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“Optimizing Innovation in Knowledge, Education and Design”

EXTENDED ABSTRACT



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Assalamualaikum warahmatullahi wabarakatuh,



First and foremost, I would like to express my gratitude to the organizing committee of i-Spike 2023 for their tremendous efforts in bringing this online competition a reality. I must extend my congratulations to the committee for successfully delivering on their promise to make i-Spike 2023 a meaningful event for academics worldwide.

The theme for this event, 'Optimizing Innovation in Knowledge, Education, and Design,' is both timely and highly relevant in today's world, especially at the tertiary level. Innovation plays a central role in our daily lives, offering new solutions for products, processes, and services. By adopting a strategic approach to 'Optimizing Innovation in Knowledge, Education, and Design,' we have the potential to enhance support for learners and educators, while also expanding opportunities for learner engagement, interactivity, and access to education.

I am awed by the magnitude and multitude of participants in this competition. I am also confident that all the innovations presented have provided valuable insights into the significance of innovative and advanced teaching materials in promoting sustainable development for the betterment of teaching and learning. Hopefully, this will mark the beginning of a long series of i-Spike events in the future.

It is also my hope that you find i-Spike 2023 to be an excellent platform for learning, sharing, and collaboration. Once again, I want to thank all the committee members of i-Spike 2023 for their hard work in making this event a reality. I would also like to extend my congratulations to all the winners, and I hope that each of you will successfully achieve your intended goals through your participation in this competition.

Professor Dr. Roshima Haji Said
RECTOR
UiTM KEDAH BRANCH



WELCOME MESSAGE (i-SPIKE 2023 CHAIR)



We are looking forward to welcoming you to the 3rd International Exhibition & Symposium on Productivity, Innovation, Knowledge, and Education 2023 (i-SPIKE 2023). Your presence here is a clear, crystal-clear testimony to the importance you place on the research and innovation arena. The theme of this year's Innovation is "*Optimizing Innovation in Knowledge, Education, & Design*". We believe that the presentations by the distinguished innovators will contribute immensely to a deeper understanding of the current issues in relation to the theme.

i-SPIKE 2023 offers a platform for nurturing the next generation of innovators and fostering cutting-edge innovations at the crossroads of collaboration, creativity, and enthusiasm. We enthusiastically welcome junior and young inventors from schools and universities, as well as local and foreign academicians and industry professionals, to showcase their innovative products and engage in knowledge sharing. All submissions have been rigorously evaluated by expert juries comprising professionals from both industry and academia.

On behalf of the conference organisers, I would like to extend our sincere thanks for your participation, and we hope you enjoy the event. A special note of appreciation goes out to all the committee members of i-SPIKE 2023; your dedication and hard work are greatly appreciated.

Dr. Junaida Ismail

Chair

3rd International Exhibition & Symposium Productivity, Innovation, Knowledge, and Education 2023 (i-SPIKE 2023)

GOBOX

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ABSTRACT

The ability of food rider delivery boxes to keep the temperature of the supplied food consistent is one of the biggest challenges they encounter. Several of the boxes lacked the right insulation, which resulted in the loss of heat or cold while the boxes were being delivered. Because of this, the meal may arrive at the doorstep of the customer in a less-than-desirable condition, which may have an impact on the customer's review of the dish's quality and overall satisfaction. This unique delivery box for food, which is called a GoBox, features two separate compartments that enable it to store both warm and cold food while preserving the perfect level of temperature control all the way through the delivery process. It is also strong enough to resist the obstacles of transportation and safeguard the food within from being damaged or spilled while it is being handled. By properly separating hot and cold items within a single delivery box, this innovation removes the need for separate packing or additional coolers, which in turn speeds up the delivery process and reduces the amount of waste that is wasted. The combination of a solar panel as a power source as well as modern tracking and monitoring technology not only raises the value of the product but also instills confidence in customers and makes it easier for companies to carry out their daily operations. This product was also available in two sizes; one was designed specifically for food delivery riders, and the other was a standard size that was convenient for all customers as a picnic bag for the public.

Keywords: thermal, delivery box, food delivery

INTRODUCTION

The food delivery industry has been experiencing a strong growth over recent years especially in Malaysia, due to the increased adoption of online platforms as well as changing consumer preference. In other words, the food delivery market in Southeast Asia is huge – the food market itself is a trillion dollar one and the delivery market is only a small fraction of this (Kandasivam & Singh, 2017). As Malaysians have become accustomed to the convenience of delivery service, there is an increasing demand for delivered meals in which freshness and quality are maintained. It is essential to develop bags with efficient thermal insulations that are multifunctional, not just for delivery, and have diverse uses in daily life. Apart from their primary use in delivering items while preserving their temperature, these bags prove beneficial for various purposes. For instance, keeping food and beverages fresh and at the right temperature during picnics, camping trips, hiking, outdoor activities, grocery shopping, meal prepping, and also ideal for transporting medications.

In response to the growing demand for perishables' transportation, companies are making efforts to prevent product deterioration, offer fresher and safer products as much as possible by flexible service at a reasonable cost (Liang & Wang, 2023). This leads to the creation of GoBox as a thermal delivery bag which is a type of thermally insulated container that can be carried for. It is easier and convenient to restaurants, caterers, and companies that offer delivery services. Besides, GoBox is designed and equipped with a thermal that enables temperature to be controlled in maintaining the quality of goods, easy-to-clean materials and clear surfaces. The high standards of hygiene and cleanliness were also emphasized, in order to prevent any risk of contamination and minimize the retention of food and beverages residues during the delivery process. GoBox has the potential to penetrate this industry market and become an ideal solution for both consumers as well as delivery companies. Therefore, GoBox is a worthy product that must be invested in and become valuable tools for a wide range of everyday scenarios since it offers several benefits and opportunities.

OBJECTIVE

A thermal bag, also known as a GoBox is usually manufactured of thermally insulating materials. GoBox aims to ensure the durability and protection in delivering goods and meals by maintaining proper temperature of its contents, keeping cold items cold, and hot items hot. GoBox is made from thermal insulators, where the materials have low thermal conductivities to retain heat, as it reduces the rate of heat transferred by means of conduction from the inside of the bag to the outside surface (Hasan A. & Dincer I., 2019). An instance of through minimizing the temperature fluctuations and preserving a consistent environment, this thermal delivery box prevents rapid spoilage, bacterial growth, and deterioration in goods and meals. This will ensure that the goods and foods remain fresh and safe for consumption for an extended period, reducing food waste, and also improving overall food safety. GoBox are focused on control and retaining the quality as well as the freshness of perishable items such as hot meals, ice creams, or beverages. Thermal delivery bags lessens the possibility of food spillage or damage, thus making it more convenient for riders to make their deliveries. In brief, GoBox can maintain the quality of perishable goods and taste of the food until it reaches its final destination, and also allows for longer delivery routes or possible delays without affecting its integrity.

NOVELTY

Our thermal food delivery box is novel because of its cutting-edge features and advantages over ordinary food delivery boxes, which have traditionally been the norm. During delivery, both the hot and cold items will maintain their respective temperatures thanks to the system's perfect temperature control. The ability to separate various foods into their own sections during travel reduces the risk of cross-contamination. PTFE is used because it is highly insulating, long-lasting, and has a non-stick surface that makes cleanup easy. PTFE has a very high dielectric strength and a low dielectric loss (Rae & Dattelbaum, 2004), making it one of the materials with the highest resistivity. Solar panels provide for eco-friendly, long-term operation, allowing for deliveries to be made even in places without reliable grid power. By providing real-time data on temperature, location, and delivery status, cutting-edge tracking and monitoring technology improves productivity and delights customers. In addition, businesses can choose to highlight their logo and messaging using the brand customization option, which boosts brand recognition and customer engagement. In sum, GoBox stands out thanks to its creative features, which provide businesses with an edge and give customers peace of mind.

PRACTICALITY AND USEFULNESS

By ensuring the freshness and quality of perishable foods supplied in this bag, GoBox will improve the food delivery industry by providing novel solutions. GoBox provides a lot of space, and there are separate compartments for both warm and cold products, so riders don't have to worry about spills or being harmed by the foods. Each section is integrated with cutting-edge thermal insulation and temperature-regulating systems to always guarantee ideal conditions for both types of food. The hot section of the box employs cutting-edge heat-retention technology to ensure that the delivered meal is served at the optimal temperature. Insulation and reduced heat loss help keep food at an ideal serving temperature and preserve its flavor. If more space is required in the box, the divider between the compartments can be taken out, and the entire box can still be kept at the same temperature.

The design provides drivers and customers with a compact and well-organized means of conveying food alternatives. Our delivery box features temperature regulation to keep the food fresh throughout delivery. Foods, whether hot or cold, benefit from being kept within a specific temperature range to preserve their flavor, texture, and general freshness. Customers can rest assured that their orders will arrive in excellent condition, enhancing their whole dining experience and level of satisfaction.

GoBox is built with environmentally friendly and reusability in mind. Recycling is a great way to help the environment and cut costs. Promoting environmental responsibility in our food delivery operations strengthens our company's reputation and appeals to eco-conscious consumers. By providing an eco-friendly option for packaging, we can show that we care about the environment and boost our company's image. This functionality ties our company with sustainability goals and attracts clients that value eco-friendly practices.

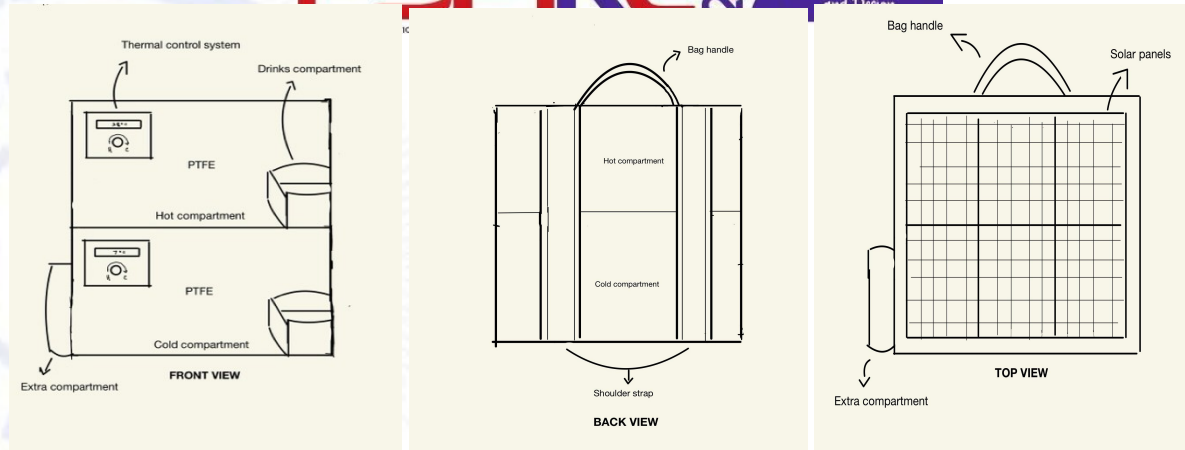


Figure 1. Figure Header

COMMERCIALIZATION POTENTIAL

GoBox's commercial viability can be increased by incorporating intelligent features as technology continues to advance. For example, incorporating temperature sensors or intelligent tracking systems can provide real-time surveillance of the condition of the food during delivery. This technology-driven strategy increases product value, inspires consumer confidence, and facilitates operational procedures for businesses.

GoBox also offers a practical solution for conveying temperature-sensitive products and has enormous commercial potential in the grocery and retail sectors. Grocery stores and retailers can offer their customers the convenience of purchasing refrigerated or frozen items without worrying about deterioration during transport. By maintaining the proper product temperature, businesses can increase consumer satisfaction and loyalty, thereby encouraging repeat purchases. In addition, the use of thermal bags demonstrates a commitment to food safety and quality, establishing retailers as reliable sources of safe and fresh products. As eco-awareness continues to influence consumer decisions, retailers can also investigate recyclable and sustainable thermal bag options to appeal to environmentally conscious customers and reinforce their brand's values.

Moreover, collaborations with food delivery platforms and local establishments are also essential to maximize the commercialization potential of thermal food delivery boxes in Malaysia. Confidence in a service provider is a key to loyalty (Dick and Basu, 1994), whereby customer satisfaction leads to customer confidence. Partnering with established delivery platforms allows GoBox to reach a larger customer base and gain market exposure. Collaboration with well-known restaurants can also create opportunities for joint marketing efforts and menu items designed particularly for thermal food delivery boxes, thereby increasing their appeal.

CONCLUSION

In conclusion, GoBox will benefit society by assisting people in making their life easier and convenient. The industry is also ripe for innovation and product development, creating opportunities for companies to introduce new features and materials. As a result, investing in GoBox is a strategic decision for businesses operating the delivery services. GoBox provides crucial insulation that ensures food safety, extends delivery range, enhances brand reputation, and contributes to cost savings through reduced food waste. It will ensure consumers enjoy freshly prepared meals delivered right to their doorstep. Moreover, the adaptability and versatility of thermal delivery bags make them suitable for broader applications beyond the food sector, opening up possibilities in pharmaceuticals and other industries. By embracing these boxes, businesses can uphold the quality of their delivered goods, meet customer expectations, and foster sustainability by reducing disposable packaging. Overall, investing in thermal delivery bags proves to be a valuable investment, facilitating efficient and reliable delivery operations while promoting customer satisfaction and long-term business success.

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