure-10, it shows that 28.87% believe that their export is an increasing trend due to "Consider Food Safety as priority (Success in following the Food Safety instructions)", followed by "Strong Management policy (22.54%)" and ethical practice (13.38%). Unethical practice decreases the brand value and overall goodwill. Due to transgressions and unethical business activities, Bangladesh has experienced export prohibitions from a number of countries and international alliances at various times (Khan, *et al.* 2022). Therefore, may be many of them believe that business with ethically increases their exports.

Huang (2022) mentioned that under normal circumstances, the food supply chain prioritizes food safety and quality for consumers. In other words, food security cannot exist without food safety.

Figure-9: Reasons behind, if export is decreasing or dicline in a particular year

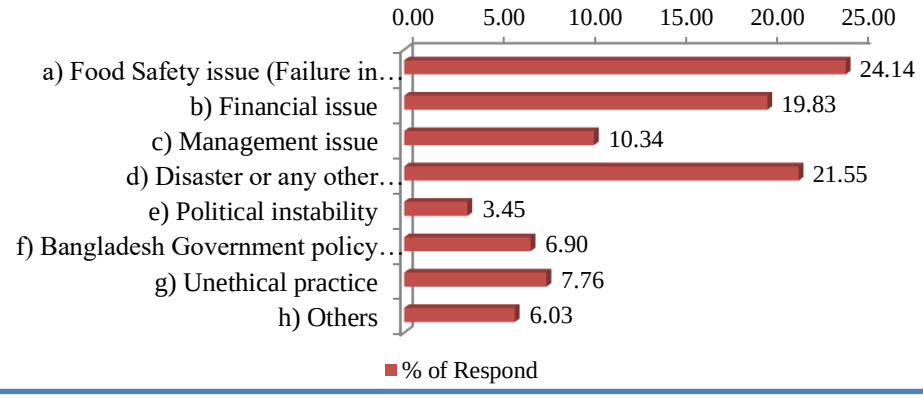


Figure-10: Reasons behind, if export is an increasing trend

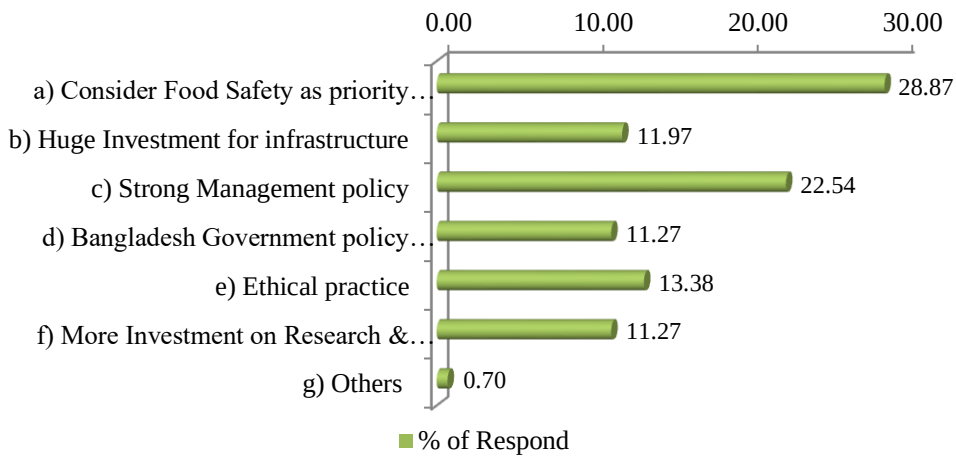
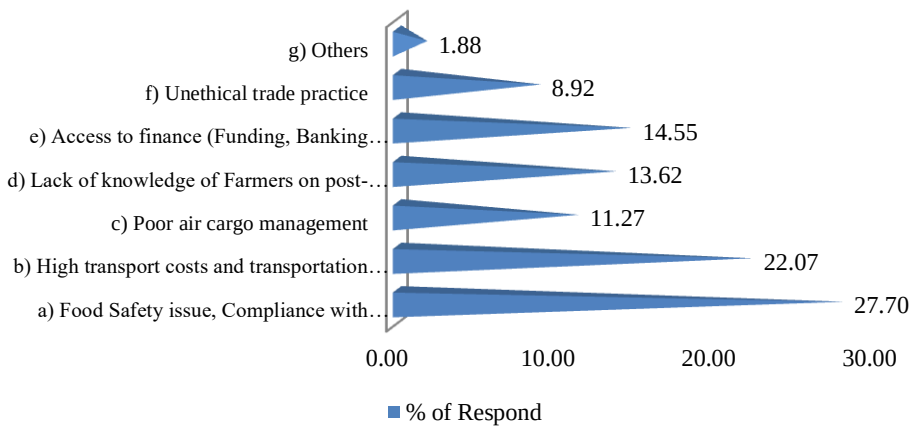


Figure-11: Major challenges for Food Exporting to other countries



4.5.3. Major challenges for export

Respondents were asked to mention at least three key challenges to food exports in the survey questionnaire. 27.70% feels that Major Challenges for Exporting Food to other countries is the "Food Safety issue, Compliance with SPS standards and safety standards", followed by "High transport costs and transportation problem (22.07%)". According to Figure-11 also concluded that, Access to finance (Funding, Banking Process, etc) and Lack of knowledge of Farmers on post-harvesting techniques are another big challenge for exports.

Unnevehr (2000) stated that SPS rules provide significant hurdles to LDC fresh food product exports. Successful exporters adhere to food safety requirements, as proven by the similar safety of domestic and imported produce in the United States.

4.5.4. Export (products) ever been banned or recalled from abroad

In the survey questionnaire, the respondents were asked to indicate whether their export products had ever been banned or recalled, but 95.80% of the exporters mentioned that their products had never been banned or recalled by the import destination, although several newspapers (national and international) reported on the matter. Maybe exporters are not willing to share this information due to brand value or any other issue. Participants may answer questions at random or not truthfully. This is crucial since it is easier to fake responses in online surveys than in other ways of gathering data (Jensen & Thomsen, 2014). Therefore, from this question it is difficult to understand the real situation.

4.4. Recommendations based on Research findings

At the last part of survey questionnaire, the respondents were asked for their opinion on three broad aspects. This are-

a. Recommendation for a company
b. Recommendation for a Developed Country
c. Recommendation for Government

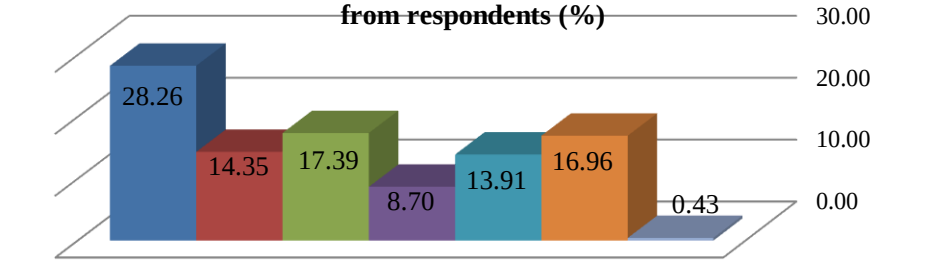
4.4.1. Recommendations for a company

The respondents were asked to mention three important recommendations for a company to increase the export volume and to find out the diversified market for foods in the survey questionnaire.

According to Figure-12, 28.26% respondents recommend that a company should consider food safety measure as the highest priority (SPS and TBT), followed by Improve Competitiveness (17.39%) and Provide Proper Training and awareness raising programme for employees as well as growers/producers (16.96%).

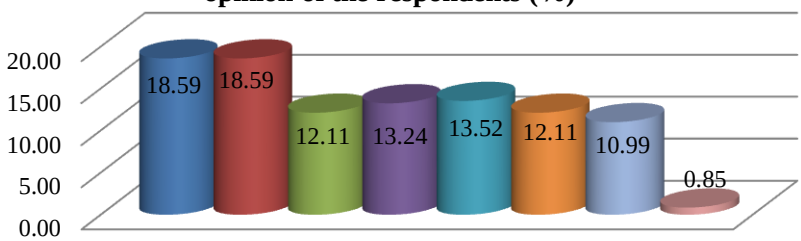
De Boeck, *et al.* (2015) stated that the larger framework for food safety is the perception of the food safety culture by the management and employees of a food company, which can be characterized as the interaction of the human route. A company can huge invest for infrastructure or hardware, but food safety is the software of the company which is one of the most important phenomenon than any other.

Figure-12: Recommendations for a company as per opinion from respondents (%)



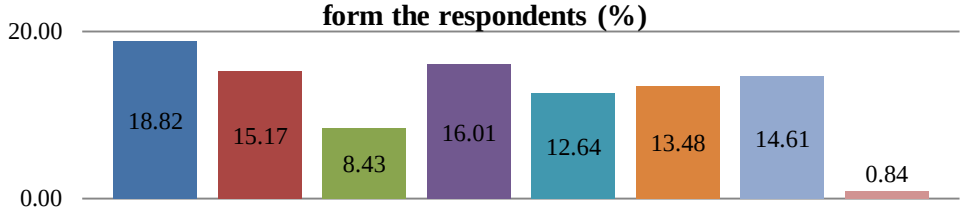
a) Consider food safety measure as the highest priority (SPS and TBT)
b) Lobby for international market access
c) Improve Competitiveness
d) Private sector innovation
e) More investment for Infrastructure
f) Provide Proper Training and awareness raising programme for employees as well as growers (producers)
g) Others

Figure-13: Recommendation for Developed Countries as per opinion of the respondents (%)



a) To Improve the facilities regarding Research and Development
b) Capacity Building for Food Safety knowledge through training
c) To uses of the digital opportunities and modern technologies
d) To investment more for development of infrastructures
e) To Establish High level/Tertiary level laboratory
f) To improve the transportation facilities from farm to fork
g) To improve the traceability systems
h) Others

Figure-14: Recommendation for Government as per opinion form the respondents (%)



(i) Give high priority to full Synchronization and implementation of the international food standards
(ii) Put in place the necessary accredited inspection bodies and laboratories;
(iii) Need more Rules & Guidelines for export promotion
(iv) Make good partnership with other countries through FTA, Bi-lateral, Multi-lateral trade agreement
(v) Create more space for financial opportunities (Export financing, insurance, Tax/Cash incentives, etc,)
(vi) Promote supply chain linkages between local food processors and international Markets
(vii) Simplify Custom procedures and reduce administrative barriers to export
(viii) Others

4.4.2. Recommendations for Developed countries

In the survey questionnaire, the respondents were asked to list five key recommendations for Developed countries to support the developing countries for improving the Food market through various ways. According to Figure-13, highest 18.59% respondents recommend that Developed countries should support to improve the facilities regarding Research and Development and to Capacity Building for Food Safety knowledge through training. The respondents were also opined that Developed countries can support to establish High level/Tertiary level laboratory (13.52%), followed by to invest more for development of infrastructures (13.24%).

According to Zach *et al.* (2012), since it is increasingly difficult to guarantee the safety of imported foods due to the volume of imported food, the ratio of imports from developing countries, and the depth of International food supply chains, the role of developed countries in assisting developing countries needs to be clearly defined.

OECD (2021a) also emphasized that the R&D and innovation investments that would be required to support technological change and other drivers of productivity increases. 54 countries, OECD and non-OECD contributed USD 720 billion yearly between 2018 and 2020 to boost their agricultural economies. Only 17% of the overall budget was allocated to biosecurity, public infrastructure investment, and research and innovation (OECD, 2021b).

4.4.3. Recommendations for Government

The survey's respondents were asked to indicate their top five suggestions for Government in this respect that Government can consider for increasing the food export.

According to Figure-14, highest 18.82% respondents recommend that government can give high priority to full Synchronization and implementation of the international food standards, followed by can make good partnership with other countries through FTA, Bi-lateral, Multi-lateral trade agreement (16.01%). Similarly, the respondents were also marked that Government can put in place the necessary accredited inspection bodies and laboratories; (15.17%), followed by Simplify Custom procedures and reduce administrative barriers to export (14.61%). Some of respondents also considered that government can promote supply chain linkages between local food processors and international Markets (13.48%) and 12.64% respondents believe that government can create more space for financial opportunities (Export financing, insurance, Tax/Cash incentives, etc,). There are very minute differences between percentage of recommendations and recommendations are important for export expansion through ensuring food safety.

All those who work with food should be aware of their responsibilities for ensuring food safety, according to the Codex Alimentarius (2013). To assure food quality, the government is becoming more involved in monitoring and regulating the industry. Therefore, government should consider the recommendations seriously.

Chapter 5. Conclusion

As a third world developing country, Bangladesh also dreams of a happy and prosperous Bangladesh. It will be difficult to join the ranks of the developed world by 2041 if economic fears are not strong and proper planning is not in place. To be economically prosperous there is no alternative to export. Although Bangladesh is second only to China in garment products, but due to lack of product variety, there is not significant success in exports. Bangladesh has to face harsh reality after transition from LDC due to lack of product diversity despite labor intensive and cheap labor. After 2026, Bangladesh's ready-made garment industry will face a harsh reality if the quota and GSP facilities go away. And that's why the government has taken the initiative to diversify the products in the new export policy (2021-24). The new export policy has given priority to several sectors including agriculture and agricultural products.

Bangladesh has great potential for agro-based industries including agricultural products and food processing industries. Bangladesh has shown success in the production of several food products as the fertile soil, undisturbed reservoirs and suitable climate are conducive to agricultural production. In the financial years 2020-21 and 2021-22, the export of agriculture and agricultural products earned more than 1 billion dollars. Although the export of agricultural and food products is on the upward trend, it is not at the desired level due to various complications and one of the reasons is not being able to ensure food safety.

Bangladesh is losing its market, as food safety is not ensured. For example,

the European Union is a major market for the export of vegetables and fruits of Bangladesh. However, the country's food and agricultural exports are at risk of EU sanctions after several shipments have been found to contain harmful ingredients. To overcome this situation, it is important to ensure food safety at every level from food production to food consumption. Food Safety Culture in company level as well as state level can increase the volume of export and can access to a new market.

Food safety is turning into a more crucial development concern in order to achieve the “Global Food Security Strategy (GFSS)” and “Sustainable Development Goals (SDGs) of the United Nations”. Public health will heavily depend on food safety. Trade is crucial because it gives people a way out of poverty. It encourages economic growth. It helps in the hunt for better job prospects for individuals, new markets for businesses, and more reasonably priced goods for consumers. Exporters must also be aware of and capable of adhering to the applicable food safety regulations.

In this study, the author tried to correlate with the Food Safety Culture and International Market Access. The study revealed that Food Safety Culture are strongly associated with Export performance. 239 exporter representatives were asked to complete the survey online, and 71 of them/their representatives did so, whereas only 161 email delivered. Based on survey questionnaire, an analysis has done by using SPSS. An explanatory strategy and a quantitative research methodology were both used in this study. For considering food safety culture, in this study, 13 measurements that were predetermined for the questionnaire were used to gauge Food Safety Culture. On the other hand, export performance during

the last ten years has been taken into account when determining international market access (upward trend, ups & downtrend, and downward trend).

Out of 13 measurements, the study found 11 are statistically significant, only two was different (non-significant). The study found that Food Safety related Certificate has strong and positive association with Export Performance. Although 19.7% of companies have all type of certificates, and 23.9% of company has no certificate. However, without safety certificate, it is hard to access developed market.

Similarly, the study also found a positive and strong relationship between food safety training for employee and food exports. A staff-training program is crucial for any corporate organization. The result shows that only 8.5% of the businesses conducted more than 75% of specialized training in food safety. On the other hand, the majority of businesses (47.9%) only managed less than 25% of the complete food safety-training program. Management of the company implements SOP for traceability and Rules & procedures of Food organization. It is revealed that SOP for traceability implementation and regularly reviewed Rules & Procedures has a link with export performance.

According to the Survey, 42.3% of businesses take steps to prevent future food safety accidents by addressing the core cause (more than 75% of the time). However, the majority (57.7%) have only addressed the root cause to a lesser extent. The Association between Percentages of addresses the root cause of food safety incidents to make sure it doesn't happen again (% of address) and Export Performance has statistically associated at 10% level of confidence.

The analysis concludes that the null hypothesis is disregarded because the *P-value* is below the level of significance (0.01). Rather, we get to the conclusion that there is a connection between Export Performance and Annual Expenditure connected to Food Safety Management as a Percentage of Total Annual Expenditure.

According to Bristow (2022), the most important aspect in ensuring that "a food safety culture lives and breathes in an organization" is managerial commitment. The study also found the similar result that top management commitment to continuous improvement of food safety has highly significant (*P-value* <0.0001) with Export performance. In addition, we conclude that there is a relationship between Export Performance and the Importance of Performance Evaluation in Food Safety-Related Activities. The results of the investigation enable the following conclusions to be made: There was a correlation between export performance and sufficient knowledge of food safety among farmers and exporters. Findings reveal that 53.5% of respondents strongly agreed with the statement that farmers and exporters need sufficient knowledge of food safety, followed by agreed (36.6%). No one 'disagreed' or' strongly disagreed' with the statement.

The study's findings can be used to explain the following: Export Performance and the organization or company's degree of food safety culture was strongly correlated. Besides this from the study, we found that the company who maintain the level of Food Safety Culture in their organizations, their export volume never goes down.

Only two hypotheses (measurements) are proven to be non-significant by the study (out of 13 measurements). Someone thought that Knowledge of food safety may not be crucial during recruitment in Bangladesh. To keep its production costs as low as possible, this industry pays the lowest wage possible (Hassan, 2018). Therefore, in Bangladesh, maybe that reason, management looking for fresh and unskilled employee at recruitment level, they not much more consider the food safety issue. It was insignificant in light of the strong attention placed on employee and food safety. The study revealed that there is no distinction between worker safety and food safety; both are crucial for the food industry.

According to the study, there is a link between a culture of food safety and access to international markets (Export Performance). If a company takes into account the Food Safety Culture in their facilities (for example, obtaining a food safety certificate, conducting more training for the staff, dedicating more budget for food safety training, spending more for food safety issues, routinely reviewing food safety-related rules and procedures, implementing the SOP for traceability as well, high commitment of top management to continuous development of food safety, etc.), export can be increased, and the company will find the new market for its products.

As per descriptive statistics, export performance has positive association with demographic information in terms of age of the business and size of the company, market activity. On the other hand, Location of the factory has no correlation with Export performance. By the way, there are a mild association between export performance and number of the compound of the Company. Size, Age, Number of

compound, Market activity has an moderating influence on export performance, although the study didn't find any relation with location of the company and export performance. Due to their greater range of capabilities and ability to benefit from economies of scale, bigger companies are able to carry out operations more successfully and generate higher returns on their assets and sales as well as export.

Based on Multinomial Logistic Regression Analysis, the result revealed that the model is fit i.e. Food Safety Culture has positive relation with Export performance and Location, Age, Size, Compound, Market Activities also has a combined effect on Export Performance.

The question of which market was challenging to get into and which market was more vociferous about food safety was put to each participant. The author attempted to compare developed and developing nations based on Awareness and Accessibility. Based on the survey, it is found that Developed countries are more aware regarding food safety issue and access to the market more hurdles in developed countries than in developing countries.

From the study, it is found that reason behind for declining the export is Food Safety issue (Failure in following the Food Safety instructions) and due to considering Food Safety as priority (Success in following the Food Safety instructions), their export volume is increasing. In addition, 21.55% exporters mentioned that their export sometimes hampered or decline for a particular years due to "Disaster or any other emergency/incidents (COVID-19)". It is a truth that COVID-19 has significantly impacted both general exports and food exports. A hindrance to agricultural products entering the market are export limitations

imposed by various countries (Haque, *et al*. 2022).

As observed by the respondents, 27.70% believe that the "Food Safety issue, Compliance with SPS norms and safety standards," followed by "High transport costs and transportation problem“ and “Access to finance (Funding, Banking Process, etc)” are the three main obstacles to exporting food to foreign nations.

The respondents were also made a recommendation for a company, for developed country (major importing country) and for the government. According to respondents' suggestions, a company should prioritize food safety measures above everything else (SPS and TBT), then improve competitiveness and offer appropriate training and awareness-raising programs for both employees and growers/producers. Additionally, respondents advise developed nations to promote the improvement of facilities for R&D, capacity building for knowledge of food safety through training, and the establishment of high level/tertiary level laboratories.

The full synchronization and implementation of international food standards, as recommended by respondents, should be given top priority by the government, followed by forming strong partnerships with other nations through free trade agreements (FTAs), bilateral trade agreements, and multilateral trade agreements. Similar to this, the respondents indicated that the government could set up the required accredited inspection organizations and laboratories and simplify Customs procedures and lower administrative barriers to export. The government is getting increasingly involved in overseeing and regulating the food business to ensure food quality.

Further cooperation and adherence by developed as well as developing nations to the established global standards, could increase exports from developing nations as the fixed costs of exporting would decrease; businesses would only have to meet one global standard rather than several different importers' standards.

The study has some potential limitations. One of the biggest challenges was collect the information from the business organizations. The current environment of economic crisis could have an impact on someone's unwillingness to take chances. We used an online survey to collect our data. However, small businesses are yet to become familiar with electronic data collection methods. Otherwise, the number of participants in the survey could have been more.

Regardless of the nation's economic situation, food company executives and government policy makers must consider Food Safety Culture. Food security and the accomplishment of the 2030 Agenda for sustainable development cannot exist without food safety. Freedom from hunger and economic power are both guaranteed by a consistent and ample supply of wholesome and secure foods. In the end, enhancing food safety will reinforce free trade, raise the bar for food safety globally, and benefit people's health. So if Bangladesh really wants to progress, there is no speed without increasing exports, for this reason it is necessary to increase the dependence on agricultural food products. In addition, the first and foremost requirement for increasing exports is to ensure Food Safety.

There is need for additional research on the topic because the study is not widely discussed in the context of Bangladesh and because limited number of participants engages in the Survey.

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Annexure (Survey Questionnaire)

Food Safety Culture and International Market Access: An Empirical Analysis for Bangladesh

Dear Respondent,
Assalamu Alaikum. Hope you are doing well.
This is B M Masiur Rahman, Senior Assistant Secretary (OSD for Study), Ministry of Public Administration and currently I am studying a master's program at Seoul National University, South Korea. This is a survey questionnaire that I used for my thesis research under direct supervision of **Professor Min Gyo Koo**. The purpose of this questionnaire is to find out the relation between food safety issue and export/market access in Bangladesh. Only academic research will be done using the collected data, which will be kept anonymous.

Export contributes to 12.5% of the annual GDP growth of Bangladesh and a great portion of the export economy is dominated by ready-made garments, amounting to 85% of merchandise export. However, after graduating from LDCs, Bangladesh will have to face some challenges in this area. The incumbent government has formulated a new export policy and a number of steps have taken to modernize the export sector and liberalize trade. For instance, Bangladesh is now trying to diverse the export products and Agriculture and Agro-processed food can be one of the diversified sector for exports. But in this case, Food safety is one of the vital issue for exporting the food items. Food safety is currently a top priority on the list of "concerns" that the economic actors involved in the food chain must address. Because it safeguards their brand, their customers, and their employees, businesses must foster a culture of food safety. It is not only a prerequisite but also a smart place to start when putting management systems in place, especially when trying to foster a healthy company culture. Therefore, it is essential to study the various factors that the business considers when deciding how much to export in order to establish an organizational culture of food safety. The goal of this study is to identify the critical success factors in each functional area of a company that support the right emergence of a food safety culture for export.
I appreciate your availability and attention in advance; this survey should just take a few minutes. If you have any questions regarding the questionnaire you have responded to, please contact the below email address.

Thank you for your great cooperation on this study.
Warm Regards
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General Instruction :

Please read the question below and give the appropriate answer. This email is required for future contact, if we need more information. Thanks for understanding.

Email*

A. General Information

Please state the basic information about your organization

1. **Location of the company (Factory/Production Area)***

Urban

Rural

Both

2. **Age of the firm (years of relevant business)***

1-5 years

6-10 years

10-20 years

20-30 years

30-40 years

More than 40 years

3. **What is the size of your business organization***

Up to 15 employees

16-30 employees

31-120 employees

121-300 employees

301 and above

4. **How many compounds does the company have? ***

No establishment (only digital platform)

One establishment

2-5 establishments

6-10 establishments

11 or more establishments

5. **Company's market activity***

Domestic and International Market

International Market only

6. **Do you have the following certificates?***

ISO 9000/9000:2000

ISO 9001:2015

ISO 14000

ISO 22000

HACCP

All of the Above

None of them

Other…

B. Export Information

7. **In the last 10 years your export volume has always been (**Please choose your answer)*

-ups and down trend

-Only upward (increasing) trend

-Only downward (decreasing) trend

8. Please state the reason behind, why your export volume (if any) is decreasing or decline in a particular year (Select at most 3 answers)

a) Food Safety issue (Failure in following the Food Safety instructions)

b) Financial issue

c) Management issue

d) Disaster or any other emergency/incidents (COVID-19)

e) Political instability

f) Bangladesh Government policy issue

g) Unethical practice

h) Other…

9. If your export is increasing trend, then what are the reason behind? (Most important 3 reasons)

a) Consider Food Safety as priority (Success in following the Food Safety instructions)

b) Huge Investment for infrastructure

c) Strong Management policy

d) Bangladesh Government policy issue

e) Ethical practice

f) More Investment on Research & Development (Innovation) Sector

g) Other…

10. What is your major export items?*

HS Code-03: Fish and crustaceans, mollusc and other aquatic invertebrates

HS Code- 07: Edible vegetables and certain root and tubers

HS Code- 08: Edible fruits and nuts; peel of citrus fruit or melon

HS Code- 0901 & 0902: Coffee, tea

HS Code- from 0904 to 0910: Spices

HS Code- 19: Preparations of cereals, flour, starch or milk; pastry cooks' products

HS Code- 20: Preparation of vegetables, fruit, nuts or other parts of plants (Jam, Jelly, Juice)

Other…

11. Please mention your Top 5 export destinations (Country Name)*

12. What are the major challenges for Exporting Food to other countries?

Please mention the most three challenges.*

a) Food Safety issue, Compliance with SPS standards and safety standards.

b) High transport costs and transportation problem

c) Poor air cargo management

d) Lack of knowledge of Farmers on post-harvesting techniques

e) Access to finance (Funding, Banking Process, etc)

f) Unethical trade practice

g) Other…

13. Which certificates are tough to manage for Food Export (Please select the most tough three)*

i. Certificate of Origin

ii. Weight Certificate

iii. Health Certificate (Fit for Human Consumption certificates)

iv. Fumigation Certificate

v. Halal Certificate

vi. Pre-Shipment Inspection certificate

vii. Radiation Certificate

viii. Other…

14. Which countries are *

a) More aware about food safety issue?

(b) More Challenging (hard) to access (entry) the Food Market

- Developed Countries
- Developing Countries

15. Have your export products ever been banned or recalled from abroad?*

- Yes
- No

16. a. If yes, then reason for the banned or recalled

17. b. If yes, then which product?

18. c. If yes, then which country was involved?

19. d. If yes, what measure have you taken?

20. e. If yes, could you export that product further?

C. Information on Food Safety Cultures

21. Please give the below your answer (%)*

(i) How many employees have completed Training regarding food safety?

(ii) % of training dedicated to Food Safety area based on total Training Program

(iii) % of Standard Operating Procedures for food safety implemented and understood

(iv) Food Safety Rules and Procedures are reviewed with the staffs regularly

(v) When a food safety incidents occurs, we aggressively address its root cause to make sure it doesn't happen again (% of address)

(vi) Annual expenditure regarding Food Safety Management (% of total Expenditure)

- Up to 25%
- 26%-50%
- 51%-75%
- Above 75%

22. Please mention your answer*

(i) Top management commitment to continuous improvement of food safety is important for Market expansion

(ii) Food Safety knowledge is important at the recruitment level

(iii) Performance evaluation in Food Safety-related activities is important for Food export

(iv) Food Safety is the high priority than Employee Safety for the food industries

(v) One of the main obstacles to food exports is a lack of sufficient knowledge about food safety management among farmers and exporters.

- Strongly Disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly Agree

23. In the light of the survey you have just answered, please indicate what level of food safety culture (overall) your organization/company has. To do so, please, use the following scale of perception*

- Minimum
- A few
- Medium
- A lot
- Maximum

D. Recommendation

24. To increase the export volume and to find out the diversified market for foods, the important recommendations for a company are (at least Three)*

a) Consider food safety measure as the highest priority (SPS and TBT)

b) Lobby for international market access

c) Improve Competitiveness

d) Private sector innovation

e) More investment for Infrastructure

f) Provide Proper Training and awareness raising programme for employees as well as growers (producers)

g) Other…

25. Developed countries should support the developing countries for improving the Food market through various ways (Please mark most important 5)*

a) To Improve the facilities regarding Research and Development

b) Capacity Building for Food Safety knowledge through training

c) To uses of the digital opportunities and modern technologies

d) To investment more for development of infrastructures

e) To Establish High level/Tertiary level laboratory

f) To improve the transportation facilities from farm to fork

g) To improve the traceability systems

h) Other…

26. In this respect, Government can consider for increasing the food export (up to 5 answer)*

(i) Give high priority to full Synchronization and implementation of the international food standards

(ii) Put in place the necessary accredited inspection bodies and laboratories;

(ii) Put in place the necessary accredited inspection bodies and laboratories

(iv) Make good partnership with other countries through FTA, Bi-lateral, Multi-lateral trade agreement

(v) Create more space for financial opportunities (Export financing, export insurance, Tax incentives, Cash incentives, etc,)

(vi) Promote supply chain linkages between local food processors and international Markets

(vii) Simplify Custom procedures and reduce administrative barriers to export

(viii) Other…

27. Any other Comments or Recommendations*

Final Submission

Please review your answer carefully. If you want to check again, please click the "Back" button.

Do you want to submit finally? Please click the "Submit" button.

Thanks for your kind cooperation.

Acknowledgements

First and foremost, I want to thank Allah Almighty, the Beneficent, and the Merciful for providing me with the opportunity, strength, and patience to carry out and accomplish my study on time.

I owe my heartfelt gratitude to my respectable Advisor and guide, Professor Min Gyo KOO, Graduate School of Public Administration, Seoul National University, for his constant supervision, scholarly guidance, valuable suggestions, encouragement, and constructive criticism from the project proposal to the completion of the research.

I would like to pay my deep gratitude and respect to Professor Bong Hwan KIM, Chairman of the Examination Committee and Professor JM DOSTAL, Vice Chairman of the Examination Committee for their guidance, support and valuable suggestions.

I want to thank all of the department faculty members and Director of GMPA as well as GMPA staffs for their unforgettable co-operation and support during my study and research.

The KOICA Fellowship Program supported my research work and due to this, I would express my Gratitude to KOICA and Korean Government for giving me the Scholarship to do this thesis at Seoul National University.

A special thanks to my family; words cannot explain how grateful I am to my wife Dr. Nusrat Kamal and my Son B M Nafsan Nihad and other family members, for all of your efforts and sacrifice on my behalf.

Finally, I'd want to thank my friend Md. Kamruzzaman and other SNU Bangladeshi fellows for motivating and encouraging me to work towards my objective.

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국문초록

식품 안전 문화 및 국제 시장 접근: 방글라데시에 대한 실증분석

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글로벌행정전공

방글라데시의 수출 부문은 연간 GDP 성장률(2021~2022년)의 12.25%를 차지하며, 기성복은 모든 상품 수출의 85%를 차지합니다. 하지만 방글라데시는 최빈국을 떠나면 이 분야에서 몇 가지 어려움을 처리해야 할 것입니다. 현 정부는 새로운 수출 정책(2021~24)을 개발했으며 수출 산업을 현대화하고 무역을 자유화하기 위해 다양한 조치를 취했습니다. 예를 들어 방글라데시는 현재 수출 상품을 다양화하기 위해 노력하고 있으며 다양한 수출 산업 중 하나는 농업 및 농가공 식품일 수 있습니다. 이 시나리오에서 식품 안전은 식품 수출의 주요 관심사 중 하나입니다. 수출업자는 식품 안전을 관리하는 해당 법률에 대해 잘 알고 있어야 하며 준수할 수 있어야 합니다. SPS 조치의 확대로 방글라데시의 기업 및 개별 부문 수준에서

전반적인 식품 수출이 증가했습니다. 그러나 우리는 다른 그림을 가지고 있습니다. 수출에는 여전히 몇 가지 문제가 있습니다. 일부 기업은 이전보다 실적이 더 좋은 반면 다른 기업은 실적이 더 나쁩니다. 지금까지 특히 방글라데시에서 식품 안전 문화와 국제 시장 접근 간의 연계에 관한 연구는 매우 제한적이었습니다. 이 연구의 목표는 수출을 위한 식품 안전 문화의 올바른 출현을 지원하는 회사의 각 기능 영역에서 중요한 성공 요인을 식별하는 것입니다. 저자는 본 연구에서 국제시장접근과 식품안전문화를 연관시키기 위해 노력하였다. 온라인 설문조사는 239명의 수출업체 대표에게 제공되었으며 그 중 71명이 완료했습니다. 제안된 모델에 대해 설문지를 기반으로 한 SPSS(Chi-square test)와 다항 로지스틱 회귀 분석을 이용하여 분석하였다. 이 연구는 양적 연구 접근법과 설명 전략을 모두 사용했습니다. 이 연구는 식품 안전 문화와 수출 성과 사이에 높은 상관관계가 있음을 발견했습니다. 연구에 따르면 식품 안전 인증서, 직원 교육, 식품 안전 교육을 위한 예산 할당, 식품 안전을 위한 연간 지출, 식품 안전 관련 규칙 및 절차를 정기적으로 검토하고 추적 가능성을 위한 SOP 구현, 최고 경영진의 지속적인 노력 식품 안전의 발전은 수출 성과와 밀접한 관련이 있습니다. 이 연구는 또한 수출 성과가 일부 인구통계학적 정보(연령, 규모, 시장 활동)와 긍정적인 연관성이 있지만 위치와는 연관성이 없음을 밝혔습니다. 상대적으로 큰 회사는 작은 회사보다 더 잘 수행합니다. 전체 모델은 "모델 적합 정보"를 기반으로 하는 null 모델에 비해 적합도가 크게 향상되었습니다. 설문 조사에 따르면 선진국은 식품 안전 문제에 대해 더 많이 인식하고 있으며 개발

도상국보다 선진국에서 시장 접근이 더 어렵습니다. 이 외에도 연구는 COVID-19가 식품 수출에 어느 정도 영향을 미쳤다는 것을 발견했습니다. 이와 별도로 본 연구는 응답자들의 제안을 바탕으로 기업, 선진국, 정부에 대한 권고사항 목록을 만들었다. 응답자들의 제안에 따르면 기업은 무엇보다 식품 안전 조치를 우선시해야 하며, 선진국에서는 교육을 통해 R&D 시설 개선 및 식품 안전 지식 역량 강화를 촉진해야 합니다. 한편 정부는 국제식품규격의 전면적인 동기화와 이행을 최우선 과제로 두고 자유무역협정(FTA) 등 무역협정을 통해 다른 나라와 강력한 동맹을 맺어야 한다. 이 연구에는 몇 가지 단점이 있을 수 있습니다. 상업 조직에서 데이터를 수집하는 것이 주요 장애물 중 하나였습니다. 위험을 무릅쓰지 않으려는 사람은 현재의 경제 위기에 영향을 받을 수 있습니다. 데이터는 온라인 설문 조사를 통해 수집되었습니다. 그럼에도 불구하고 소기업은 아직 전자 데이터 수집 기술에 익숙하지 않습니다. 방글라데시 맥락에서 연구가 자주 논의되지 않고 설문 조사의 표본 크기가 작기 때문에 주제에 대한 더 많은 연구가 필요합니다. UN의 GFSS(Global Food Security Strategy) 및 SDGs(Sustainable Development Goals)를 충족하기 위해 식품 안전은 점점 더 중요한 개발 관심사가 되고 있습니다. 방글라데시는 정말로 그의 수출을 늘리고 싶어하며, 그 경우 가장 먼저 요구되는 것은 식품 안전 문화를 홍보하는 것입니다.

키워드: (방글라데시, 식품안전, 시장접근, 수출, 코로나19, SDG)

학생번호 : 2021-21791