



INTERNATIONAL EXHIBITION & SYMPOSIUM ON PRODUCTIVITY, INNOVATION, KNOWLEDGE & EDUCATION

**“Optimizing Innovation in Knowledge, Education and Design”**

## ***EXTENDED ABSTRACT***



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*“Optimizing Innovation in Knowledge, Education and Design”*

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Azni Syafena Andin Salamat  
Nurfaznim Shuib

Cover design : Syahrini Shawalludin  
Layout : Syahrini Shawalludin

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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 3<sup>rd</sup> 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

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





## OSEM LUGGAGE

Crystal Marvella Jasren

Faculty of Hotel and Tourism Management, UiTM Kampus Kota Kinabalu  
marvellacrystal8@gmail.com

Erzivericella Buing

Faculty of Hotel and Tourism Management, UiTM Kampus Kota Kinabalu  
erzibuing@gmail.com

Nurazlina

Faculty of Hotel and Tourism Management, UiTM Kampus Kota Kinabalu  
nurazlyena@gmail.com

Cindy Johnny

Faculty of Hotel and Tourism Management, UiTM Kampus Kota Kinabalu  
cindy614@uitm.edu.my

### ABSTRACT

Traveling can be a very nerve-wracking experience for many travelers. Some contributing factors to traveling stress are losing their travel luggage, excess luggage weight, and carrying too many pieces of luggage. As reported in 2022, the cases of mishandled luggage at the airport increased by 100%. OSEM Luggage is a piece of smart luggage innovated to reduce some of these traveling stresses. OSEM Luggage is multi-function luggage supported with solar technology. This luggage has a unique application that can be downloaded into users' smartphones. The primary function of this OSEM Luggage App is its ability to track the luggage's whereabouts. Other functions, such as a place to buy traveling items, are also included to enhance users' travel experience. In addition, OSEM Luggage also comes with an attached digital weighing scale so that users are aware of their luggage weight and avoid paying excess baggage fees or removing some of the items at the airport, which is deemed inconvenient. Another unique feature of OSEM luggage is that it has attached vacuum devices and bags to deflate traveling items to save luggage space, allowing users to bring more traveling items in small to medium size luggage.

**Keywords:** Smart luggage, Solar, Vacuum, Tracker

### INTRODUCTION

Many may need to realize that luggage is one of the essential items when traveling. Luggage is vital for travelers since it helps keep their possessions safe and organized while traveling, whether on the road, on a flight, or even on a cruise. Hence, choosing and caring for the right luggage can significantly enhance their travel experience. However, traveling can be a nightmare for many airline passengers if they fail to anticipate overweight baggage, meaning extra costs incurred to pay the excess baggage fee, or they probably need to remove their items to reduce the weight, and the worst would be losing their luggage upon arriving at their destination. All these incidents could cause immense stress for travelers. In 2022, the number of mishandled luggage at the airport increased by over 100%, with 26 million bags being either late, lost, or damaged (Visontay, 2023). SITA, an airline data provider, reported that the rate increased to 7.6 bags per 1,000 passengers from 4.35 in 2021 and 5.6 in 2019 (Visontay, 2023). Most bags are lost, especially during transfer between planes at the connection



(Brown, 2023), and placing luggage on the scales and seeing it exceed the limit is the quickest way to have a panic attack at an airport (Milligan, 2019). With these in mind, multi-function luggage named OSEM luggage was created. OSEM luggage is a Smart Luggage concept designed with durable material and three built-in features to ease and reduce some of these traveling problems. These built-in features include a tracking device where luggage owners may track their luggage's whereabouts via an application, a weighing scale, and vacuum baggage to save space in the luggage.

## OBJECTIVE

1. To create luggage with solar-powered vacuum technology to maximize the use of space and help reduce the weight of luggage.
2. To create luggage whose whereabouts can be traced in great detail using an application with other functions.
3. To create luggage that has a solar-powered weighing device.

## NOVELTY

The mobile application business is a dynamic and rapidly growing industry driven by smartphones and tablets increasing popularity and ubiquity. The mobile travel apps reached 137 million downloads from the United States, both App Store and Google Play, in 2022, and it will increase by 18 percent from 116 million in 2021 (Sanchez, 2022). The OSEM Luggage app is an innovative app that tracks users' luggage via smartphone. Though airline companies can trace their lost luggage with their system, OSEM luggage allows passengers to view their luggage via the users' application with detailed information of its whereabouts, which may reduce the waiting time at the luggage carousel. The luggage information can be forwarded to airline companies for their immediate action. The application also supports scanning multiple luggage items, providing assistance and information regarding luggage-related issues, and offering tips on luggage care. In addition, the built-in vacuum bag in the luggage may save up to 50% of the luggage space. Hence, travelers no longer require bigger-size luggage to carry their items. Furthermore, OSEM luggage has a solar-powered weighing device that lets travelers know their luggage's weight. This allows them to bring their items within the free baggage allowance or purchase additional baggage allowance before departure without the hassle of paying extra charges at the check-in counter.

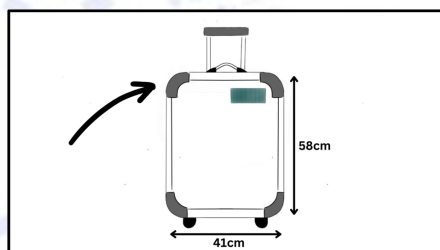
## SPECIAL CRITERIA

1. Useful features to ease traveler travel experience.
2. Provides instant information on the luggage's whereabouts on the user's smartphone.
3. Built-in vacuum bags reduce luggage space by 50%, which allows travelers to travel with compact luggage.
4. Built-in weight scale to reduce the anxiety of the possibility of excess baggage.
5. Energy saving features.

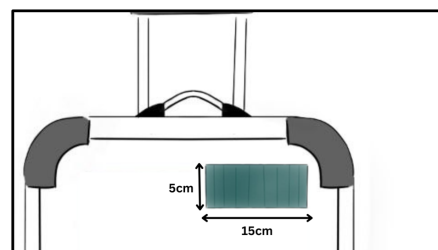
## USEFULNESS

The multi-function suitcase may make traveling easier for consumers. It may reduce traveling anxiety. This is because the user does not have to be concerned about excess baggage charges when they travel with OSEM Luggage. The weight of the luggage will be displayed on the luggage handle. Thus, it allows the user to decide whether to carry within the allowed weight, or they may buy an additional baggage allowance before departure. Furthermore, OSEM Luggage's Hoover technology helps deflate their traveling items and save luggage space. Lastly, owners can track their luggage's whereabouts via the OSEM application.

## OSEM LUGGAGE FEATURES

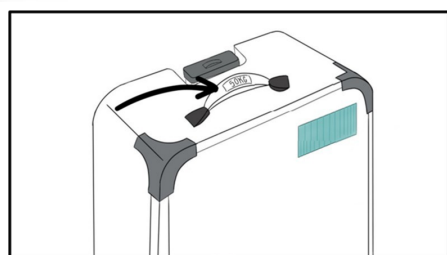


**Figure 1:** Size Of The Luggage

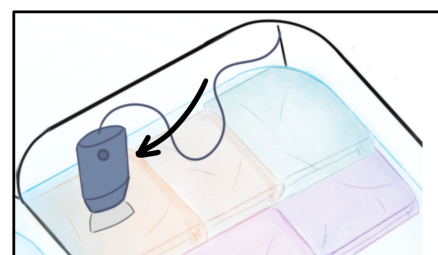


**Figure 2:** Solar Panel

Based on Figure 1, OSEM luggage has a height of 58cm or 22.84 inches and a width of 41 cm or 16.18 inches. It means that OSEM luggage would fall within the range of medium-sized luggage. The rubber frame on the side is embossed to protect the solar from breaking. Figure 2 is the solar panel that works to supply energy to support essential features of this luggage. The solar panel size is 5cm× 15cm. The maximum number of solar panels it can supply is 15000 watts.

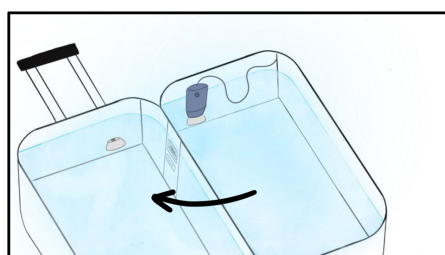


**Figure 3:** Weighing Device

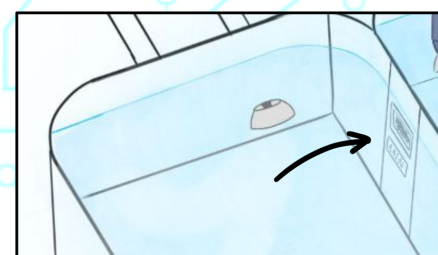


**Figure 4:** Vacuum Device

Figure 3 is the attached digital weighing scale. The weight of the luggage is shown when users carry the luggage. Figure 4 is the attached mini vacuum. When switched on, the vacuum sucks out the air from the attached bag that compresses the clothes in the luggage. The vacuum only needs 100 watts to suck out the air.



**Figure 5:** Vacuum Plastic

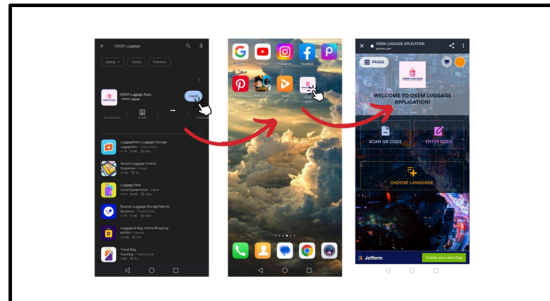


**Figure 6:** Code and Qr code

Based on Figure 5, the part is attached to the luggage case is a durable and waterproof plastic material. This is where users place their clothes. Users may switch the vacuum to compress the plastic bag if more space is needed.

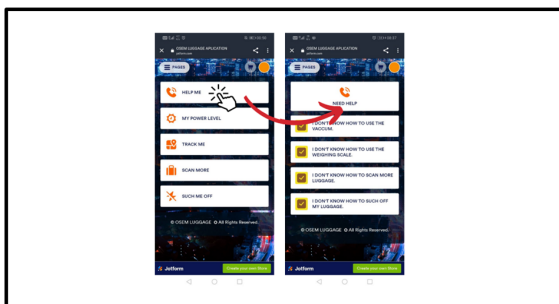
Figure 6 shows the barcode and QR code. It is made of waterproof material. The function of the barcode and QR code is luggage identification. Users may enter the barcode number or scan the QR code via the OSEM Luggage app.

## PROCESS OF USING OSEM LUGGAGE

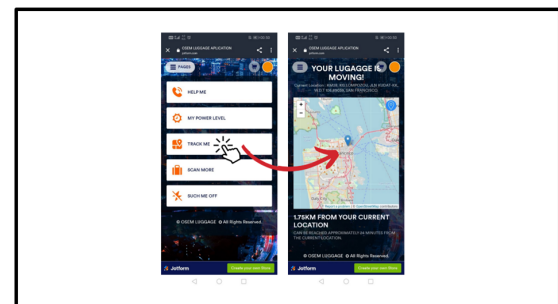


**Figure 7:** Connect Luggage With A Smartphone And Choose Language

Based on Figure 7, to activate the OSEM luggage, users need to scan the QR code or enter the code provided inside the luggage, and after that, the luggage information will appear on the screen. Users also can choose what language they prefer in this app.

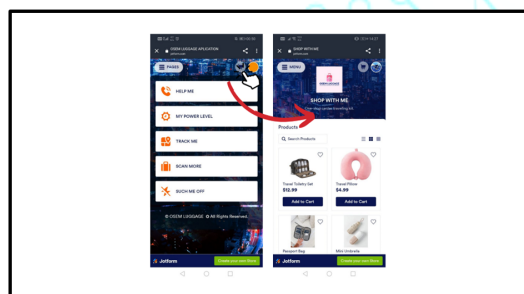


**Figure 8:** Instructions To Use Luggage



**Figure 9:** Track Luggage Location

Based on Figure 8, the user can click on the "HELP ME" button to get instructions on how to use luggage. After that, the user needs to click on the problem that the user is facing for the user to get instructions/help with luggage. For example, if the user clicks on the button "How to use a vacuum?" a step on how to use a vacuum will appear on the screen. Figure 9 shows to track the luggage, users must click "TRACK ME," and detailed information on the luggage location will be displayed.



**Figure 10:** Other Functions Of The OSEM Luggage Application

This application also provides another function, the “SHOP WITH ME” section. The “SHOP WITH ME” section is a one-stop center for travelers to purchase OSEM luggage and other traveling kits. Based on Figure 10, users can search for what traveling item they want to buy. This application also allows users to track how many kilowatts of solar power have been collected and used by clicking the “MY POWER” button. This information can help those who want to know how much solar power their device uses. Lastly, the user also can switch off the tracking function by clicking the “SWITCH ME OFF” button.

### OSEM LUGGAGE COMMERCIALIZATION

OSEM Luggage requires a targeted approach that emphasizes the benefits of technology and the convenience it provides travelers. Key strategies to market OSEM Luggage are: First, highlight OSEM Luggage technology as “smart” luggage, which stresses the technical elements which differentiate it from conventional luggage. Emphasizes the unique value of OSEM Luggage, including special functions. This tracking device displays real-time updates of the luggage location, solar technology, built-in digital scales, and a vacuum bag. In addition, the OSEM apps have a user-friendly interface that provides a delightful user experience.

Second, to reach potential buyers. OSEM Luggage and Apps will be launched and promoted through social media platforms. Utilizing promotional platforms on social media such as Instagram, Tiktok, and Facebook will create awareness and engage with the target audience. The Apps offer multi-language support and localize content to cater to a global audience. Furthermore, the company's website posts informative content about OSEM luggage and its app. This information will further enhance the product's credibility, thus encouraging customers to make purchases.

Lastly, OSEM Luggage can be purchased online via the company's website. To entice purchases of “smart” luggage special incentives, such as discounts, rebates, or free shipping, will be offered to consumers to entice purchases of " smart " luggage.

### REFERENCES

- Brown, F. (2023, May, 8). What should I do if my luggage is delayed, lost or damaged?*CNN Travel*.  
<https://www.theguardian.com/world/2023/may/18/mishandled-baggage-rate-al-most-doubled-globally-in-2022-as-airlines-scrambled-after-covid>
- Milligan, C. (2019, February 19). What to do when your luggage is definitely overweight.  
<https://www.wotif.com/vc/blog/tips/overweight-luggage-tips/>
- Sanchez, J. (2022, July). U.S. Travel app downloads reach a record high of 137 million in q2 2022. *Sensor Tower*.<https://sensortower.com/blog/state-of-travel-apps-us-report-2022>
- Visontay, E. (2023, May 18). Mishandled baggage rate almost doubled globally in 2022 as airlines scrambled after Covid. *The Guardian*.  
<https://www.theguardian.com/world/2023/may/18/mishandled-baggage-rate-al-most-doubled-globally-in-2022-as-airlines-scrambled-after-covid>



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