

The Relationship Between Innovation and Technology That Influence Airport Service Quality Based on Innovating PortalFit Malaysia for Future

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Abstract: PortalFit is an innovative airport passengers' check-in equipment that benefits public health and safety. The product can provide greater peace of mind and convenience among the airport passengers due to its capability of simplifying check-in procedures and reducing physical contact. These features are practically significant in times of the health crisis like COVID-19 pandemic as airport passengers are required to deal with additional check-in procedures incorporating the COVID-19 Standard Operating Procedures (SOPs). PortalFit is a single equipment that is able to perform five functions in a single check-in process; body temperature scan, passport verification for blacklist status, visa status, boarding pass print, and luggage drop.

Keywords: Travel, Safety, Airport, Airlines, Check-in Process, COVID-19

1. Introduction

Tourism process is a termed of travellers' journey towards a location or destination of the tourists. However, it cannot be disputed that tourism activities may be impacted by numerous elements that might assist or boost tourism itself. Currently, the globe is facing the Coronavirus, or known as COVID-19, which is an infectious disease produced by a novel virus called Coronavirus [1]. This deadly virus can be transmitted even among asymptomatic tourists. The efficacy of entrance screening at airports as a control strategy has its limits, with a recent exposure not advancing to signs of symptomatic travellers' without fever. This is due to the decreasing sensitivity of the non-contact infrared thermometer used for fever screening, masking symptoms via drugs, and considering the non-specificity of fever as a screening sign [1].

Malaysia had to overcome many new challenges due to the novel nature of the disease, along with many already known or documented challenges reported in airport screening in other epidemics. During this pandemic, Kuala Lumpur International Airport (KLIA) has an important role in rebuilding trust in aviation by means of safe travel and not posing a health risk to airport officials and prospective

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passengers who will fly. To gain trust and become the top airport, maintenance procedures. Besides, the management of KLIA must have the consistency of management in Malaysia. KLIA must have a high standard of airport security, cleanliness, and hygiene monitoring, including security and safety.

The need for documented evidence regarding entry screening as a control strategy for COVID-19 during different phases of the epidemic and the evaluation of this newly established system of airport screening can inform decisions regarding future use of screening strategies of pandemic control. The objective of this study was to assess entry screening for COVID-19 at KLIA in terms of confirmed cases, identifying symptomatic, infection control practices and actions taken.

PortalFit, as one of the points of key achievements, is complemented by high technology, including the Rapiscan 620DV X-ray screening system, designed for aviation and high-security applications. PortalFit has a 5 in 1 function that eases the check-in process. It scans body temperature, scans passports to check individual travel overseas status (blacklisted or not), visa status, prints boarding passes, and drops off luggage. PortalFit also uses biometrics system. A single token reflects the mechanization of the passenger trip, including access to security, border control, and boarding without the need to show travel documentation at check-in. This is the air travel protocol technology technique that was utilised at departure airports during check-in, security or immigration, and boarding procedures. This can save time because all check-in procedures and COVID-19 SOPs are performed at the same time. PortalFit enables contactless security, lounge access, and contactless boarding. Passengers are not required to rush or change sections or levels during the check-in process. As per to COVID-19 SOPs, this is essential for safety and to reduce the possibility of contact while preserving social distance. PortalFit aims to decrease the spread of the COVID-19 infection by reducing direct contact with airport personnel.

2. Method and Development Process

2.1 Study Approach

In this product innovation project, the Design Thinking Method was used. **Figure 1** below shows the Design Thinking Method of PortalFit Development. This method is used because it involves the processes of empathizing (gaining an empathic understanding of the problem that is being solved), defining (defining the problem as a problem statement in a human-centered manner), ideating (ready to start generating ideas by identifying new solutions to the problem statement created), prototyping (producing a number of products or specific features found within the product so that investigation to the problem can be done and solve) [2].



Figure 1: The Design Thinking Method of PortalFit Development

2.1.1 Empathise Stage

The PortalFit is the latest prototype product developed after previously innovating check-in equipment. Observations, comments, suggestions, and recommendations from the previous market survey project were collected from the respondents for consideration in new product development. Based on the results, most respondents suggest that the next check-in equipment needs to include the following criteria:

- i. Body temperature scanner

- ii. The traveler's immigration status
- iii. Visa status
- iv. Camera
- v. Payment Online

2.1.2 Define, Ideate, Prototype, and Test Stage

Processes to ensure the smoothness of the PortalFit development are as follows:

- i. Defining and ideation sessions with group members about product innovation.
- ii. A discussion session with the collaborator factory as the person in charge of the PortalFit production, Malaysia Airport as the buyer of the product, PortalFit. The discussion includes the design of the equipment, an internal software, the budget, and the timeline for making the equipment.
- iii. Material and product selection for the PortalFit include the equipment to be used, the label to be put on the equipment, the software to do a check-in and the size of the PortalFit.
- iv. Check-in equipment production: After all the innovators and collaborators agreed, the check-in equipment production began at the appointed factory.
- v. Test the innovative product on potential buyers and users. Market surveys for the PortalFit have been conducted to gain the perception, acceptance, and purchase intention of buyers towards the product.



Figure 2: The view of PortalFit check-in equipment

Figure 2 shows the actual PortalFit that can easily fit 5 in 1 function that eases the check-in process. It scans body temperature, passports to check individual travel overseas status (blacklisted or not), visa status, prints boarding passes, and drops off luggage. This figure shows every part of the function where the temperature scanner scans body temperature at the top that can detect normal and unnormal body temperature of humans. Sensor weight and security for luggage handling purposes that can detect the unprohibited item and exceed weight luggage. The section PortalFit Self Check-in has camera to recognize ID Face align with passport or travel document and there is a section that requires travellers to scan QR code of flight ticket, passport, identity card for Malaysian, visa payment, boarding tag, and pass before departure.

3. Result and Discussion

The result was taken from a previous study regarding customer satisfaction at Kuala Lumpur International Airport 2 (KLIA2). Since the airport was built after Kuala Lumpur International Airport, this study consists of an ASQ survey; Airport Service Quality. 1626 passengers are the sample size [3]. The result of data analysis by the previous authors was interpreted in a table. This result and the discussion aim to examine ASQ and the relationship with PortalFit.

3.1 Result

Table 1: The result of Convergent Validity [3]

Convergent validity for the measurement model.

Construct	Item	Loading	CR	AVE
Access ^a	Access1	–	0.906	0.973
	Access2	0.904		
	Access3	0.906		
	Access4	–		
Airport Environment	AEnv1	0.883	0.885	0.794
	Aenv2	0.893		
Airport Facilities ^b	Afacilities1	–	0.876	0.703
	Afacilities2	–		
	Afacilities3	–		
	Afacilities4	–		
	Afacilities5	–		
	Afacilities6	–		
	Afacilities7	–		
	Afacilities8	–		
	Afacilities9	0.834		
	Afacilities10	0.863		
	Afacilities11	0.808		
Arrival Services	Arrival1	0.938	0.970	0.916
	Arrival2	0.959		
	Arrival3	0.961		
Check In	CheckIn1	0.939	0.967	0.907
	CheckIn2	0.966		
	CheckIn3	0.939		
Finding your way ^c	Findingway1	0.835	0.847	0.649
	Findingway2	0.802		
	Findingway3	0.773		
	Findingway4	–		
Overall Satisfaction	Overall Satisfaction	1.000	1.000	1.000
Passport	Passport1	0.952	0.959	0.921
	Passport2	0.964		
Security	Security1	0.822	0.901	0.694
	Security2	0.860		
	Security3	0.837		
	Security4	0.798		

Table 1 shows the results are based on previous study regarding customer satisfaction at Kuala Lumpur International Airport 2 (KLIA2). It might be different from another airport and terminal. The findings for the Internal Consistency among the data for the Measurement Model [3] are Access – The model kept two out of four items; CR > 0.9, which is undesirable. The airport environment – The model kept both elements, and the CR values are all satisfactory (CR > 0.7 - 0.9). Airport facilities — Only three over eleven components were preserved for the model, with Factor Loading greater than 0.5 providing the best AVE value for the construct. Arrival services — all three elements were maintained for the model, resulting in a CR greater than 0.9, which is undesirable. Check-In – All three elements were maintained for the model, resulting in a CR greater than 0.9, which is undesirable. Finding your path – The model retains three out of four elements with a respectable CR score (CR 0.7–0.9). Security - All items were maintained, with a CR greater than 0.9, which is undesirable. Passport – All items were preserved; the CR was greater than 0.9, which is undesirable.

Table 2: The result of Discriminant Validity [3]

Discriminant validity for the measurement model.

	1	2	3	4	5	6	7	8
1. Access								
2. Airport Environment	0.055							
3. Airport Facilities	0.084	0.625						
4. Arrival Services	0.104	0.054	0.132					
5. Check In	0.264	0.138	0.174	0.102				
6. Finding your way	0.086	0.421	0.500	0.117	0.198			
7. Overall Satisfaction	0.128	0.617	0.483	0.107	0.150	0.412		
8. Passport	0.181	0.210	0.23	0.108	0.537	0.277	0.194	
9. Security	0.057	0.439	0.49	0.131	0.255	0.619	0.403	0.416

Table 2 shows the result of Discriminant Validity that determines the relationship between ASQ. Some variables might have a good relationship and a poor relationship. An outcome lower than 0.70 shows that there may be discriminant validity between these two scales, even if no standard value has been established.

Table 3 shows the ASQ survey which relates to the PortalFit check-in process. Based on the **Table 3**, it was found that PortalFit has fulfilled the ASQ dimension of arrival services, check-in, finding your way, passport and security. This is where PortalFit simplifies the check-in process with the way of passport or ID inspection, where PortalFit functions to scan it, and the speed of baggage delivery service, where customers do not need to move to a different section to wait for their bag because it is in the same place and close to them. PortalFit also eases customs inspection and saves their time by eliminating the need to go through a person to another person where the sensor and light lamp of PortalFit will show if anything occurs. The check-in process with PortalFit does ease the airport and airline staff, and there is no need to wait for a long time. Not only that, but PortalFit facilitates the check-in process by requiring less movement and eliminating the need to seek additional directions to complete the check-in process. Flight information appears after scanning of the passport, and walking distance in the terminal is nearby; there is no need to move from another level or another section since the airport is too big. Even though PortalFit does its function, it still needs staff to monitor it, at least in certain cases, in case it has any problems involving certain people, such as blacklisting, exceeding baggage weight limits, or not prohibited items. With PortalFit, it is safe and secure, especially during COVID-19 when we need to take care of social distancing and SOPs.

With the convenience of innovation and technology in PortalFit, it is clear that this can ease our customers' lives, especially senior citizens, from having to rush and worry more about time, finding the level and section, immigration, luggage checking, and more, especially during COVID-19. The efficiency of PortalFit in terms of 5 in 1 usage, where everyone can travel and follow the process without any problems, ASQ can be a comparison before and after PortalFit existed.

Table 3: Measurement Model of ASQ at KLIA2 [3]
 Summary of the findings for the Measurement Model (klia2 ASQ Data).

Nos.	Airport Service Quality Dimension	Elements/Items
1.	Access	a. Availability of parking facilities b. Value for money of parking facilities
2.	Airport Environment	a. Terminal cleanliness b. Ambience
3.	Airport Facilities	a. Availability of washrooms/toilets b. Cleanliness of washrooms/toilets c. Comfort of waiting/gate areas
4.	Arrival Services	a. Passport/ID inspection b. Speed of baggage delivery service c. Customs inspection
5.	Check-In	a. Efficiency of check-in staff b. Courtesy and helpfulness of check-in staff c. Waiting time in check-in queue/line
6.	Finding your Way	a. Ease of finding way through airport b. Flight information screens c. Walking distance inside the terminal
7.	Passport	a. Waiting time at passport/ID control inspection b. Courtesy and helpfulness of inspection staff
8.	Security	a. Courtesy and helpfulness of security staff b. Thoroughness of security staff c. Waiting time at security inspection d. Feeling of being safe and secure

4. Conclusion

In conclusion, the PortalFit hopes for better feedback on its advantages since it is a potential innovation that could ease the check-in process at the airport. It may be concluded that the PortalFit can save time, particularly during times when individuals are fearful of travel and want to avoid infection. As buildings and malls have grown increasingly concerned with their own safety and health, the product has economic potential as an impulse buy. Additionally, for the future product, there are several plans and strategies to improve the PortalFit by concentrating on the quality of high-tech and materials used, making it more adaptable and robust to withstand any situation, as well as having multiple versions or themes for each country to promote the tourist destination. Additionally, the innovators of PortalFit intend to collaborate with the Ministry of Transportation (MOT) and the Ministry of Science, Technology and Innovation (MOSTI) to fulfil additional social commitments while benefiting society via PortalFit.

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