

TECH-KNOWLEDGE

The Official PMG Engineering Newsletter



EXECUTE

PROJECT MANAGEMENT



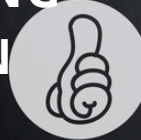
PRIORITIES



TASKS

FOOD & BEVERAGE
INDUSTRY

ENGINEERING
& DESIGN



INITIATE

SCIENCE &
TECHNOLOGY



MONITOR & CONTROL



COMPLETE

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An introduction to Project Management



Introduction

A project is any temporary initiatives or tasks taken up to achieve specific goal by creating unique product, service or result. A project need to fulfill the set goal(s) and for any project to be successful, proper Project Management is required. Any project start with assigning the project manager, who is responsible for leading and completing the project by addressing important questions, sketching out the scope and goal of project and importantly communicating and setting realist objectives of team to achieve in a timely manner. Project manager is also responsible for timely monitoring and identifying any gaps or critical pathway to ensure all deliverable are being met and project is moving towards closure.

Any good project management involves balancing the three most fundamental factor, i.e., Scope, Time and Cost. All three are dependent, as any change in any one of the parameter result in changes to the other. Any project has following phases

- **Initiation:** Laid down the foundation of project with scope, issues, resource and overall broad timeline and expected budget.
- **Planning:** Important phase to define detailed tasks, timelines and making strategy to make project successful.
- **Execution:** Working on the planned strategy to bring project on ground.

- **Monitoring and Control:** Monitoring all the plans and works being executed to have successful project.
- **Closure:** Once all deliverables have been achieved which were defined during the project initiation stage and formally handover to client satisfaction, one can say the project has been closed.

Work Breakdown Structure: For Scope

When a project starts, major focus is to achieve set goals. Often it is missed that to achieve any goal number of tasks need to be completed.

For an instance, when goal is to build a house there are major and minor tasks which need to be completion to achieve the set goal

- Civil work (foundation laying, brick wall, plastering, painting, tiling etc.)
- Mechanical (Water storage tank, plumbing, fittings etc)
- Electrical (Conduit, Main Meter, Lighting and fittings etc)

Project Schedule and Timelines

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Once the scope has been broken down into smaller tasks, it is important to set duration for each smaller task and to set them in a manner that they are trackable and not exceeding the set overall project timelines. To do this in any project

- Estimate the duration of each task
- Add realistic buffer timeline
- Put task in sequence of their occurrence during the project and link them based on their dependency to each other.

Conclusion

Apart from planning budget, scope and time – resource management plays an important role in the successful completion of work. While a project is formed, resources are allocated to project manager. Project Manager is responsible for defining the needed resource by estimating the efforts needed, validate resource availability and define roles and responsibility of each to attain the target. RACI (Responsible, Accountable, Consulted, Informed) Matrix is one common approach for managing larger size projects involving more people.

Risk Planning

In real time, unpredictable events can happen which can lead to project stagnation, like loss, injury, or other unavoidable circumstances and all these are considered as risk in project. These risks can be extended to cost, time, scope, quality etc. Project Manager is to identify the project risk, analyze it and develop risk mitigation strategies to avoid them.



Conclusion

Project management is a very vast topic and this topic only gives a brief idea on the project management. Project success depends on the experience of Project manager to handle the project along with his/her expertise to use the various project management tools.



Antimicrobial Coatings and Films



Introduction

The increase in food-borne microbial outbreaks all over the world, especially in developing economies, are pushing forward an urgent search for innovative, feasible, and cost-effective ways to inhibit microbial growth in the foods while maintaining quality, freshness, and safety. One such way is to develop antimicrobial packaging materials that can release substances possessing bactericidal properties into the food it contains. These specialized classes of films fall under active packaging materials, the active component being the antimicrobial agents. There are several ways of fabricating food packages possessing these properties:

- addition of sachets/pads containing volatile antimicrobial agents into packages,
- Incorporation of volatile and non-volatile antimicrobial agents directly into polymers,
- Coating or adsorbing antimicrobials onto polymer surfaces,
- Immobilization of antimicrobials to polymers by ion or covalent linkages, and
- Use of polymers that are inherently antimicrobial.

Methods for preparing antimicrobial food packaging

Fabrication of films has been possible thanks to the film forming properties of natural polymers. Such ability is related to the chemical structure of those compounds, which allows the association through hydrogen bonding of their polymeric chains. Many studies show that the most frequently used macromolecule for antimicrobial films formulation are protein, polysaccharides, and blends of both. The preparation of antimicrobial films must include at least one component capable of forming a suitable continuous, cohesive, and adhesive matrix. Such a formulation comprises a film-forming agent, solvent, plasticizers, pH adjusting agent when necessary, and an antimicrobial agent. Subsequently, the film-forming solution is poured on a support and submitted to a dehydration process that allows an easy release from the mold or applied in a coating product. The methods that can be used for in the preparation of antimicrobial films include casting, tape-casting, extrusion, and thermopressing. The casting method is one of the most used methods by researchers in the preparation of films and comprehends the preparation of a colloidal solution of the polymer added or not of additives, dispersion of solution in adequate support and, drying under strictly controlled conditions. After evaporation of the solvent, the dried film is removed from the support.

READ MORE....



Types and selection of antimicrobial films

Active compounds, such as antimicrobials, can be incorporated into biodegradable films and can act as active packing. This alternative is developed to reduce, inhibit, or stop the growth of food borne pathogens and other microorganisms on food surfaces. In processed or fresh products, the microbial contamination is found with the highest intensity on their surface requiring a system to control the growth of microorganisms. The implementation of films as active packaging can be more efficient than antimicrobial additives used in the foods since they can migrate selectively and gradually from active film compounds to the surface of the food. The antimicrobial films are divided into two groups: in the first, the agent migrates to the surface of product, while in the second they are effective against microbial growth surface without the need for migration into the product. In these cases, an intense contact between the product and the antimicrobial agent.

The selection of an antimicrobial agent depends on its activity against a target microorganism. The growth of potential microorganisms that can spoil food is predictable due to the food product characteristics such as pH, water activity, composition, as well as storage condition.

Application in Food



In food, one application of antimicrobial films is to extend the shelf-life and promote safety by reducing the rate of growth of specific microorganisms by direct contact of the package with the surface of solid food or in the bulk of liquids. Second antimicrobial packaging materials could be self-sterilizing or sanitizing. Such antimicrobial packaging greatly reduces the potential for recontamination of processed products and simplify the treatment of materials to eliminate product contamination. The target microbes and the food contamination must be considered in antimicrobial packaging. As with any antimicrobial, those to be incorporated into polymers must be selected based on their spectrum of activity, mode of action, chemical composition, and the rate of growth and physiological state of the targeted microorganisms.

Conclusion

Antimicrobial packaging is gaining interest from researchers and industry due to its potential to provide quality and safety benefits. Currently, development is limited due to unavailability of antimicrobials and new polymer materials, regulatory concerns, and appropriate testing methods. With the advent of new materials and more information this may change.



INDUSTRY BUZZ

Patanjali Foods clarifies a violation of food regulations and states it is committed to openness.

Patanjali Foods Ltd. has promptly addressed the recent media coverage of 'Unsafe Patanjali Soan Papdi' by providing a comprehensive explanation to the BSE.

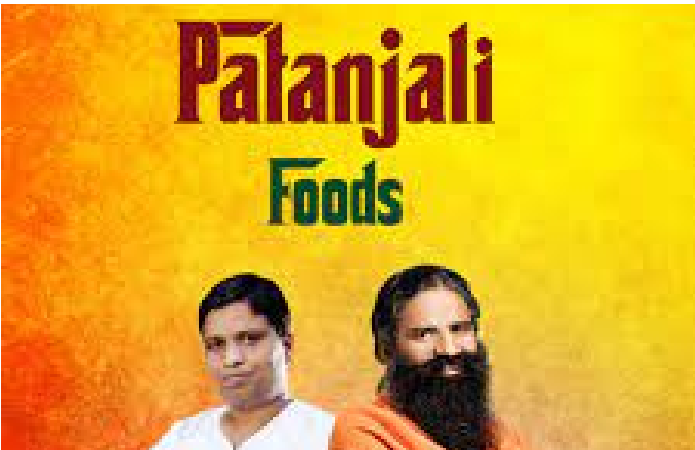
The case was an order from a court in the Uttarakhand district of Pithoragarh, which sentenced three individuals, including an official of the Company, to prison in connection with the Company's breach of the FSS Act about the production of soan papdi.

"We may clarify that this matter pertains to the year 2019 when sampling was conducted at the premises of a distributor of Patanjali Ayurved Limited ("PAL"), according to the statement released by Patanjali Foods. The Chief Judicial Magistrate Pithoragarh received a complaint against PAL's nominee and distributor. The recent court conviction only concerns PAL and its distributor's nominees who plan to appeal the conviction judgment. Please take note that Food Business only joined Patanjali Foods Limited ("the Company") in July 2022; as a result, the Company is unrelated to this situation.

The FSSAI has warned fruit dealers to follow the ban on calcium carbide during fruit ripening.

The Food Safety and Standards Authority of India (FSSAI) has issued an advisory to food business operators (FBOs), dealers, and fruit handlers who operate ripening chambers, warning them to strictly enforce compliance with the ban on using calcium carbide for artificial fruit ripening, especially during mango season. Additionally, the FSSAI is encouraging State and Union Food Safety Departments to maintain vigilance, take decisive action, and deal strictly with any individual(s) engaging in these illegal activities by the requirements of the Food Safety Act of 2006 and the Rules and Regulations enacted thereunder.

When calcium carbide is used to ripen fruits, such as mangoes, it releases acetylene gas, which has dangerous levels of phosphorus and arsenic. These compounds, commonly referred to as "masala," have the potential to cause severe health problems, including skin ulcers, frequent thirst, irritability, weakness, disorientation, and difficulty swallowing.



Patanjali
Foods





Enhancing financial inclusion is greatly aided by the Indian dairy industry: PM Modi.

According to Prime Minister Narendra Modi, the Indian dairy industry makes a substantial contribution to improving financial inclusion and encouraging sustainable development in rural areas.

Women have historically worked in the dairy industry, and even though it is one of their household responsibilities, their labour adds substantially to the sector's productivity. According to PM Modi, the dairy business sells milk and other dairy products, which helps women become financially independent and supplement their income.

Over 80 million individuals are employed in the nation's dairy industry, with 56 million workers being women, making up 70% of the workforce. Moreover, women make up the majority of the workers in the nation's dairy industry.

SC requests a response on the usage of pesticides from Union Ministries.

The Supreme Court has responded to a petition on the issue regarding the excessive use of pesticides and other chemical insecticides on food crops and food items, as well as the artificial colouring, coating, and waxing of pulses, food grains, and other items, allegedly resulting in a high incidence of deaths throughout the nation, by sending notices to the Ministries of Health & Family Welfare, Agriculture, Environment, Forest & Climate Change, and the Food Safety and Standards Authority of India (FSSAI).

The FSSAI still needs to prevent and regulate pesticide use and guarantee food safety. The petitioner's argument to the court stated that there is a direct scientific and medical association between pesticides and tumours, which are becoming more common.

The writ petition also raised severe concerns about the government's inability to stop the abuse of pesticides and other inorganic materials on food crops.



Use green protein to energise World Nutrition Day.

More than just a day on the calendar, World Nutrition Day is an international call to acknowledge the critical role that nutrition plays in our daily lives. One cannot stress the significance of necessary nutrients in a world where eating patterns are ever-changing. Protein is a powerful nutrient that is essential for immunity, muscular growth, and tissue repair, yet it is still one of the nutrients that is most often ignored in everyday diets.

Global research indicates that approximately 1 billion individuals are deficient in protein despite its vital role, which can lead to a multitude of health difficulties. Adults should eat at least 0.8 grammes of protein per kilogramme of body weight each day, according to studies. Nevertheless, many only consume half of the necessary quantities; nations like India fall short of this requirement. The critical requirement for easily accessible, high-quality protein sources is highlighted by this worrying trend.

WEEKS HIGHLIGHT

NON - TECHNICAL CONTENT



20 MAY

HR DAY

Recognizing the heartbeat of our organization on HR Day - Celebrating the invaluable contributions and dedication of our Human Resources team.



21 MAY

TEA DAY

Embrace the warmth and aroma, it's Tea Day! Indulge in the soothing flavors and delightful moments this cherished beverage brings.

MAY

DID YOU KNOW?



1/4

Frozen sushi refers to pre-made sushi that has been frozen and can be stored for an extended period before being thawed and consumed. Sushi is a traditional Japanese dish that typically consists of vinegared rice, seafood or vegetables, and sometimes other ingredients like avocado or egg, rolled up in sheets of dried seaweed called nori.

- It can be made at home without having to go to a restaurant or can be made from scratch. It can be found in many grocery stores and supermarkets and comes in a variety of types and flavors.

Major players in the Market

Ajinomoto Co., Inc.
California Sushi Rolls, Inc.
Gorton's Seafood
Kanegrade Ltd.
Katokichi Co., Ltd.
Nishimoto Co., Ltd.

2/4



Commercial Production

- 1. Selection and preparation of ingredients:**
Ingredients such as fish, vegetables, and rice, are carefully selected and prepared according to established food safety guidelines.
- 2. Sushi rolling:**
Placed on a sheet of nori (dried seaweed), along with rice and other seasonings, and rolled into sushi rolls of various sizes and shapes.
- 3. Freezing:**
Made sushi rolls are immediately frozen to preserve their freshness and quality.
- 4. Packaging:**
Packaged in airtight bags or containers to protect it from freezer burn and other contaminants.

3/4

Fact 1

Employing advanced preservation methods, frozen sushi undergoes meticulous processing to ensure its quality and safety. After preparation, it is promptly frozen to temperatures below -18°C , halting microbial growth and preserving its delicate texture. Vacuum sealing prevents moisture loss and freezer burn, maintaining product integrity. Innovative freezing techniques minimize ice crystal formation, ensuring that frozen sushi retains its authentic taste, texture, and nutritional value.

Frozen meat-based ready-meals



1/3

Frozen meat-based ready meals are pre-cooked, pre-packaged, and frozen meals that typically contain meat as the main ingredient. These ready meals are designed to provide convenience to consumers who want a quick and easy meal that can be prepared in a matter of minutes.

- Available in a wide range of varieties, including casseroles, stews, stir-fries, meatballs, and lasagnas

Major players in the Market

1. Nestle
2. Conagra Brands, Inc.
3. Kraft Heinz Company
4. McCain Foods Limited
5. Dr. Oetker GmbH
6. The Hain Celestial Group, Inc.
7. General Mills, Inc.
8. Tyson Foods, Inc.

2/3

Commercial Production

1. Sourcing of ingredients:

Sourced from approved suppliers, and quality checks are carried out to ensure that they meet the required standards.

2. Preparation:

Cooked and seasoned according to the recipe, and the other ingredients are added to create the desired flavor and texture.

3. Packaging:

Packaged using specialized equipment and materials used are designed to withstand freezing temperatures and preserve the quality and flavor of the meals.

4. Freezing:

Freeze the meals while minimizing the formation of ice crystals, which can affect the quality of the food.

5. Storage and distribution:

Stored in temperature-controlled warehouses until they are ready to be shipped to retailers or consumers.

3/3

Fact 2

Frozen meat-based ready-meals undergo meticulous processing to maintain quality. After preparation, they're swiftly frozen below -18°C , halting microbial activity and preserving texture. Vacuum sealing prevents moisture loss and freezer burn, ensuring product integrity. Advanced freezing techniques minimize ice crystal formation, preserving meal texture.

FROZEN VEGETARIAN/ VEGAN READY-MEALS

"Deliciously Frozen. Vegan Delights Ready to Satisfy Anytime, Anywhere!"



1/3

Frozen vegetarian/vegan-ready meals are pre-packaged meals that are prepared without any meat, poultry, fish, or animal products. These meals are designed to be convenient and provide a quick and easy meal option for consumers who follow a vegetarian or vegan diet.

- Made with a variety of ingredients such as grains, legumes, vegetables, tofu, and plant-based protein sources like soy, pea protein, or seitan.
- Meals are popular among health-conscious consumers who want to reduce their intake of animal products or for those who have food allergies or intolerances.



2/3

Market Scope

The global market for vegetarian/vegan food products was valued at \$12.2 billion in 2019, and is projected to reach \$24.3 billion by 2027, growing at a CAGR of 9.6% from 2020 to 2027.

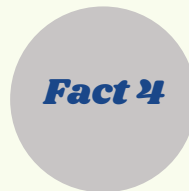
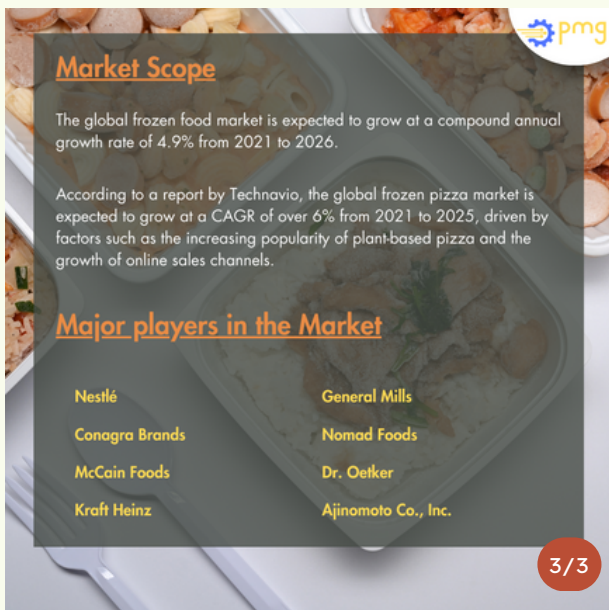
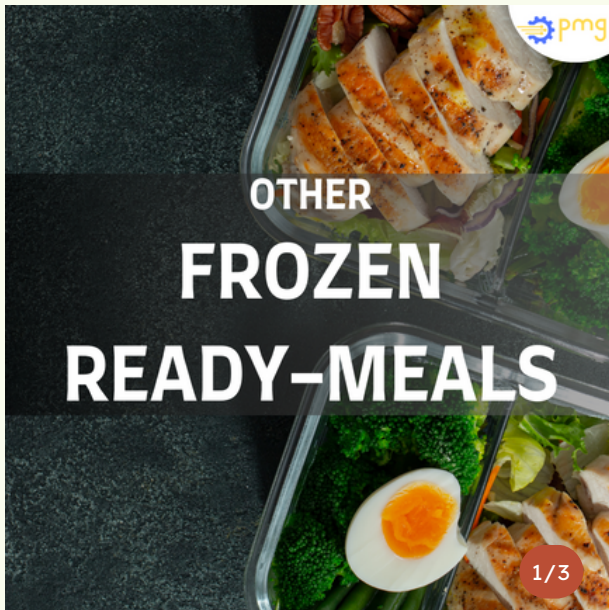
Major players in the Market

- | | |
|---------------------------|-----------------------|
| 1. Amy's Kitchen | 6. Tesco |
| 2. Dr. Praeger's | 7. Sainsbury's |
| 3. The Vegetarian Butcher | 8. Whole Foods Market |
| 4. Linda McCartney Foods | 9. Tofurky |
| 5. Quorn | 10. Beyond Meat |

3/3

Fact 3

Employing advanced preservation techniques, frozen vegetarian/vegan ready-meals undergo meticulous processing to maintain quality. After preparation, they're swiftly frozen below -18°C, halting microbial growth and preserving texture. Vacuum sealing prevents moisture loss and freezer burn, ensuring product integrity. Advanced freezing techniques minimize ice crystal formation, preserving meal texture.



Utilizing advanced preservation methods, other frozen ready-meals undergo meticulous processing to maintain quality. Swift freezing below -18°C halts microbial growth and preserves texture. Vacuum sealing prevents moisture loss and freezer burn, ensuring product integrity. Advanced freezing techniques minimize ice crystal formation, preserving meal texture. These meticulous procedures ensure retained taste, texture, and nutritional value, offering consumers convenient and satisfying options.

FROZEN TARTS



1/3

Frozen tarts are a type of pastry that is typically filled with sweet or savory ingredients and frozen for later consumption. The tart shell is made from pastry dough, which can be either a shortcrust pastry or a puff pastry. The filling can be made with a variety of ingredients, such as fruits, nuts, chocolate, custard, cheese, vegetables, and meats, depending on whether the tart is sweet or savory.

- Sold pre-made and frozen and can be quickly reheated in the oven or microwave for a delicious and satisfying meal or snack.
- Found in a variety of flavors and sizes, ranging from bite-sized mini tarts to larger, family-sized tarts. Frozen tarts are also a popular item in the food service industry, where they are often served as a dessert or snack in restaurants, cafes, and other food establishments.



2/3

Market Scope

The market scope for frozen tarts is relatively small compared to other frozen food products, but it is still a significant and growing segment of the frozen food market.

Major players in the Market

1. Nestle SA
2. Dr. Oetker
3. Jus-Rol
4. La Rose Noire
5. Trader Joe's
6. Schwan's Company
7. McCain Foods Limited



3/3

Fact 5

Frozen tarts undergo precise preparation and rapid freezing below -18°C , arresting microbial activity and preserving texture. Vacuum sealing prevents moisture loss and freezer burn, ensuring product integrity. Advanced freezing methods minimize ice crystal formation, maintaining tart texture. These meticulous procedures safeguard taste, texture, and quality, offering consumers convenient and appetizing options with extended shelf life.



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for FOOD and BEVERAGE Industry with SINGLE POINT ACCOUNTABILITY

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- MAKING CUSTOMERS THE INDUSTRY LEADERS
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- MEET THE EXPECTATIONS OF ALL STAKEHOLDERS
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