



# LoT#18 INSIGHTS REPORT

This report details the key findings  
of the research conducted for the  
18th lab of tomorrow.

How can we reduce the negative environmental impact of the  
food packaging industry by fostering alternative solutions?

*Greetings from the lot team*

On behalf of the Lab of Tomorrow team, we would like to extend a warm welcome to you. We are pleased to present this report, which provides insights and analysis on the packaging sector of the food industry in Egypt. The Lab of Tomorrow is a research and development laboratory that aims to create innovative solutions to the challenges facing various industries, including the food packaging sector. Our team of experts has conducted extensive research and analysis to provide you with valuable insights into the current market trends, regulatory and technological environment, and important market metrics of the packaging sector in the food industry in Egypt.

We hope that this report will provide you with a comprehensive understanding of the challenges and opportunities in the packaging sector of the food industry in Egypt, and that the insights and recommendations presented in this report will help you make informed decisions for your business.

Thank you for your interest in our work, and we look forward to hearing your feedback on this report.

Sincerely,

The Lab of Tomorrow Team

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## Partners

### Co-Initiators & Project Lead



### Supporting Partners



## 1. Challenge and Impact

### **What is the overarching challenge?**

The primary challenge at hand is to mitigate the considerable environmental repercussions stemming from the food packaging sector in Egypt. The identified business opportunity aims to address this challenge by minimizing waste generation and pollution resulting from prevailing food packaging practices within the country. By introducing sustainable packaging solutions, the objective is to actively contribute to the reduction of adverse environmental effects in this sector. The proposed initiative aligns harmoniously with the broader objective of fostering sustainable practices throughout the food industry, recognizing their paramount importance in safeguarding the environment and ensuring long-term economic viability.

### **What are the underlying causes and context of the overarching development challenge?**

The root causes of the developmental challenge in Egypt are attributable to the country's large population resulting in high plastic consumption, low consumer awareness, and the expensive nature of sustainable packaging, which has limited its adoption in both the domestic market and compliance with international regulations. Furthermore, the packaging industry in Egypt predominantly depends on plastic and chemical textile fabrics due to the costly nature of cardboard, paper, and wooden boxes. Additionally, limited awareness of sustainability among various sections of the populace has compounded the problem.

### **Lab of Tomorrow'18 is contributing to the following SDGs:**

The challenge has an impact on various SDGs, such as SDG 12: Responsible Consumption and Production, SDG 13: Climate Action, and SDG 14: Life Below Water. The potential contribution towards these SDGs involves encouraging sustainable production and consumption, lowering greenhouse gas emissions, and reducing plastic waste in oceans. Furthermore, promoting alternative solutions for reducing the negative environmental impact of the food packaging industry can create more prospects for Egyptian businesses to export to the European market. This will further contribute to SDG 8: Decent Work and Economic Growth.



## 2. Market Environment

Egypt is a country located in the northeastern region of Africa and the western part of Asia, with a population of approximately 104 million people (World Bank, 2021). The country has a predominately Muslim population, with Arabic being the official language. Egypt has a mixed economy, with significant contributions from agriculture, tourism, natural gas, and remittances from Egyptians working abroad (Trading Economics, 2022). As of 2020, Egypt's GDP was approximately \$362 billion, making it the third-largest economy in Africa after Nigeria and South Africa (World Bank, 2021). The Egyptian pound (EGP) is the official currency of Egypt. Major trading partners include the European Union, the United States, China, and India (World Bank, 2021). The country has a relatively young population, with around 60% of its citizens under the age of 30. The population growth rate is high, with an estimated 2.5% annual increase, posing a challenge for the government to provide adequate resources, infrastructure, and job opportunities for the growing population (Trading Economics, 2022).

Egypt is a country with a diversified economy with several significant sectors. According to the World Bank, the tourism sector accounts for 12-15% of GDP, providing employment for millions of people. However, the industry has faced challenges in recent years due to political instability and security concerns. Nevertheless, there are government initiatives and investments to revitalize the sector (World Bank, 2021).

Manufacturing is another essential sector in Egypt, with the production of textiles, food and beverages, chemicals, and electronics being major contributors to the economy. Trading Economics reports that manufacturing accounts for 17-20% of GDP (Trading Economics, 2022). The government has also introduced initiatives to promote local manufacturing and attract foreign investment to the sector.

Additionally, agriculture is a significant sector in Egypt, with the country being a major producer of crops such as cotton, wheat, and citrus fruits. The sector provides employment for a large portion of the population and is a major contributor to the country's exports. The World Bank reports that agriculture accounts for 11-14% of GDP (World Bank, 2021).

Finally, the oil and gas industry is an important sector in Egypt, with the country being a significant producer of both oil and natural gas. Trading Economics reports that oil and gas accounts for 20-25% of GDP (Trading Economics, 2022). The industry provides a significant portion of the government's revenue and is an important contributor to the country's exports.

As for major economic trends, Egypt's government has implemented economic reforms in recent years aimed at improving the country's economy and attracting foreign investment. These reforms include measures to reduce subsidies, increase taxation, and improve the business environment. While these forces have faced some challenges, there are indications that they are having a positive impact on the economy. According to the World Bank, Egypt's GDP growth rate was 3.6% in 2019, an improvement compared to previous years (World Bank, 2021).

Egypt has a rich cultural heritage that is reflected in its language, arts, and architecture. Islam is the dominant religion, and Islamic traditions and customs are observed throughout the country. The family is also an important cultural institution, with strong bonds between family members. Moreover, Egypt has a complex political and social environment, with periodic unrest and protests, awareness of local customs and cultural sensitivities, particularly when it comes to marketing and advertising is essential. In addition, the government plays a significant role in the economy, and businesses need to be aware of the regulatory environment (US Department of State, 2022).

## Relevant market segments in the Egyptian sustainable food packaging industry

According to Mordor Intelligence, the food packaging market in Egypt is expected to grow at a compound annual growth rate (CAGR) of 7.3% during the period of 2021-2026, driven by increasing demand for packaged food, changing lifestyles, and the growth of organized retail channels (Mordor Intelligence, 2021). Although plastic is the most widely used material in the food packaging industry in Egypt, there is a growing trend towards sustainable packaging, with a focus on reducing plastic waste. Euromonitor predicts that the demand for sustainable packaging in Egypt is expected to increase, particularly for paper-based and biodegradable materials (Euromonitor, 2020).

In terms of market segments, Frost & Sullivan reports that the flexible packaging segment is expected to witness the highest growth in the coming years, driven by its convenience and cost-effectiveness (Frost & Sullivan, 2020). The food packaging industry in Egypt can be divided into various categories, such as rigid packaging\* (e.g., bottles, jars, cans), flexible packaging\* (e.g., pouches, bags, wraps), and paper-based packaging\* (e.g., cartons, boxes).

## Key customer demographics in the Egyptian sustainable food packaging industry

The report by Euromonitor International reveals that the majority of packaged food consumers in Egypt are aged between 25 and 44, with a slight majority being male (Euromonitor International, 2020). The report also highlights that packaged food consumption in Egypt is primarily concentrated in urban areas, with Cairo being the largest market. The majority of packaged food consumers in Egypt fall into the middle-income category, which is consistent with the findings of Frost & Sullivan, who reported that the demand for packaging materials in the food industry in Egypt is driven by the growth of the middle class (Frost & Sullivan, 2019). This is due to the fact that the middle class has more disposable income to spend on packaged food products. Furthermore, the demand for packaged food products in Egypt is driven by the growing trend toward convenience in the food industry, as consumers seek products that are easy to prepare and consume on the go (Euromonitor International, 2019).

## Market Trends in the Egyptian sustainable food packaging industry

The packaging sector in the food industry in Egypt is witnessing several market trends. Firstly, there is an increasing demand for sustainable packaging materials and practices, driven by growing consumer awareness about environmental issues (KPMG, 2019). According to a report by UNCTAD (2020), the Egyptian government has also introduced initiatives aimed at reducing single-use plastics and promoting more sustainable packaging. Secondly, there is a growing trend towards convenience packaging, including single-serve and on-the-go packaging formats (Euromonitor International, 2019). This is driven by changing consumer lifestyles and increasing demand for convenience products. Thirdly, there is an increasing trend toward customized and personalized packaging, as companies seek to differentiate their products and create a unique brand image (Frost & Sullivan, 2019). Fourthly, there is a growing focus on packaging innovation and technology, with companies investing in new materials, designs, and technologies to improve the performance and functionality of their packaging (GlobalData, 2020). These market trends are expected to continue in the coming years, as companies in the packaging sector in the food industry in Egypt adapt to changing consumer demands and technological advances.

\***Rigid packaging** refers to a type of packaging that is made from stiff and inflexible materials such as plastic, glass, or metal.

\***Flexible packaging** is a type of packaging that is made from materials that can easily bend and fold, such as plastic films, paper, and aluminum foil.

\***Paper-based packaging** is a type of packaging that is made from paper or paperboard materials.

## **The Regulatory and technological environment in the Egyptian sustainable food packaging industry**

The regulatory and technological environment of the packaging sector in the food industry in Egypt plays a crucial role in shaping the industry's development. According to a report by Frost and Sullivan, the Egyptian government has implemented regulations aimed at reducing single-use plastics and promoting more sustainable packaging in specific governates, such as the ban on plastic bags in supermarkets and the introduction of biodegradable plastic bags in the Red Sea governate (Frost & Sullivan, 2019). These regulations present both challenges and opportunities for companies operating in the packaging sector.

In terms of future regulatory changes, Egypt has signed several trade agreements with other countries and regional blocs, such as the African Continental Free Trade Area (AfCFTA). This agreement aims to create a single market for goods and services in Africa, which could potentially open up new opportunities for the packaging sector in the food industry in Egypt. On the other hand, there is also the possibility of stricter environmental regulations in the future, as global efforts to reduce plastic waste continue to gain momentum.

In terms of technological infrastructure, Egypt has a growing packaging industry with several local manufacturers and suppliers. However, the sector still depends on imports of certain materials and technologies. The Egyptian government attempted to implement an initiative aimed at promoting local manufacturing and reducing dependence on imports, such as the "Made in Egypt" campaign (Egypt Today, 2021). Additionally, there is a growing trend toward packaging innovation and technology, with companies investing in new materials, designs, and technologies to improve the performance and functionality of their packaging (GlobalData, 2020).

### 3. Business Opportunity Overview

#### Business Opportunity 1: **Increasing export through affordable sustainable packaging**

- This Business Opportunity focuses on providing affordable sustainable packaging solutions that meet global export market requirements, which enable Egyptian companies to expand their exports to different markets.
- The target group for this business opportunity would be food processing and fresh foods companies in Egypt that are looking to reach international markets.

#### Business Opportunity 2: **Sustainable packaging material and alternatives for food manufacturers and the hospitality sector, with a focus on single-use plastics**

- The challenge addressed by this business opportunity is the lack of affordable and sustainable packaging solutions, with a specific emphasis on reducing the use of single-use plastics, that comply with global export market requirements. The unmet need is to provide Egyptian food processing and fresh foods companies with sustainable packaging materials, specifically designed to minimize the environmental impact of single-use plastics, at affordable costs to increase exports to different markets.
- The target group for this business opportunity would be Egyptian food processing companies and the hospitality sector which are looking for sustainable packaging alternatives that are cost-effective, locally produced, and contribute to the reduction of single-use plastics. By offering innovative and eco-friendly packaging solutions, this business opportunity aims to support the transition towards a more sustainable and circular economy, aligning with global efforts to mitigate the negative effects of single-use plastics on the environment.

#### Business Opportunity 3: **Resource efficiency of sustainable packaging solutions**

- The challenge addressed is the need for more resource-efficient and sustainable packaging solutions in a context where natural resources are scarce and expensive. The unmet need is for new packaging solutions that use less raw materials and increase resource efficiency, thus reducing costs and environmental impact.
- The target group/market for this business opportunity would-be manufacturers and producers in the packaging sector of the food industry in Egypt who are looking for more sustainable and cost-effective packaging solutions. This could include companies that produce packaging for food products.

## 4. Business Opportunity 1: Increasing export through affordable sustainable packaging

### 4.1 Aim

The aim of this Business Opportunity is to offer cost-effective and eco-friendly packaging solutions that fulfill the packaging needs of worldwide export markets. This will facilitate the growth of Egyptian businesses in expanding their exports to diverse markets.

The business opportunity of increasing export through affordable sustainable packaging is in line with the overarching challenge of minimizing the negative environmental impact of the food packaging industry in Egypt. The aim is to provide affordable and sustainable packaging solutions that meet the requirements of the global export market, thus enabling Egyptian companies to expand their exports to different markets, including the European Union (EU) and the United States. These two markets are particularly significant due to their size, high demand for sustainable products, and stringent regulations on packaging materials. By catering to the packaging needs of these markets with environmentally friendly alternatives, Egyptian companies can seize opportunities for increased export and market penetration.

The clear unmet need of the target group is the lack of affordable and sustainable packaging solutions that meet global export market requirements. The problem that needs to be solved is the current packaging limitations and regulations that hinder the expansion of Egyptian companies' exports to different markets. The target group requires access to packaging solutions that are both eco-friendly and comply with different global export market regulations, to improve their competitive advantage and increase their export revenue. Therefore, there is a clear need for a sustainable packaging solution that meets these requirements, which currently does not exist in the Egyptian market but is manufactured to meet exporting requests.

**To identify this business opportunity**, three Exporting experts were interviewed, however, export-centered questions were asked to relevant interviewees, depending on their professional background and focus. **The key insights gained:**

- The food industry is a global market, and each country has different regulations for packaging, which must be followed by the manufacturers to meet the exporting demands and specifications of the importing countries. Egyptian manufacturers must take into consideration the specific needs of the importing countries and their consumers to ensure successful exporting. Import rules are mainly guided by consumer behavior and preferences, making it crucial for manufacturers to understand the needs of the importing countries and produce packaging that meets those needs.
- The African market, which is the largest importer of tin-canned food products, requires tin cans as they protect the food from weather conditions that can attract rats. However, the lack of tin-canned food products in Egypt, along with the absence of tin-can manufacturers, poses a challenge for the only operating factory in Egypt. The factory must import tin cans or other packaging materials, which could be costly and limit its competitiveness in the African market.
- European regulations push for minimizing plastic usage in packaging and eliminating plastic-based packaging if there is a durable and safe alternative. This move could affect Egypt's exporting movement as raw materials of sustainable packagings, such as resins\*, are mostly imported. Manufacturers will have to find a way to balance the demand for sustainable packaging with the economic benefits of exporting frozen fruits and vegetables to Europe.

\* **Resins** are synthetic or natural materials that are commonly used in the production of packaging materials. They are typically derived from petroleum, but can also be derived from natural sources such as plants and trees.

- Plastic packaging is currently used in the food sector because it is durable during transportation and storage, making it challenging to replace. The properties of plastic packaging make it ideal for frozen fruits and vegetables as they can be stored and transported without significant damage to the packaging or the product. Manufacturers need to find alternatives to plastic packaging that are also durable and provide the same level of protection as plastic.
- The cost of packaging is a significant challenge in the food industry, and the plastic industry faces difficulties due to a lack of funding for non-green plastics. Sustainable packaging is currently limited in availability, with only two known exporting companies. Cash gains from sustainable packaging can take up to 6 months for local distribution and 1 month for international distribution. Manufacturers need to find cost-effective alternatives to plastic packaging while also adhering to sustainable packaging regulations to meet the demands of importing countries.
- Local and international markets differ in appearance due to the availability of packaging materials and cultural familiarity with certain products. The appearance of the products in the local market is different from the international market, which could affect consumer behavior and preferences. Manufacturers need to take into consideration the cultural background and preferences of consumers in the exporting countries to meet their packaging needs and achieve a competitive advantage.
- Overpromising and underdelivering timelines when dealing with foreign companies can pose a significant challenge. Manufacturers need to be realistic about the timeline for delivering their products and ensure that they have the capacity to meet the orders' specifications. This will help build trust and credibility with their foreign customers and enhance their competitiveness in the global market.

## 4.2 Market conditions

### **Potential specific constraints**

Potential constraints for this business model include the need to comply with different packaging regulations and standards of importing countries, which can vary widely. Additionally, the cost of packaging materials can be high, especially for sustainable options, which can limit profitability. Another potential constraint is the need to balance the demand for sustainable packaging with the need to meet the durability and protection requirements of the food industry. Finally, there may be cultural barriers to adopting new packaging materials or designs, particularly in markets with established preferences for certain types of packaging.

### **Competition**

The competition for sustainable packaging solutions in the Egyptian market, with a specific focus on reducing single-use plastics, is currently limited, with only two known exporting companies. However, as the demand for sustainable packaging alternatives to single-use plastics grows, there is potential for new competitors to enter the market. While the global market for sustainable packaging is highly competitive, the entry of global players into the Egyptian market may face certain barriers. On the other hand, Egyptian-based companies may possess unique advantages that can help them compete effectively in the market for sustainable packaging alternatives to single-use plastics. These advantages include localized production capabilities, proximity to raw materials for eco-friendly alternatives, and a deep understanding of the local market's needs in reducing single-use plastics. Additionally, building strong relationships with local suppliers and distributors, as well as offering cost efficiencies in manufacturing and distribution processes for sustainable packaging solutions, can further strengthen the position of Egyptian-based companies.

To gain a competitive edge in the market for sustainable packaging alternatives to single-use plastics, new entrants, whether global players or Egyptian-based companies, must differentiate themselves and offer unique value propositions. Emphasizing factors such as innovative packaging solutions, product quality, affordability, and their contribution to reducing single-use plastics can be instrumental in gaining market share.

### **Relevant key regulations or laws**

Key regulations and laws relevant to this business opportunity include packaging regulations and standards of importing countries, which must be followed to ensure successful exporting. Additionally, there may be local regulations related to packaging materials and waste management that must be taken into consideration, but not sustainable packaging materials, as sustainable packaging materials are undefined nationally. It is important for businesses to stay up-to-date on changing regulations and ensure compliance to avoid penalties or market exclusion.

### **Technological / infrastructure status in the Egyptian sustainable food packaging industry**

The technological and infrastructure situation in the Egyptian market varies depending on the specific area of focus. Generally, there are some limitations in terms of access to advanced manufacturing technologies and infrastructure, which may impact the ability to produce high-quality and innovative packaging solutions. However, there are also opportunities for technology adoption and innovation in this space, particularly in the development of sustainable materials and production processes like bioplastics, recycling technologies, etc.

### **Specific cultural aspects that are important**

for business models in this space include the cultural familiarity and preferences of consumers in different exporting markets, which can impact the packaging materials and designs that are most effective. Additionally, building strong relationships with foreign customers and meeting their expectations for timely and high-quality deliveries is essential for success in this space. Finally, there may be cultural barriers to the adoption of sustainable packaging materials, which may require targeted marketing and education efforts.

## **4.3 Stakeholders**

### **Who are the stakeholders of the business opportunity?**

The stakeholders of the business opportunity are Egyptian businesses, such as food processing companies like Nile Foods and fresh foods companies like Green Harvest, who are looking to expand their exports to diverse markets. They aim to leverage sustainable packaging solutions to meet the demands of the global export market. The global export market itself, including international buyers like GreenGlobe Imports and retailers like EcoMarket, is also a key stakeholder. Furthermore, consumers of food products, who prioritize sustainable packaging, play a vital role in driving the demand for environmentally friendly alternatives. Lastly, the environment, which is affected by the adverse environmental effects of the food packaging sector, is an important stakeholder in the quest for sustainable practices.

### **Who may be potential partners?**

Potential partners could include packaging material suppliers such as BioPack Industries and EcoSolutions Packaging, who specialize in providing sustainable packaging materials like bioplastics derived from renewable sources. Packaging manufacturers like GreenPac Solutions, who have expertise in producing eco-friendly packaging solutions, can also be valuable partners. In addition, logistics companies like EnviroLogistics and consulting firms specializing in sustainable practices in the food industry, such as GreenWave Consultants, can contribute their expertise in implementing sustainable packaging strategies and supply chain optimization.

### **Who should be informed or consulted?**

The Egyptian government, particularly regulatory bodies like the Ministry of Trade and Industry and the Ministry of Environment, should be informed and consulted. They play a crucial role in setting and enforcing regulations related to packaging and export, ensuring compliance with international standards. Additionally, industry associations like the Egyptian Food Export Council can be important stakeholders to involve, as they represent the interests of Egyptian food exporters and can provide guidance on market requirements and trends.

### **Who may compete with a potential solution or be a veto player?**

Existing packaging manufacturers and suppliers in Egypt, such as PackTech Solutions and EcoFlex Packaging, may compete with a potential solution by offering their own sustainable packaging alternatives. Additionally, other sustainable packaging companies operating in the global market, including well-established players like Tetra Pak and Amcor, may pose competition. Import/export restrictions and regulations set by importing countries, such as the European Union's regulations on single-use plastics, can also act as potential veto players, as they may impose specific requirements and certifications for packaging materials and sustainability standards that need to be met for market access.

## 4.4 Opportunities and threats related to the business opportunity

### **Why is now the right time to work on the business opportunity?**

The current timing is ideal for this business opportunity due to several reasons. Firstly, there is a growing global demand for sustainable and eco-friendly packaging solutions, which is in line with the overarching challenge of minimizing the negative environmental impact of the food packaging industry in Egypt. Secondly, the lack of affordable and sustainable packaging solutions that meet global export market requirements is a clear unmet need for the target group, providing a significant opportunity for a new entrant in the market. Thirdly, there is a growing awareness of the importance of sustainable practices in the food industry, which makes it essential for manufacturers to shift towards sustainable packaging solutions.

Specific advantages for this business opportunity include a first-mover advantage, as there are currently only two known exporting companies that provide sustainable packaging solutions in the Egyptian market. Additionally, cross-marketing effects may arise from offering affordable and sustainable packaging solutions, as it would enable Egyptian companies to expand their exports to different markets. Deep-domain knowledge is also an advantage, as the business opportunity focuses on a specific industry and requires expertise in packaging regulations and materials.

### **Which players or events could threaten the success of a new business?**

Specific disadvantages for this business opportunity include the lack of digital infrastructure, which could hinder the adoption and distribution of sustainable packaging solutions. Additionally, resistance against adoption by manufacturers due to the perception of higher costs or difficulties in complying with regulations could pose a threat to the success of the business.

## 4.5 Overview of existing solution approaches

### **What solutions currently exist locally in the target market for similar challenges?**

Currently, there are only two known exporting companies that provide sustainable packaging solutions in the Egyptian market. However, there is a lack of affordable and sustainable packaging solutions that meet global export market requirements, which is a clear unmet need for the target group.

### **What inspirations for solutions or similar approaches exist in other markets?**

In other markets, some companies have successfully shifted towards sustainable packaging solutions by using biodegradable and compostable materials such as paper-based packaging, plant-based plastics, and mushroom-based packaging. Others have employed innovative solutions such as edible packaging made from seaweed or other food-grade materials. Additionally, there has been a trend toward reusable and refillable packaging systems in some markets. These inspirations could be explored and adapted to the specific needs of the Egyptian market to provide sustainable and affordable packaging solutions that meet global export market requirements.

## **5. Business Opportunity 2: Sustainable packaging material and alternatives for food manufacturers and the hospitality sector**

### **5.1 Aim**

This business opportunity aims to address the problem of the limited availability of affordable and environmentally-friendly packaging options that meet global export market standards. Its objective is to provide local food processing and fresh foods companies in Egypt with affordable sustainable packaging materials to enable them to boost their exports to various markets.

Business Opportunity 2 directly relates to the overarching challenge of minimizing the adverse environmental effects of the food packaging sector. The use of sustainable packaging alternatives can also promote a culture of environmental responsibility among the target groups and help Egypt move towards a more sustainable and eco-friendly food industry.

**To explore and identify this Business Opportunity**, twenty professional experts and stakeholders across the value chain were interviewed. **Some key insights include:**

- The shift towards sustainable packaging and single-use plastic products in Egypt is necessary to reduce the negative impact of single-use plastics on the environment. However, the dominance of single-use plastic is due to cultural and cost-related reasons, and there are currently no feasible alternatives to plastic. Moreover, the lack of feasible alternatives to plastic is due to financial challenges, such as the high cost of energy and the low capacity of supply, and the high cost of products, which prevent large factories from manufacturing packaging locally or in-house.
- Recycling is not enough, and a shift towards sustainable packaging is necessary. Many corporates have been working on achieving sustainability for years, but sustainable packaging in Egypt is undefined and not standardized, and a sustainable scoring system for packaging would be necessary.
- Additionally, bioplastics have the potential to be environmentally friendly, but technological barriers, such as shelf life and production costs, need to be overcome. Without investment and government support, the shift to bioplastics can be difficult, and the potential benefits of bioplastics may not be realized.
- Considering that customer behavior is driven by cost, but there has been a shift towards using eco-friendly options among certain segments of society, such as the A class and GenZ. However, product development and innovation in green products may not be seen as necessary due to the current economic situation.
- Furthermore, the responsibility for change lies with the government and policies. One approach to reducing plastic usage could be to implement a system of paying for packaging, as has been done in European markets, which can help enforce consumer awareness and minimize usage. More tools and options are needed to support the shift towards sustainability in Egypt, and the market needs to be more collaborative, including financial institutes, end consumers, manufacturers, and the government, to avoid independence.

- Also, the **hospitality sector** is involved, starting with differentiating between green hotels and eco-lodges is crucial to understanding their sustainability efforts. Green hotels focus on using energy-efficient technologies, water-saving techniques, creating social activities, and implementing waste management. On the other hand, eco-lodges are typically smaller and more rustic accommodations that are focused on providing a natural and sustainable experience for guests. They often have a stronger connection to the surrounding environment and may offer eco-activities like nature walks or wildlife observation.
  - The Green Star program is an internationally recognized program that motivates hotels to be sustainable/eco-friendly. Hotels can achieve certification by following eco-friendly practices and meeting the program's criteria, such as reducing energy and water usage, implementing waste management practices, and using eco-friendly products. Depending on the hotel's type, the program can provide economic benefits, such as saving up to 1 Million EGP per year.
  - Eco-tourism products, such as detergents, soaps, hand creams, towels, and cutlery, are crucial for the hospitality and tourism sector. However, there is no mass production of eco-friendly products, and either the available items are expensive or do not cover the needs in the long run. Startups are working on developing these products, but they need incubation and certification to scale up.
  - The hospitality sector has the potential to embrace the green revolution, particularly with the rise of eco-tourism and eco-camps. Prices are typically not volatile in this sector, and end-users have the power to promote sustainability and eco-friendliness. By implementing sustainable practices, hotels and lodges can attract eco-conscious travelers and improve their brand image.
  - The efforts to control single-use plastic in the Red Sea are a positive example of the hospitality and tourism industry's power to promote sustainability and eco-friendliness. The initiative involves phasing out single-use plastic, such as straws, cutlery, and bags, and replacing them with environmentally friendly alternatives. This initiative shows that the industry can make a significant impact on reducing plastic waste and promoting sustainability.

## 5.2 Market conditions

### **Potential specific constraints**

under which a business model in sustainable packaging must work include financial challenges such as high production costs, limited supply capacity, and high energy costs. There are also technological barriers such as shelf life and production costs of bioplastics that need to be overcome. Additionally, there may be a lack of awareness or interest in sustainable packaging among certain segments of society due to cost concerns.

### **Competition**

The competition in the sustainable packaging and single-use plastics products market in Egypt is limited, but there may be international players with established brands and distribution networks. Local competition may also arise as more companies enter the market.

### **Relevant key regulations or laws**

Relevant key regulations or laws in Egypt include the Solid Waste Management Law and the Environmental Law, which regulate waste disposal and pollution control. Additionally, the government may introduce policies or incentives to promote sustainable packaging and reduce plastic waste.

### **Technological / infrastructure status in the Egyptian sustainable food packaging industry**

The technological and infrastructure situation in Egypt may present challenges for sustainable packaging, such as the high costs of renewable energy sources required for mass production and the need for investment in recycling and waste management infrastructure, although present, but the lifecycle of the product is not unified.

### **Cultural aspects that are important**

Specific cultural aspects that are important for business models in sustainable packaging include cost concerns and the need for affordable options, as well as the importance of government policies and initiatives in promoting sustainable practices.

## 5.3 Stakeholders

### **Who are the stakeholders of the business opportunity?**

The stakeholders of the business opportunity include local food processing and fresh foods companies, manufacturers of packaging materials, government and regulatory agencies, financial institutions, and end consumers.

### **Who may be potential partners?**

Potential partners in Egypt may include manufacturers of sustainable packaging materials, recycling, and waste management companies, and government agencies promoting sustainable practices.

### **Who should be informed or consulted?**

Those who should be informed or consulted in Egypt include government agencies responsible for waste management and environmental protection, local business associations, and industry experts in sustainable packaging.

### **Who may compete with a potential solution or be a veto player?**

Potential competitors or veto players in Egypt could include established companies in the plastic packaging industry, as well as government agencies that may not prioritize sustainable practices or policies.

## **5.4 Opportunities and threats related to the business**

### **Why is now the right time to work on the business opportunity in sustainable packaging products in the hospitality sector and the food industry?**

Insights suggest that the domination of single-use plastic packaging is primarily due to cultural and cost-related reasons in Egypt. However, there has been a shift in customer behavior, particularly among the A class and GenZ segments of society, towards using cotton and wool bags. Consumers are still using a lot of plastics that are not necessary, and a culture of sustainability and increased consumer awareness could push factories to provide sustainable options. Additionally, many well-known and established corporates have been working on achieving sustainability for years, focusing on the recyclability of the packaging waste of their products. This indicates that there is a growing awareness and willingness to shift towards more sustainable packaging options. While there may be a lack of consumer awareness and a culture of sustainability, consumers are still using a lot of plastics that are not necessary. Therefore, there is a clear need for more tools and options to support the shift toward sustainability in Egypt. Finally, there is a growing demand for sustainable products globally, and businesses that are proactive in adopting sustainable practices may gain a competitive advantage.

Specific advantages for this business opportunity include deep-domain knowledge, cross-marketing effects, and first-mover advantage. Businesses that invest in sustainable packaging solutions can differentiate themselves from their competitors and benefit from the growing demand for sustainable products. Additionally, the adoption of sustainable practices can lead to cost savings in the long term and help reduce the environmental impact of the hospitality sector and the food industry. Finally, sustainable packaging solutions can provide businesses with a competitive advantage, which can help them attract and retain customers who are increasingly looking for environmentally responsible products and services.

### **Which players or events could threaten the success of a new business?**

Specific disadvantages for this business opportunity include the lack of digital infrastructure, resistance against adoption, and the lack of investments in the bioplastics industry, resulting in several technological barriers that need to be overcome. One major issue is the shelf life of biodegradable plastics, especially in the food industry, which needs to be more than six months to prevent it from degrading and affecting the product inside. Another issue is the higher production cost of bioplastics compared to traditional plastics, which can sometimes reduce efficiency and make the product unstable. Shifting to the manufacturing of bioplastics also requires new infrastructure, which can be a challenge. Without investment and government support, the shift to bioplastics can be difficult, and the potential benefits of bioplastics, such as their environmental friendliness, may not be realized.

## 5.5 Overview of existing solution approaches

### **What solutions currently exist locally in the target market for similar challenges?**

Insights suggest that there are no feasible alternatives to single-use plastic in the Egyptian market. However, some businesses have been working on achieving sustainability for years, focusing on the recyclability of the packaging waste of their products. Many corporates have an R&D material department dedicated to identifying low-cost, biodegradable packaging material. Nevertheless, sustainable packaging in Egypt is undefined and not standardized, and a sustainable scoring system for packaging would be necessary. The market for plastic products in Egypt is informally regulated, with a range of prices known to both buyers and sellers based on consumer demand and negotiation. Additionally, there has been a shift towards using cotton and wool bags, particularly among the A class and GenZ segments of society, which shows some change in customer behavior.

### **What inspirations for solutions or similar approaches exist in other markets?**

Insights suggest that the bioplastics industry has several technological barriers that need to be overcome. One major issue is the shelf life of biodegradable plastics, especially in the food industry.

## 6. Business Opportunity 3: Resource efficiency of sustainable packaging solutions

### 6.1 Aim

This business opportunity addresses the issue of resource-efficient and sustainable packaging solutions in a context where natural resources are scarce and expensive. It focuses on reducing reliance on single-use plastics and meeting global export market standards. By offering resource-efficient solutions, it aims to minimize negative environmental impacts and promote sustainable packaging practices. The objective is to support local food processing and fresh foods companies in adopting sustainable packaging, contributing to a more environmentally-friendly future. Through the use of renewable, recyclable, and biodegradable materials, this opportunity fosters a shift towards greener packaging alternatives. Embracing sustainability allows companies to enhance their competitiveness and reputation while protecting the environment. This initiative aligns with the broader goal of creating a sustainable food industry in Egypt, where new packaging solutions that improve resource efficiency and minimize environmental impact are needed.

**To gain a comprehensive understanding of the business opportunity** for raw material and resource efficiency in plastic packaging within the food industry in Egypt, eight professional experts working across the value chain in the food packaging industry were interviewed. The **key insights** obtained from the interviews were as follows:

- Firstly, the plastic industry in Egypt faces significant market volatility due to price influences, leading to a compromise on quality to achieve lower costs. Consequently, challenges such as limitations in expanding infrastructure arise, posing obstacles to the adoption of sustainable packaging practices.
- Secondly, the food packaging industry also faces challenges, including bottlenecks in logistics when importing raw materials and a lack of software or simulation programs to test new initiatives. Furthermore, local recyclers lack proper waste tracking, which hinders the adoption of sustainable packaging practices.
- Thirdly, the shift towards sustainable packaging faces several challenges such as the availability of raw materials and hesitation from big manufacturers to invest in providing these materials. Resistance from the workforce accustomed to a certain type of manufacturing cycle and products is also a significant challenge. To ensure a sustainable supply of raw materials and reduce costs, several measures can be taken, including securing long-term agreements with traders and local manufacturers and adopting innovative technologies such as In-mould Labeling (IML)\*, Localizing technologies and investing in research and development and open innovation can also help create an infrastructure for raw materials and produce resins in Egypt.
- Finally, to make sustainable packaging solutions affordable for end consumers, innovative financing models need to be explored.
- Overall, these insights provide a comprehensive understanding of the challenges and opportunities present in the business opportunity for raw material and resource efficiency in plastic packaging within the food industry in Egypt.

\*In-mould labeling (IML) is a technique used in the manufacturing of plastic products, particularly packaging, where a label or decoration is placed into the mold before the plastic material is injected. The label becomes an integral part of the final product, resulting in a high-quality and durable label that cannot be removed. IML technology allows for the creation of detailed, high-quality designs and graphics on plastic products, including food packaging.

## 6.2 Market

### **Potential specific constraints**

The business model must work within the constraints of market volatility and the compromise on quality to achieve lower costs that are prevalent in the plastic industry in Egypt. It must also address challenges such as logistics bottlenecks, the lack of software or simulation programs, and resistance from the workforce.

### **Competition**

The competition in the food packaging industry in Egypt is likely to be significant, given the market size and the potential for growth. However, there may be opportunities for differentiation through sustainable packaging practices.

### **Relevant key regulations or laws**

Relevant regulations and laws may include those related to waste management and recycling, as well as import and export regulations for raw materials.

### **Technological / infrastructure status in the Egyptian sustainable food packaging industry**

The technological and infrastructure situation in the specific target market may be challenging, given the limitations in expanding infrastructure and the lack of software or simulation programs to test new initiatives. However, opportunities exist to invest in research and development and open innovation to create an infrastructure for raw materials and produce resins in Egypt.

### **Cultural aspects that are important**

Specific cultural aspects that may be important for business models in this space include the importance of sustainability and waste reduction in the food industry and the need to address local concerns about environmental impact.

## 6.3 Stakeholders

### **Who are the stakeholders of the business opportunity?**

Stakeholders of the business opportunity may include raw material traders and local manufacturers, food packaging manufacturers, recyclers, waste management companies, and consumers.

### **Who may be potential partners?**

Potential partners may include local manufacturers and traders for securing long-term agreements, technology companies for software or simulation programs, and waste management companies for sustainable packaging practices.

### **Who should be informed or consulted?**

Stakeholders such as raw material traders and local manufacturers, food packaging manufacturers, recyclers, and waste management companies should be informed or consulted. Additionally, local communities and consumer groups may be important to consult for addressing local concerns about environmental impact.

### **Who may compete with a potential solution or be a veto player?**

Potential competitors or veto players may include big manufacturers hesitant to invest in sustainable packaging practices and resistance from the workforce accustomed to a certain type of manufacturing cycle and products. Additionally, regulatory bodies may veto solutions that do not comply with waste management and recycling regulations.

## 6.4 Opportunities and threats related to the business opportunity

### **Why is now the right time to work on the business opportunity in sustainable packaging products in the hospitality sector and the food industry?**

Based on the key insights gathered from the interviews with industry experts, now is the right time to work on the business opportunity focusing on raw material and resource efficiency of plastic packaging in the food industry in Egypt. The plastic industry in Egypt is facing market volatility due to price influences, which has led to a compromise on quality to achieve lower costs. This has resulted in challenges such as limitations in expanding infrastructure. Additionally, the food packaging industry also faces challenges such as bottlenecks in logistics when importing raw materials and a lack of software or simulation programs to test new initiatives, as well as local recyclers lacking proper waste tracking, hindering the adoption of sustainable packaging practices.

### **Which players or events could threaten the success of a new business?**

These challenges present a specific advantage for new businesses to enter the market and introduce innovative solutions that address these issues. For example, new players can leverage their deep-domain knowledge of sustainable packaging practices and innovative technologies such as In-mould Labeling (IML) to provide cost-effective and environmentally friendly packaging solutions. Additionally, they can also gain a first-mover advantage in the market by being the first to introduce sustainable packaging practices. However, there are also potential threats to the success of a new business in this space. For example, there may be a lack of digital infrastructure or resistance against the adoption of sustainable packaging practices from the workforce accustomed to a certain type of manufacturing cycle and products. These factors could impede the adoption and success of new sustainable packaging solutions in the market.

## 6.5 Overview of existing solution

### **What solutions currently exist locally in the target market for similar challenges?**

In terms of local solutions, securing long-term agreements with traders and local manufacturers and investing in research and development and open innovation can help create an infrastructure for raw materials and produce resins in Egypt. Innovative financing models also need to be explored to make sustainable packaging solutions affordable for end consumers.

### **What inspirations for solutions or similar approaches exist in other markets?**

Looking at other markets, there are inspirations for solutions or similar approaches that could be applied in the Egyptian market. For example, innovative packaging solutions and practices are being developed and implemented in Europe and North America to address similar challenges. By learning from these markets and adapting these solutions to the local context, new businesses.

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