How to Create and Manage an Innovative Business Startup Using a Design Thinking Approach?

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Abstract. The challenging experience of finding halal food providers, places of worship, and matters related to the halal world prompted the developers to create a complete, accurate, and easily accessible information system for the Muslim community in Taiwan. This study investigates what lessons and how Taiwan Halal Start up works and its impact on users since it was developed to date. This research is descriptive qualitative research with phenomenological methods and website analysis. The data collection method uses triangulation by interviewing developers, observing websites and applications, and seeing users' feedback in reviews on the play store. The results show that business innovation can be started from the emergence of empathy for a problem experienced by the developer and the people around him. Through research and development, they can finally develop coursework into a company that impacts the Muslim community in Taiwan. The research results teach us that to become an innovator; we need to be sensitive to a problem and try to find a solution to implement. In addition, to develop into a calculated startup, various strategic efforts are needed to make the impact even more significant.

Keywords: Management of Innovation · Information Management · Start Up · Early Age Company · Design Thinking

1 Introduction

Some of the challenges faced by the Muslim community in a non-Muslim majority country are difficulties in finding restaurants that provide halal food and drinks, good places of worship, and other facilities related to daily needs. According to Muslims' religious views, the Islamic religion's adherents are prohibited from eating pork and its derivatives [1–3]. In addition, it is forbidden to drink intoxicating beverages such as alcohol [4, 5]. In addition to these two prohibitions, Muslims must also perform daily worship five times. So wherever and wherever they have to find these facilities. The above difficulties are also experienced and felt by the Muslim community in Taiwan [6, 7]. As a non-Muslim majority country, Taiwan has its challenges [7]. Indeed, there are already several cities that have mosque facilities, such as in Taipei. However, several

other cities still do not have them. As a result, most of them will perform their worship in the workplace or at their residence. Some campuses, on average, have prayer room facilities, including public facilities such as Taipei Main Station. However, the size is minimal, and the distance between the prayer room and the ablution place is also quite far.

This problem prompted three NCTU *(now NYCU)* students to develop an information system that can provide accurate, complete, and easy-to-obtain information. Initially, this information system was a cloud computing course assignment he took in 2016. However, after trying to open it to the public, there were many positive responses from within and outside Taiwan. Finally, the system continued to be developed. In 2018, they began to think about developing halal Taiwan as a service company to consumers. The services offered are halal tours and travels. Technically, Taiwan Halal cooperates with local tour agencies, including hotel managers, restaurant providers, and managers of places of worship. So that Muslim tourists get services that are guaranteed halal with a schedule tailored to the needs of Muslims in traveling, such as places and times for worship and Muslim-friendly hotel services.

This research contributes to describing the process of exploring ideas through empirical problem analysis and then how to find the right solution and manage the solution so that it has a long-term positive impact on the target community. The purpose of this study is to explore information about the background, goals, management, and impact of Halal Taiwan on the Muslim community in Taiwan and how the design thinking model is applied in its development.

2   Methods

To obtain the required data from all research questions, we conducted interviews, observations, and website explorations and analyzed user reviews on the Playstore. The interview protocol that we use consists of the following questions (Table 1). To obtain all the information and data needed, we conducted interviews with the Taiwan Halal management.

The interview was conducted on Saturday, June 5, 2021, from 15.00–16.00 using Google Meet. Respondent is Developer of Taiwan Halal Mr. Himatur Rijal, M.Sc. In addition, researchers also conducted intensive observations on the Taiwan Halal website using observation guidelines (Table 2). In addition, documentation analysis of user review comments uses the guidelines in Table 3.

The data analysis techniques used are thematic analysis [8, 9], discourse analysis [10] and document analysis [11]. All of these techniques were used to generate comprehensive data. We also used techniques of extension, excavation, and narration/retrieval [12–14].

In general, there are six main topics discussed including, background and motivation, goal, team management, the impact based on the user experiences, data and information contained in the Apps, as well as user response toward the Taiwan Halal services. All these topics will be discussed in a narrative way with information from other relevant sources.

Table 1. Interview protocol with the owner.

No	Questions
1	What is the development background of Taiwan Halal?
2	How is the development process?
3	Who is the target segment of its users?
4	How is the marketing technique done?
5	How to build cooperation with partners?
6	Support for users from digital natives and digital immigrants?
7	How do they manage Taiwan Halal?
8	How does it impact the target user?

Table 2. Website observation guidelines.

No	Questions	Good	Average	Low
1	How is the appearance of the website?			
2	How is the user interface of the website?			
3	Completeness of information available on the website?			
4	Menus and features available on the website?			
5	Ease of finding the information you need?			
6	Developer response to user questions?			
7	How to design the appearance of the website?			
8	How is the user interface of the website?			

Table 3. Review on user comments.

No	Questions
1	Average rating score of app users
2	Apps user comments
3	Owner's response to user reviews

3   Result and Discussion

This results section describes the developer's experience in exploring and finding ideas, finding solutions, testing solutions, expanding collaboration, collaborating. In addition, it also explains the information we get from the website, and user responses to the

start-up innovation products that are developed. Some of the information we obtained through our interviews was described in several topics, including background, objectives, management, information that appears on the Taiwan Halal website and application. We describe in detail in the following presentation.

3.1 Background and Motivation

Based on information obtained from the owner of Taiwan Halal, the background for the development of Taiwan Halal is due to some reason. The limited information center needed by the Muslim community related to places of worship and halal food. Encouragement from the Muslim community from students and migrant workers to create a complete, accurate, and easily accessible information system. That is as stated by the owner.

> *"In the beginning, halal Taiwan was only an assignment from a cloud computing course which happened to be taken by 3 Muslim students from Indonesia. After that, he met one of the management students who happened to have the same project. So it was agreed to create a website containing information systems for halal centers and facilities in Taiwan. This course started in 2016. At first, I did not even think about starting a startup. However, after the product was developed, we thought it would be beneficial to help the Muslim community in Taiwan.". "Finally, we see each other often; finally, we start working on it seriously. Finally, we started taking part in some competitions, at first we sometimes failed and we finally won. From the competition results, we save the money and develop it in the form of startups. Alhamdulillah, the source of information that we have developed, is useful for Muslims in Taiwan. Finally, we developed the application. We know that Taiwan is a non-Muslim-majority country. We understand that Muslims who come to Taiwan find it difficult to find out where the Friday prayer place is, restaurant Halal, prayer rooms, and hotels that are friendly against Muslims."*

3.2 Taiwan Halal Development Goal

Based on the information provided by the resource persons, the main objectives of developing Halal Taiwan can be summarized into the following four points. (1) Providing information on places of worship (mosques or prayer rooms) throughout Taiwan, (2) Providing information on halal restaurants located throughout Taiwan, (3) Providing information on Muslim-friendly hotels in Taiwan, (4) Providing Muslim-friendly travel agency services in Taiwan.

3.3 Taiwan Halal Team Management

Based on the information presented by the resource persons, the Taiwan halal management process includes the following things. (1) Recruit a like-minded team. According to the informant, having team members with the same vision is the principal capital for building a business. A team of like-minded people will facilitate the collaboration

process. Then differences in the vision of members can adversely affect business performance. Differences in vision will hinder the movement of steps in achieving the target. Initially, Taiwan halal only had three developers. Nevertheless, we added one member from the management field to improve the quality of our business management. In addition, we also recruited four part-time employees during the early stages of development. (2) Develop a website and App-based information system. Once we have a solution to the problem we are facing is to develop a website-based information system. However, because we felt that our project was excellent and impacted, we finally developed another channel in an application form. Developing websites and applications is critical and decisive because websites and information are innovations that we offer to users.

Third is collect data on mosques, restaurants, hotels, and Muslim-friendly tour services. After creating websites and apps, the next step is to fill incomplete, accurate, and easily accessible data for users. So to complete it, the team conducted research, field surveys and used previously available data. (4) Input and update data regularly. Another process carried out regularly every week is adding new data or updating old data that no longer exists. That is done in conjunction with the weekly meeting of team members. (5) Do Intensify promotion. It is no less essential to do promotion intensively to potential consumers. As far as information is obtained from resource persons, socializing services are carried out through the Muslim community in Taiwan. In addition, it is the automatic word of mouth for users who find the website http://taiwanhalal.com.

3.4 The Impact Based on Users Experiences

Based on the information provided by the informants, in general, the impact felt by halal Taiwan users includes the following. (1) Make it easy for Muslims to find the nearest place of worship and the wrong time (Fig. 1). The emergence of Halal Taiwan is beneficial for Muslims in Taiwan in terms of finding the nearest place of worship from their place of residence. The author himself can find out several locations of places of worship available around campus. First, we can pray in the multi-praying room dormitory Hung. The two prayer rooms are located on the 3rd floor of the NTHU library.

The second, make it easier for Muslims to find the nearest halal restaurant. In addition to places of worship, users can also find out the location of the nearest halal restaurant from the user's location. The restaurant's name appears along with the distance from the user's position on the website and application. That way, the user can determine how long it will take and use the transportation mode to get to it. (3) Make it easier for Muslims to find Muslim-friendly hotels. The Taiwan Halal application can also provide information and the location of the nearest hotel that users can use. So that when in an emergency, the user can easily find a place to stay where he can stay. (4) Make it easier for Muslims to get Muslim-friendly travel services. For users traveling in Taiwan, the Taiwan halal application and website will notify the places that can be visited in Taiwan. In addition, users can find out the distance and means of transportation that can be used.

3.5 The Data Contained in the Taiwan Halal Application

The author found some information based on the exploration results on the Taiwan Halal application available on the Play Store and Apple Store. The following is some of
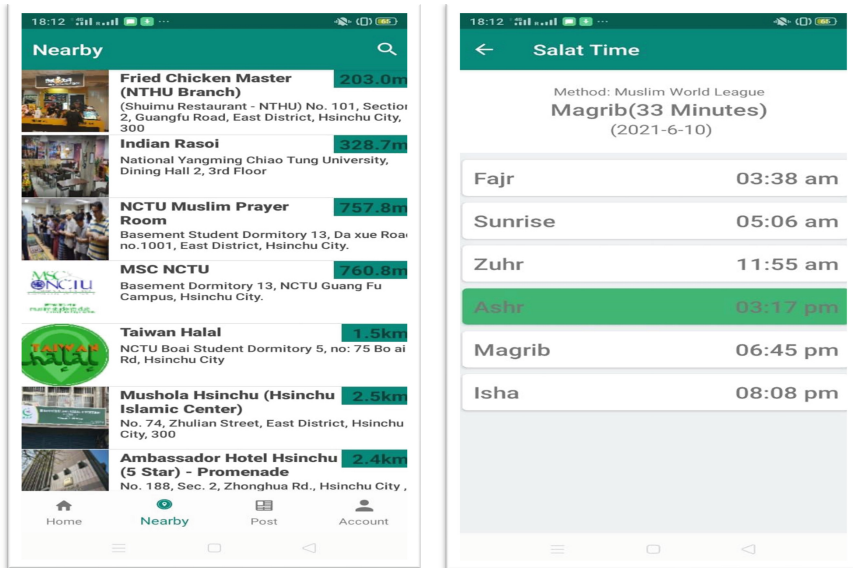
Fig. 1. Information on places of worship and halal restaurant closest to the author's location.
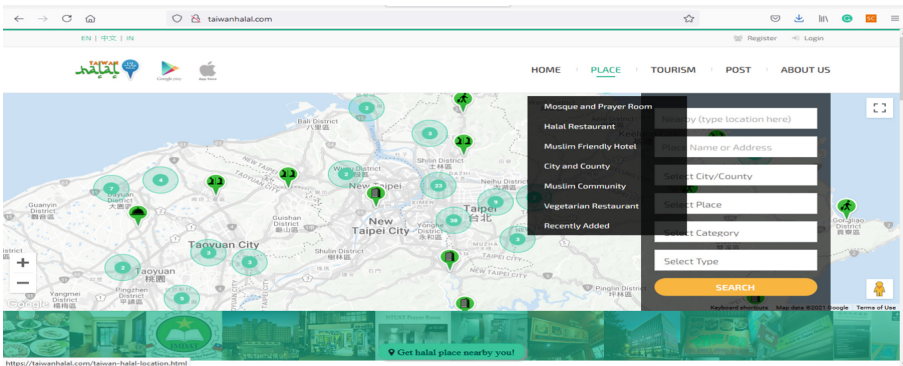

Fig. 2. Taiwan Halal website display, information appears in the "Place" category.

the information contained in the application at the time the researcher observed it (late 2021). (1) 44 mosques and musallahs, (2) 105 restaurants with halal food, (3) 90 muslim friendly hotels, (4) 32 Muslim communities in Taiwan, (5) 26 vacation locations, (6) 23 cities/counties, (7) Current daily praying time, (8) Useful articles for Muslims. The display and information on the Taiwan Halal website page can be seen in Figs. 2, 3, 4, 5, 6 and 7 [15].

3.6   User Response Toward Taiwan Halal

Based on the observations made by the author on the play store page as a place for the availability of Halal Taiwan applications that users can download. The author found
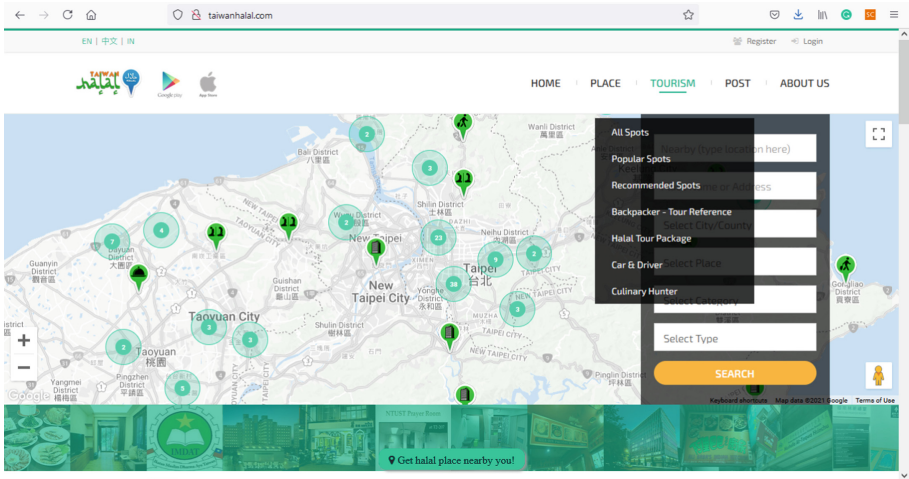
Fig. 3. Display of the Taiwan Halal website about information on the "Tourism" category.
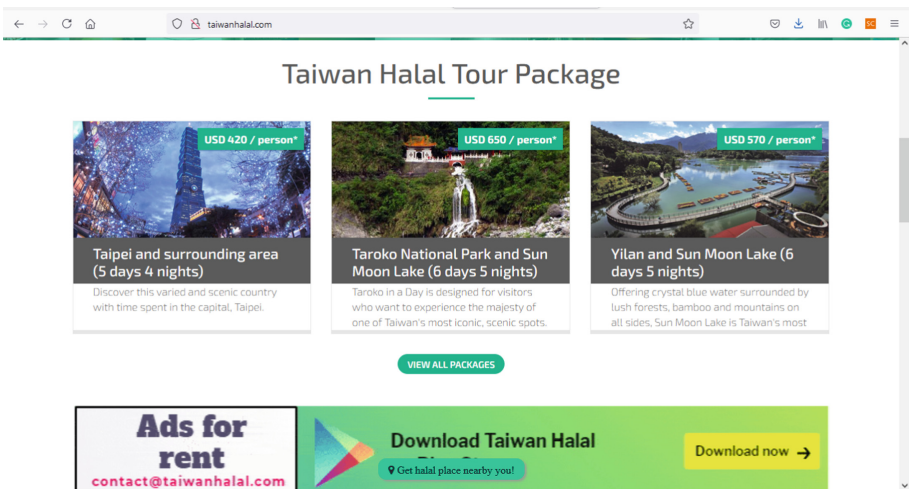

Fig. 4. Display Information of Tour Package Information in Taiwan.

information that, in general, the rate of this application is quite good. Until June 11, 2021, users give a 4.6-star rating. The last version was released on June 20, 2020. It means that in the past year, the developer has not released the latest version. So far, there have been 13 users who gave their ratings. The rate information from users can be seen in Table 4.

Based on the interviews conducted with developers, observations made on websites and applications, the Youtube channel, and the official Taiwan halal Facebook page, the authors obtained several important lessons summarized in the following points [16–18]. First lesson learn is when you find a problem, grow empathy. The author learned
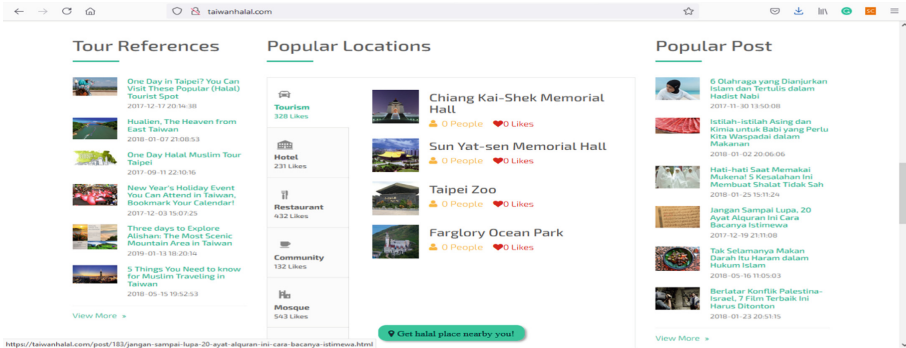
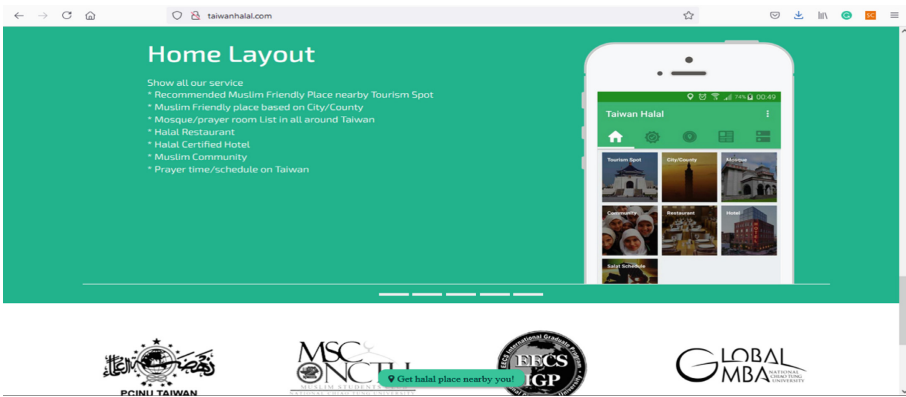**Fig. 5.** Display information about tour references, famous locations, and popular postings.

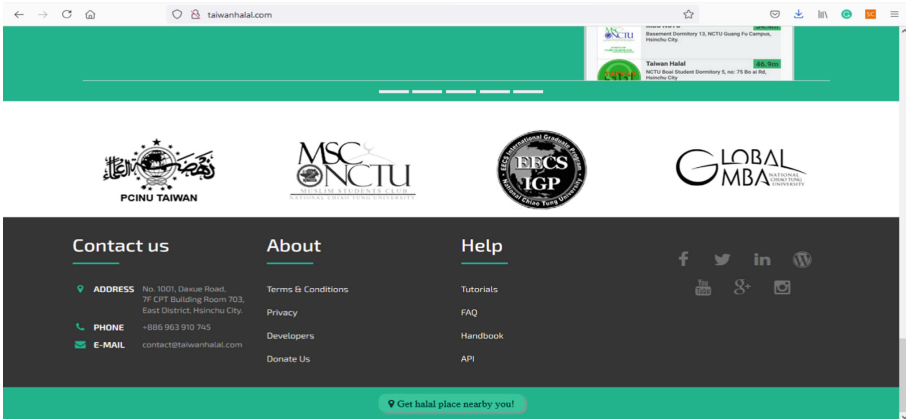**Fig. 6.** Display information of Taiwan Halal features.

Fig. 7. Some information about donors from Taiwan Halal.

Table 4. User reviews in Playstore.

User	Year	Start Rate	Review Comment
1.	2016	☆☆☆☆☆	Good idea....like it
2.	2016	☆☆☆☆☆	Josssss special
3.	2016	☆☆☆☆☆	great
4.	2016	☆☆☆☆☆	The app looks simple, yet has a great impact
5.	2016	☆☆☆☆☆	Great job! Thanks. Anyway, there's a minor typo ("mosque" should be "mosque"), hope it can be revised then. Overall, it's so useful. Thanks
6.	2016	☆☆☆☆☆	Taiwan halal will help Muslim people that stay or just visit Taiwan. This application also help Taiwan Government to promote Taiwan as friedly for Muslim tourist
7.	2016	☆☆☆☆	Thanks, very helpful..
8.	2017	☆☆☆☆☆	I like it
9.	2018	☆☆☆☆☆	Thanks very helpful
10.	2018	☆☆☆☆☆	Good apps
11.	2018	☆☆☆☆☆	nice
12.	2018	☆☆☆	The apps keep on stopping. I can not open it at all.
13.	2021	☆☆☆☆☆	Very useful for the Moslems community in Taiwan

an essential thing from the Taiwan halal team when he found a problem: cultivating empathy. Four will trigger the mind to find a solution. The second lesson learned is as educated people, you must be more sensitive to see the problems around you. We, as educated people, must increase our sensitivity to find solutions to the problems that are around us quickly.

The third lesson learned is no matter how small the solution, it must have a significant impact. We also learn about not overthinking the size of the solution we offer from the Taiwan halal team. The important thing is that we can believe that the solution has benefits. Then later, we will see a significant impact. Then the fourth lesson learned is keep innovating so your business does not die. Another vital lesson from Halal Taiwan is that we continue to innovate so that our businesses and businesses do not die. Innovation is the main principle in doing business. Looking for gaps to improve will positively impact increasing the existence of an idea and business.

From the Halal Taiwan developments, we can learn that when we find problems around us, there are several things we can do, among others. First thing is empathy. Empathy means being sensitive to a seen, felt, or experienced [19]. Someone who has high empathy will be easily touched and moved to think and find solutions that can be done [20]. In Halal Taiwan, the developers feel the problem they face, namely the difficulty of obtaining information about places of worship and places to eat, hotels and entertainment areas that are Muslim-friendly. The next one is how to find a solution. The solution is an alternative effort to overcome a problem. Solutions may be of many kinds. Then an innovator will calculate which solution is considered the most effective and efficient. In the context of halal Taiwan, the solution is to develop a complete, accurate,
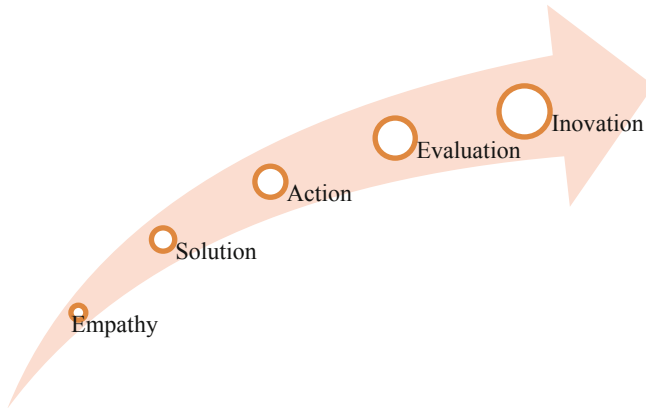
Fig. 8. Summary of lesson learned from Taiwan Halal.

and easily accessible information system related to the location of places of worship, restaurants, hotels, and Muslim-friendly tourist attractions.

The third thing is action. Action is the experimental stage of a predetermined solution. The action aims to solve a problem. In the context of Halal Taiwan, actions are taken in determining the development team, developing information systems, promoting and socializing, collecting data, and updating data on information systems and applications as well as partnering with related parties such as hotel managers, restaurant managers, data owners, mosque managers, travel agencies and other parties who can support the running of the ideas that have been developed. Then evaluation. Evaluation is an essential process in the context of developing a startup business. The evaluation aims to measure the extent to which the effectiveness and efficiency of the innovations developed. The evaluation also aims to obtain input from users and all stakeholders involved. All records from the evaluation stage are used to develop innovations. Also, innovation. Innovation is a crucial keyword in a startup business [21, 22]. The management of Taiwan halal makes various innovative efforts to ensure the services provided can satisfy all user needs. One of the evaluation results that was followed up in the form of innovation in halal Taiwan was developing travel packages for backpackers. However, unfortunately, since this package was released, users have not optimized it optimally due to the pandemic.

In simple terms, it can be seen in Fig. 8 for visualization of the design thinking model [23]. Design thinking is one of the methods and approaches in innovation management [24]. This model is widely adopted by several leading universities globally concerned with discovering innovations among their student researchers [23, 25]. Call it, for example, Stanford University, as well as several other universities.

Based on the results of data analysis and information obtained through interviews conducted with developers, observations made on websites and applications, as well as Youtube channels and official Taiwan halal Facebook pages, the author has several recommendations for the development of halal Taiwan, which are summarized into several points in Fig. 9.

The detailed explanation is as follows. (1) Add hotel booking facilities, tour agencies, and restaurants via apps and websites. According to the author, Taiwan Halal developers
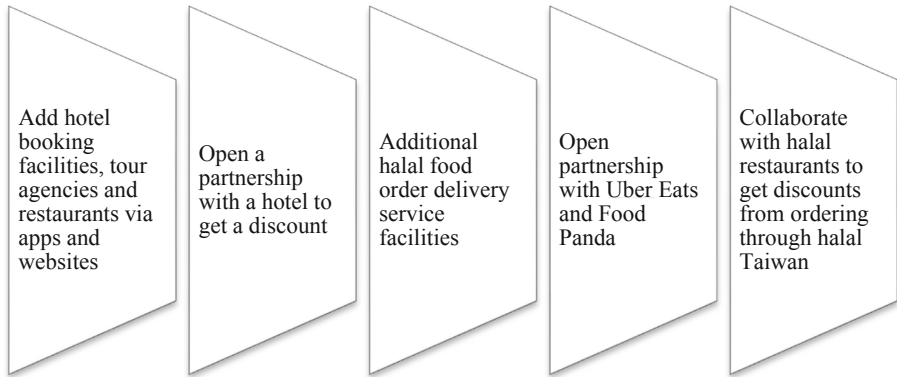
Fig. 9. Summary recommendation to the management of Taiwan Halal.

must add facilities to book directly for hotel and restaurant services and tour agencies through the application. The problem is that as far as the author's addressing and exploration are concerned, the application only provides information on the names of the locations, not providing services for booking. (2) Open a partnership with a hotel to get a discount. To realize recommendation number 1, the developer must cooperate with hotel, restaurant, and tour agency business owners available in the Taiwan Halal application. (3) Additional halal food order delivery service facilities. It will be more massive if halal Taiwan provides delivery services for products and halal food ordered by users. In practice, you can have your driver team or collaborate with other existing delivery service providers. So to make it happen, managers must cooperate with potential partners. (4) Open partnership with Uber Eats and Food Panda. Two food delivery services that exist today in Taiwan are Ubereats and Foodpanda. Collaborating with these two companies can be an alternative to develop the Taiwan Halal business. That will increase reach and add a massive number of consumers. (5) Collaborate with halal restaurants to get discounts from ordering through halal Taiwan. Cooperation with halal restaurant owners by giving discounts to users can be one of the innovations to increase the number of passive consumers. The linkage of users to return to using Taiwan Halal services is very important to increase the valuation and interest of investors. The increase in loyal users can indicate the investment value that Halal Taiwan managers can obtain. (6) Add more service variants and add the team members. To increase the number of new users and the engagement of old users is to add various services. To increase the number of service variations, the way to do this can be by adding team members or increasing collaboration with potential partners.

4   Conclusion

Based on the results and discussion, it can be concluded that the innovation of a business start-up can be started by looking for and finding problems faced by potential users of services and products developed. The level of urgency of solving a problem is the main key in developing a business innovation. Design thinking models can provide alternative

solutions in the process of extracting ideas and analyzing solutions. Startup businesses have a significant difference because they have unique characteristics. It takes effort and hard work in the early stages of development in addition to a solid team. Investor funds are needed to develop the business, as is cooperation with related partners. Research is limited to one type of start-up so that it cannot necessarily be generalized to other different contexts and types of startups. More massive research on many types of startups can be done to take a deeper look at how design thinking is applied in the process of developing business start-up ideas.

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