Institute of Engineering & Management

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DESIGN THINKING ASSIGNMENT

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Title: Local Boost Strategy: Reviving Sales for Kolkata's Local Shops

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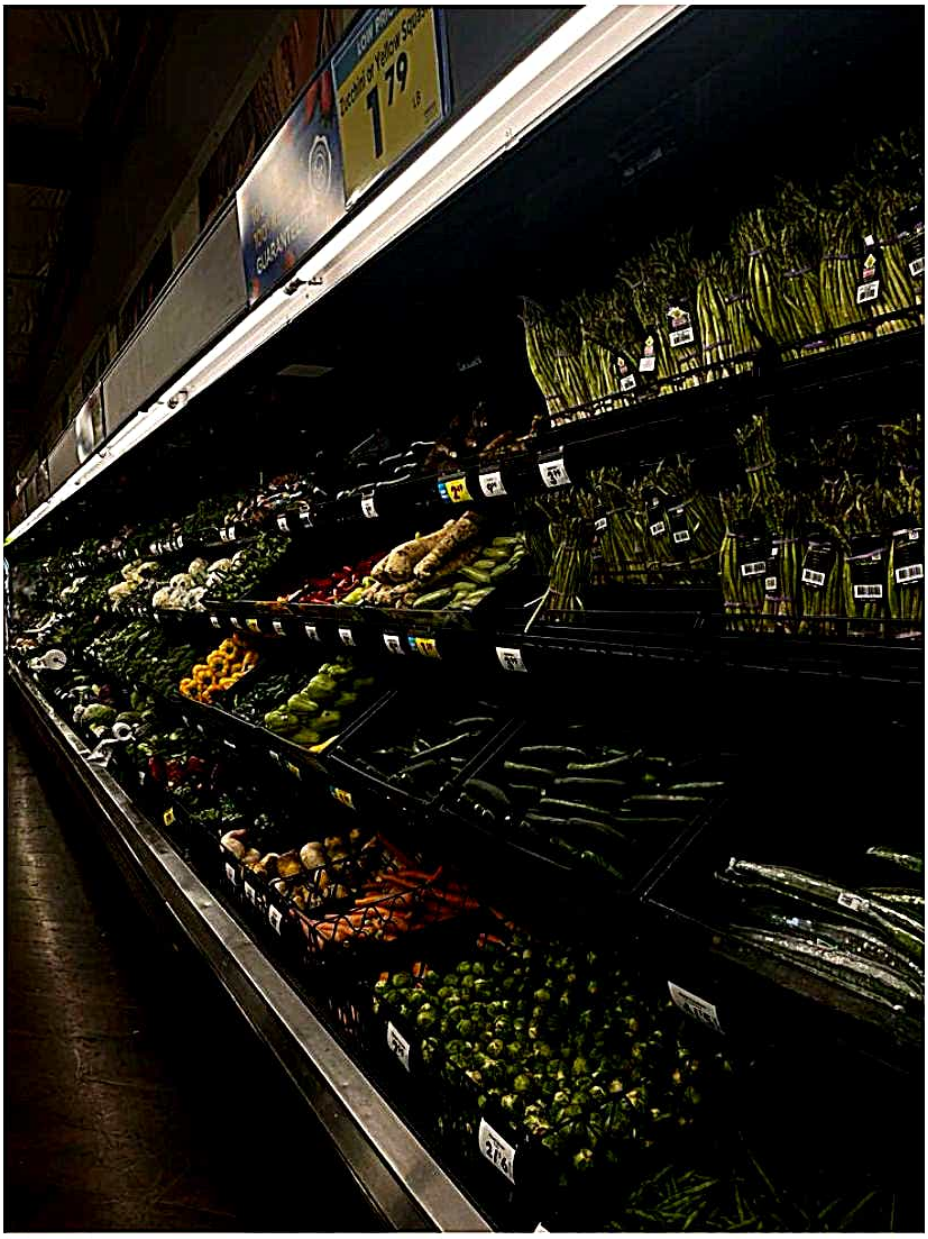
Bananas or Yellow Squash
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Introduction :-

The quality of food available to consumers is a matter of paramount importance. It directly impacts our health, well-being, and overall quality of life. In recent years, there has been a growing concern over the declining quality of food products, particularly in the face of rising raw material costs. This trend has far-reaching implications for both consumers and businesses.

This report aims to delve into the complex relationship between rising raw material costs and the deteriorating quality of food. By examining the factors driving these costs, their impact on food producers, and the subsequent consequences for consumers, we seek to shed light on this pressing issue and explore potential solutions.

Problem statement :-

The escalating costs of raw materials, coupled with economic pressure and global market fluctuations, are leading to a significant decline in the quality of food products available to consumers. This deterioration in quality, characterised by reduced portion sizes, the uses of lower quality ingredients, and the prevelance of artificial additives, poses a serious threat to public health and well being.

SHOP SURVEY

Purpose :- To gather information about the impact of rising raw material costs on food quality and pricing at Fresh Mart.

The Name of shop is FreshMart, a grocery shop located in North Barrackpore, West-Bengal, India, A grocer

Let us deal with the survey by answering some questions :-

Q. Have you noticed an increase in the cost of raw materials used in your products?

- Yes

Q. ~~If yes, please specify~~ Which raw materials have experienced the most significant price increases :-

- Fruits and Vegetables.

Q. Have you had to make changes to the quality of your products due to rising costs?

- Yes

Q. The changes noticed?

- Reduced portion sizes of pre-packaged items
- Use of frozen vegetables instead of fresh ~~&~~ produce.
- Increase use of preservatives in certain products.

Q. Has the price of products increases with offset rising costs?

- Yes, by 5%.

Q. Customer's feedback?

- Some customers has expressed dissatisfaction with the reduced portion sizes.
- A few customers have mentioned noticing a difference in the taste and quality of certain products.

We are concerned about the long term impact of rising raw materials costs on our ability to maintain the same level of quality and affordability for our customers. We are exploring ways to mitigate these challenges, such as sourcing products from local farmers and suppliers wherever possible.

Concept and Design Overview :-

The concept for this project is to develop a comprehensive strategy to address the issue of declining food quality due to rising raw material costs. The goal is to create a sustainable and equitable system that ensures consumers have access to safe, nutritous, and affordable food.

Key objectives :-

- Improve food quality :- Promote the use of high quality ingredients, reduce the use of artificial additives, and ensure proper food handling and storage.
- Enhanced food safety :- Implement Robust food safety standards and regulations to prevent foodborne illness.
- Increase affordability :- Explore strategies to make healthy food more accessible to low-income populations, such as subsidies, price controls, and community gardens.
- Foster sustainability :- Promote sustainable farming practices, reduce food waste, and support local food systems.

Design Elements :-

1. Policy interventions :-

Subsidies : provide financial assistance to farmers and food producers to offset rising costs.

Price control :- Implement price regulations for essential food items

Trade agreements :- Negotiate favourable trade deals to ensure access to affordable raw materials.

Food safety regulations :- strengthen food safety standards and ~~environment~~ enforcement.

(2) Industry initiatives :-

- Sustainable farming practices :- Encourage the adoption of eco-friendly farming methods.
- Food labelling :- Implement clear and informative food labelling to help consumers make informed choices.
- Food waste reduction :- promote initiatives to reduce food waste at all stages of the supply chain.

(3) Consumer Education :-

- Nutrition education :- provide consumers with information about healthy eating habits and the importance of food quality.
- Food literacy :- promote awareness of food production, processing and distribution.

(4) Community - Based Solutions :-

- Community gardens :- Encourage the development of community gardens to increase access to fresh, locally grown produce.
- Food banks and pantries :- Support organisations that ~~produ~~ provide food assistance to those in need.
- Food cooperatives :- promote consumer-owned cooperatives to ensure fair pricing and quality.

Design Principles :-

- Holistic approach :- Address the issue from multiple perspectives, including policy, industry, consumer, and community-based solutions.
- Equity and inclusion :- Ensure that the benefits of any interventions reach all segments of the populations, particularly vulnerable groups.
- Sustainability :- Prioritize long-term solutions that are environmentally friendly and economically viable.
- Collaboration :- Foster partnerships between government, industry, non-profit organisations, and communities to achieve shared goals.

By combining these elements and adhering to these principles, we can create a more sustainable and equitable food system that benefits both consumers and producers.

Smart Components for addressing Declining Food Quality

Smart components :- can play a crucial role in enhancing food quality, safety and sustainability. Here are some potential applications :-

1. Smart Packaging :-

- Real time monitoring : Track temperature, humidity, and other environmental factors to ensure product integrity.
- Expiration data tracking :- Automatically update expiration dates based on real time conditions.
- Tamper detection :- Detect if packaging has been tampered with.
- Product recall notifications :- Send alerts to consumers and retailers in case of product recalls.

6 ② Smart farms :-

- Precision agriculture : Use sensors to monitor soils moisture, nutrient levels, and pest infestations.
- Automated irrigation : optimize water usage based on real time data.
- Crop yield ~~production~~ prediction : Forecast crop yields to improve planning and resource allocation
- Autonomous farming equipment : Reduce labor costs and increase efficiency

③ Smart Food processing :-

- Quality control systems : Use sensors to monitor food quality throughout the processing process.
- Energy optimization : Reduce energy consumption by optimising equipment usage
- Traceability : Track the origin and journey of food products.
- Food safety alerts : Trigger alerts in case of safety violations.

④ Smart Supply chain :-

- Cold chain monitoring : Ensure proper temperature maintenance during transportation and storage
- Real time tracking : Monitor the location and condition of shipments.
- Supply chain optimization : Identify bottlenecks and improve efficiency
- Food fraud prevention : Detect counterfiet or adultered products.

⑤ Smart Retail :-

- Inventory management : Automatically track inventory levels and reorder products as needed
- Freshness tracking : Monitor the freshness of perishable products
- Personalized recommendations :- Offer tailored recommendations based on customer preferences and dietary needs.
- Food waste reduction : optimize inventory management to minimize waste.

⑥ Smart Consumer devices :-

- Food safety apps : provide information on food safety practices, recall alerts, and nutritional content.
- Smart fridges : Track food expiration dates and suggest recipes based on available ingredients.
- Food waste tracking apps : Helps consumers reduce the food waste by tracking leftover and planning meals.

By integrating these smart components into the food systems, we can improve food quality, safety, and sustainability, while also enhancing consumer experiences

Literature Review :-

The relationship between rising raw material costs and declining food quality has become a pressing concern in recent years. This literature review examines existing research to understand the factors driving this trend, its implications for consumers, and potential strategies to mitigate its effects.

Factors contributing to Rising Raw Material Costs :

Studies have identified several factors contributing to the increase in raw materials costs :

- Global market fluctuations : Economic instability, trade wars, and geopolitical events can disrupt supply chains and drive up prices.
- Climate change : Extreme weather events, such as droughts and floods, can impact agricultural production and leads to storage shortages
- Population growth : Increasing population demands more food, putting pressure on resources and driving up prices.
- Changing dietary habits : The shift towards more meat intensive diets can increase demands for certain raw materials

Impact of Rising Cost on Food Quality

Research has shown the rising raw materials costs can lead to several negative consequences for food quality.

- Reduced portion sizes:- Food producers may reduce the quantity of ingredients to maintain profits margins.
- Use of lower-quality ingredients:- To cut costs, producers may substitute higher quality ingredients with cheaper alternatives
- Increased use of additives and preservatives:- To extend shelf life and improve flavour, producers may use more additives and preservatives.
- Compromised food safety:- In an effort to reduce costs, producers may neglect food safety standards, leading to increased risks of contamination

Strategies to Mitigate the Impact:-

Several strategies have been proposed to mitigate the impact of rising raw material costs on food quality.

- Government policies:- subsidies, price controls, and trade agreements can help to stabilize prices and ensure access to affordable food.
- Industry practices:- sustainable farming practices, efficient supply chains, and innovation in food production can help to reduce costs and improve quality.
- Consumer awareness:- Education and awareness campaigns can empower consumers to make informed choices and support sustainable food practices.
- Community based solutions:- Local food systems, community gardens, and food cooperatives can provide access to fresh, affordable food.

- The literature reviewed highlights the complex relationship between rising raw material costs and declining food quality. Addressing this issue requires a multifaced approach involving government policies, industry initiatives consumer education, and community based solutions. By understanding the factors driving this trend and implementing effective strategies, we can work towards ensuring a sustainable and equitable food system for all.

Conclusions :-

The survey conducted among the local grocery stores in the place, revealed that rising raw materials costs are having a significant impact on food quality and pricing. Many shops reported increased costs for fruits, vegetables and dairy products, leading to reduced portion sizes, the use of lower-quality ingredients, and price increases.

While some customers have expressed dissatisfaction with these changes, the majority of shop owners indicated that they have no choice but to adjust their offerings to maintain profitability. The survey also highlighted the need for government support and industry initiatives to address the challenges posed by rising raw material costs.