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Revolutionizing Dining Experience: Building Restaurant Reservation Application

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Abstract: The development of digital technology has transformed business models and created new value for customers and restaurant owners. One of the challenges faced in the restaurant industry is related to queues and reservations. This research aims to investigate business design strategies that can be used by startups in the restaurant industry. In this study, two main approaches are used: lean startup and service design. Qualitative methods in the form of interviews and testing were conducted on restaurant managers and visitors in the city of Kediri with respondents from the millennial and Generation Z demographics. During the data collection phase, a comparison of existing reservation applications was carried out. It was found that reservation services are limited to large cities, presenting an opportunity and business potential for new startups. Interviews were also conducted to validate the queue problem experienced by both restaurant visitors and managers. The results showed that 91% of respondents stated that the queue problem is valid and important to resolve. Based on this data, the author attempts to outline a new startup business idea and reservation application as a solution using a lean canvas. The lean startup approach used in this research focuses on accelerating the creation of a minimum viable product (MVP) in the form of the reservation application Eat-Eat. The service design approach, through a service blueprint, was used to observe the business processes and interactions of the related stakeholders. The combination of these two methods complements each other and makes the offered MVP more aligned with customer needs and preferences. A mockup prototype of the Eat-Eat reservation application was created using Figma software and tested on 11 respondents to assess its usability. Using the system usability scale (SUS) method, an average final score of 88 was obtained, compared to the standard average SUS score of 68 set by Jeff Sauro. This means that the Eat-Eat reservation application prototype is acceptable and feasible to use. During interviews and testing, the author received a lot of positive feedback for the development and improvement of the application. In the final stage, the prototype, which has been refined through an iterative process and deemed feasible, will become the final application ready for launch. It is hoped that the results of this research will provide valuable insights for startup founders and co-founders to develop more effective business design strategies, creating more innovative, relevant, and sustainable products and services.

Keyword: Startup, Restaurant Reservation and Ordering Applications, Lean Canvas, Lean Startup, Service Design.

INTRODUCTION

Currently, the restaurant and food industry sector is growing in line with the recovery of the economy post the COVID-19 pandemic. The COVID-19 pandemic has accelerated service innovation in the restaurant sector. It explores the use of digital technologies [1]. On the other hand, the continuous advancement of information technology opens doors to the emergence of new business opportunities in Indonesia. Certainly, in all fields, people will prefer the use of technology that facilitates their lives. The challenge is recovering old customers and capturing a new "target public" through product innovation and new forms of service [2].

Kediri, one of the cities in East Java, has a rapidly growing culinary business potential, with an investment value reaching Rp 50.8 billion during the period of 2020-2023 [3]. Based on data from the Badan Pusat Statistik (BPS) of Kediri city, there were 2,568 food industries and 791 beverage industries recorded in 2022.

According to BPS, the population of Kediri city in September 2020 was 286,796 people. Kediri city has a large demographic potential as 71.58 percent of its population is still in the productive age range (15-64 years old). The largest population group in Kediri city is generation Z (1997-2012), comprising 79,164 people or 27.79 percent of the total population, while Millennials (1981-1996) amount to 67,028 people or 23.53 percent [4]. A detailed overview of the population of Kediri city according to generation will be presented in Figure 1 below. Considering the age demographics in Kediri city, there is a wide opportunity for restaurant businesses to undergo digitalization, especially when considering the customer segments of generation Z and Millennials who are already accustomed to using various mobile technologies [5].

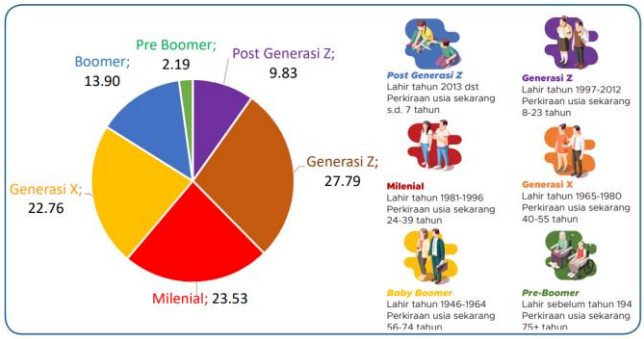

Figure 1. Population of Kediri city by generation

In today's rapidly evolving technological landscape, where services and information are expected to be readily available, marketing strategies for online restaurant sales and promotions play a crucial role in introducing the concept of digital restaurant business [6]. Digitalization in the restaurant industry refers to the use of digital technology to transform business models, create new revenue opportunities and provide value to customers. However, restaurants now face increasingly fierce competition from digitized food/restaurant industries due to various challenges including the COVID-19 pandemic, technological advancements, shifting consumer preferences and increasing demand for convenience. Processes once carried out with pen and paper have been replaced by digital tools, thereby enhancing the quality and experience of dining in restaurants. Understanding the variety of activities that

entrepreneurs can pursue helps entrepreneurs and educators increase the chances of success for new businesses [7].

In light of this phenomenon, the author is interested in establishing a startup and developing a restaurant reservation application with a unique business idea. The concept of creating a restaurant business with a marketplace concept for each area is the basic concept that will be attempted to be developed in this research. In this thesis, the author will utilize the lean startup concept popularized by Eric Ries (2011) and service design, first proposed by Lynn Shostack (1982).

The lean startup approach is chosen because it emphasizes rapid hypothesis testing, continuous learning from the market, and flexibility to change the direction of the business over time [8]. On the other hand, service design is known for its focus on users. This approach helps in designing superior customer experiences by thoroughly understanding user needs and preferences [9]. In the startup world, creating products and services that meet user expectations is key to winning the competition and building strong customer relationships.

The acceleration of creating a restaurant reservation application product and the standard service blueprint tested in one of the restaurants in Kediri city are expected to provide a solution to the challenges faced by various restaurants regarding long queues and ease of obtaining restaurant information and attractive promotions. With the restaurant reservation application, restaurant owners can effectively manage their businesses and promote them quickly, easily, and at low cost. From the user's perspective, the application is expected to provide convenience in making reservations and offer comfort when needing preferences for a place and menu anytime and anywhere. The customer realizes that the importance of having the reservation system when dining in and availability of contactless ordering or payment during dining out. These advanced methods will make them more convenient and easier to make payment. This also means the customers will not let the waiter wait for what the customers are ordering, and the customers can take their own time to decide what they need to dine in that restaurant [10]

Therefore, this research aims to explore the potential integration between lean startup and service design in the context of startup business strategy planning. By understanding how these two approaches can complement and support each other, this research is expected to provide practical guidance for startup founders, co-founders, and other stakeholders to address the challenges of restaurant business in the digital era.

METHOD

The research conducted aims to develop a new business idea, namely a restaurant reservation and ordering application in Kediri city. It employs the following methodology:

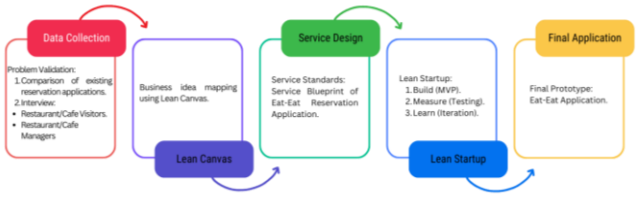

Figure 2. Research methodology

Rahim et al. in their research show that one indicator of customer satisfaction is related to wait time or queues. Wait time is defined as the period during which individuals or goods wait in line for service. This wait time significantly influences customer satisfaction. In today's fast-paced world, customers prefer fast and hassle-free service. Their goal is to obtain the products or services they desire quickly. Conversely, long wait times can potentially lead to feelings of boredom and ultimately customer dissatisfaction [10].

Another study conducted by Shepherd and Gruber is related to the lean startup framework closing the academic-practitioner divide. The 5 building blocks of the lean startup method to organize prior academic research and to highlight the need for further scholarly investigation. There are business model, validated learning/customer development, minimum viable product, perseverance vs. pivoting and market-opportunity navigation. Proposing new research using lean startup and other approaches (e.g., design thinking; Brown, 2008; the lean canvas; Maurya, 2011; etc) [11].

RESULTS AND DISCUSSION

Data Collection

In the initial stage, data collection is carried out to validate issues related to queues and the absence of a restaurant reservation application in Kediri city. There are two processes to be undertaken: firstly, comparing existing reservation applications regarding their service coverage in Kediri City, and secondly, conducting interviews with restaurant visitors and managers.

The interviews aim to obtain empathy maps from restaurant visitors and owners. These empathy maps will be used to understand and validate queue and reservation issues experienced in more detail and focus, thereby ensuring that the proposed business idea solutions are more accurate.

Lean Canvas

The author utilizes the lean canvas to elaborate and detail complex business ideas into simple and uncomplicated ones. The business idea concerning a startup for restaurant reservation and ordering in Kediri City will be elaborated in more detail within a canvas consisting of 9 elements (customer segment, problem, unique value proposition, solution, channels, revenue streams, cost structure, key metrics, unfair advantage).

Service Design

Service design has been highlighted as a promising approach for driving innovation [12]. Effective service design requires comprehensive and rich understanding of people and their contexts [13]. In the next stage, the author will create a service blueprint, which provides an overview of business activities and interaction patterns involving stakeholders. This service blueprint will help the founder understand the business processes and interactions in detail. Consequently, the business interactions at AWR Cafe in Kediri will become the standard service to be attempted to be implemented in the reservation application. The stakeholders involved include restaurant owners/managers on the front end, the application startup as the supporting system, and restaurant visitors as users.

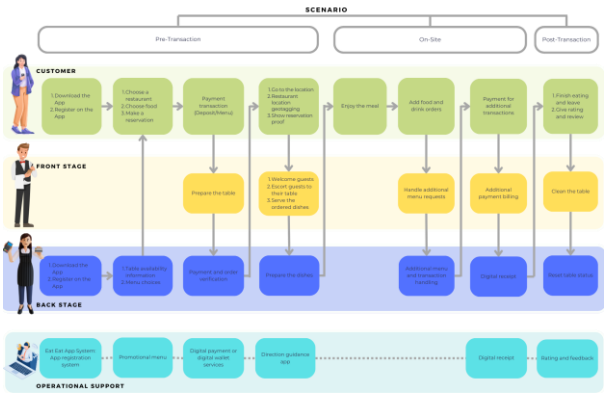

Figure 3. Restaurant reservation service blue print

lean startup

Lean startup approach is used by startups to quickly adapt to the fast changing market conditions and customer needs [14]. It's also enables companies to react more flexible to external influences, such as market competition, technologies and politics and to integrate customer needs are more effectively into the product design process[15]. The author employs the concept of Lean Startup with three main phases: build, measure, and learn in this research. The build phase emphasizes accelerating the creation of a prototype as a Minimum Viable Product (MVP). The prototype is developed based on the workflow outlined in the service blueprint. In this thesis, the prototype is in the form of application mockup using Figma software. The step-by-step process can be observed through Figma application simulation. Two types of applications will be created as prototypes.

The first application is for restaurant owners/managers, which in this research will be tested with the managers of AWR Coffee Cafe in Kediri. Some planned features include available tables, menu options, location, promotions, payment services and more. It is hoped that with these features, restaurant managers can easily input promotions and provide information regarding table availability in the restaurant.

The second application is for restaurant visitors. Planned features include restaurant selection, food filtering, information on restaurant table availability, and more. These features will assist restaurant visitors in selecting a restaurant, making reservations, and ordering menu items directly.

The next phase is Measure, where the created applications will undergo testing using a qualitative approach. Two categories of respondents are selected:

1. Owners or managers of AWR Coffee Cafe in Kediri.
2. Visitors to cafes or restaurants in Kediri.

The qualitative approach will be conducted through in-depth interviews to gather feedback from the two user groups. From the perspective of restaurant owners, we will assess how effectively the application can be used when receiving reservations and orders from the public. From the perspective of users, we will examine how effectively they can make reservations and orders at a restaurant. From the testing results, the author will explore whether the people in Kediri are interested in trying out the new service concept and understand their views on restaurant digitalization.

The interview process conducted in the previous stage is expected to explore potential development opportunities and services that need further enhancement. The iteration process becomes part of refining the application and is considered after receiving various feedback from restaurant visitors and owners.

Through the iteration process, which is part of the Learn phase in the Lean Startup method, it is expected to provide valuable insights for the development of the restaurant reservation and ordering application. Ultimately, the final mock-up for the application and related startup services for restaurant reservation and ordering in Kediri will be ready for launch.

Result

The author conducted a comparison of available applications on the Play Store and found four applications: Eatigo, Chope, Qraved and Pergi Kuliner. Essentially, application design should not only be visually appealing but also functional and practical. Frank Guo simplified the concept of user experience into four fundamental elements: value, adoptability, desirability, and usability [16]. In terms of service coverage, none of these applications reach the Kediri area. This highlights the significant business potential for reservation applications, especially for Kediri and other cities not covered by these applications.

From the interview results, the author found that the queuing problem experienced by visitors and managers of AWR Coffee Kediri is valid. Ten out of eleven respondents (91%) confirmed that the queuing problem is an important issue that needs to be addressed. Interesting pain points from the visitors' perspective include experiencing long queues and being unaware of or not having used reservation applications before. Meanwhile, pain points from the managers' side include having to manage waiting lists and dedicated staff to handle incoming visitors, as well as frequent order errors due to manual reservation processes. The image below illustrates an example of the queues at AWR Cafe in Kediri.

Figure 4. Queues at AWR coffee cafe Kediri

LEAN Canvas – business idea

The lean canvas can be implemented for entrepreneurial project startup businesses [17]. A business model must be something more than just a good logical way of doing business. A sustainable model must meet particular customer needs [18]. In this research, the author attempts to describe the idea of a new startup business into a lean canvas. The new startup, which will create a restaurant reservation application labeled Eat-Eat, will be detailed into 9 key elements as follows:

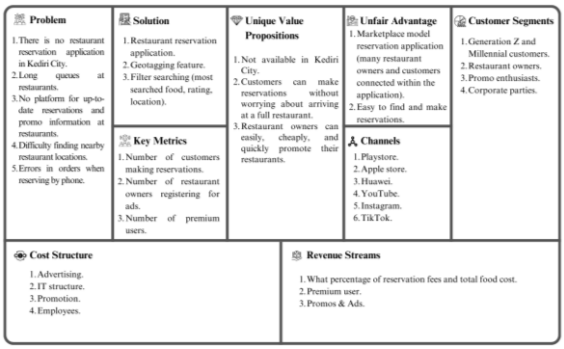

Figure 5. Lean canvas new business idea

Lean startup – prototype, Testing & iteration

The developed restaurant reservation application prototype is created with two workflow flows as follows:

1. Workflow for restaurant visitors

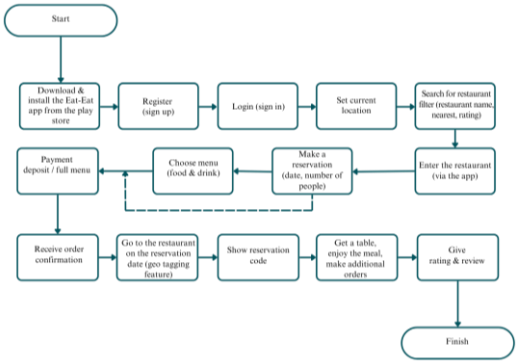

Figure 6. Workflow for restaurant visitors

2. Workflow for restaurant managers

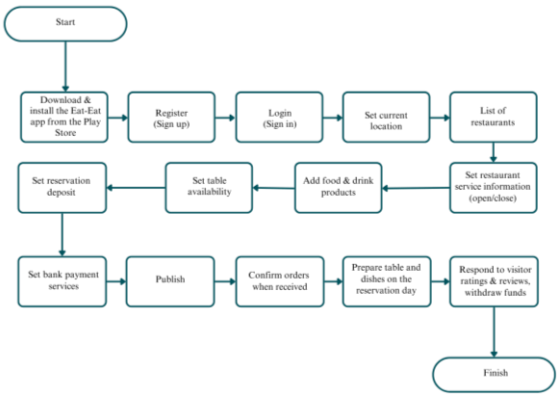

Figure 7. Workflow for restaurant manager

After completing the development of the Eat-Eat application prototype, the author conducted testing with the same respondents to gather information on whether the Eat-Eat reservation application prototype could be a solution to the problems faced. The usability testing of the prototype was conducted using the System Usability Scale (SUS) method. There are 10 statements given to the respondent. These ten questions are based on Nielsen's 10 principles of interaction design. The respondent will be asked to rate each statement on a scale from 1 to 5. A score of 1 represents strong disagreement, and a score of 5 represents strong agreement [19]. The results of the tests conducted are summarized in the table below:

	Score Calculation Result										Tot.	Cal.
	Q 1	Q 2	Q 3	Q 4	Q 5	Q 6	Q 7	Q 8	Q 9	Q 10		(Sum x 2.5)
R1	4	4	4	4	4	4	4	4	4	4	40	100
R2	4	4	3	3	3	3	2	3	3	2	30	75
R3	4	4	4	4	4	4	4	3	3	3	37	93
R4	4	4	4	4	4	4	4	4	2	2	36	90
R5	3	2	4	2	2	3	3	3	3	2	27	68
R6	4	3	4	4	4	4	3	4	4	3	37	93
R7	4	4	4	4	4	4	4	4	4	2	38	95
R8	4	4	4	4	4	4	4	4	3	2	37	93
R9	4	3	3	3	4	3	3	3	3	3	32	80
R10	4	4	4	4	3	4	2	3	4	2	34	85
R11	4	4	4	4	4	4	4	4	4	3	39	98
Average Score (Final Score)												88

Figure 8. Average score of usability testing

After performing the calculations, an average score of 88 was obtained. Based on the normal SUS threshold value of 68 [19], the interpretation [20] of the Eat-Eat prototype's score falls into grade B and is considered acceptable.

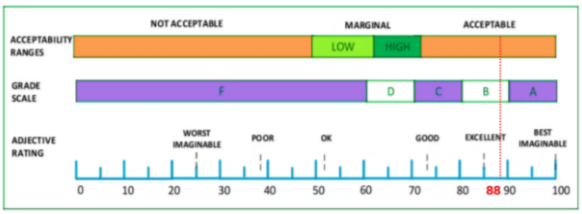

Figure 9. SUS interpretation score

Testing the prototype and in-depth interview yielded remarkable feedback. Based on the feedback received, the author conducted an iterative process to refine the features of the Eat-Eat application. Below is a summary of the refined and added features presented in tabular form:

Table 1 of iteration results for restaurant visitors

No	Improvement Feedback	Iteration Result
1	Filter (restaurant rating, menu availability, restaurant name), Language choice	Addition of filter and language selection
2	Filter: nearby	Addition of nearby filter
3	Rating and review upon completion	Addition of rating and review
4	Order cancellation feature	Addition of cancellation feature (available when the restaurant manager has not yet accepted the order)
5	Reschedule	Rescheduling can be done if payment has not been made.
6	Refund	Addition of refund feature
7	Deposit fee	Determination of deposit amount according to each manager's policy
8	Menu and table addition feature	Addition of available menu and table features
9	Table selection	Consideration for premium users
10	Notifikasi pop up	Pop-up notification addition of pop-up reminder feature
11	Order confirmation	Addition of successful order information feature

Table 2 of iteration results for restaurant manager

No	Improvement Feedback	Iteration Result
1	Indoor, outdoor, AC, smoking and non-smoking options	Addition of room selection feature
2	Available tables	Addition of available table information

Final application

The final stage involves presenting the final prototype of the Eat-Eat application, which has undergone refinement based on the iteration results. Below is the interface of the final prototype of the Eat-Eat application.

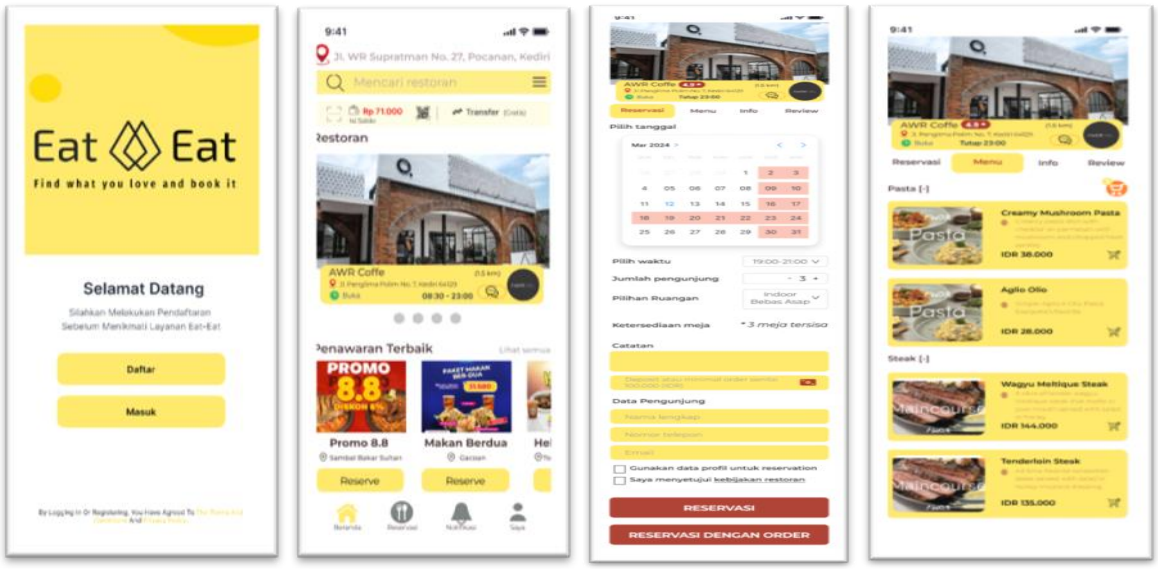

Figure 10. Final Application Eat-Eat

Discussion

This research was conducted in Kediri city and involved a relatively limited sample of respondents, comprising ten restaurant visitors and one restaurant manager. To obtain more diverse results, further research could be conducted with a larger number of respondents and in larger cities than Kediri.

CONCLUSION

This article shows that the validation results for the queueing problem at the restaurant achieved a score of 91%. Ten out of eleven respondents stated that the queueing issue is an important problem to solve.

Starting from the queueing problem, the business idea of a restaurant reservation and ordering application can become a solution and business opportunity for founders who are building new startups. To easily gain understanding, the reservation business idea can be systematically outlined into the 9 elements of the lean canvas.

The idea of designing the Eat-Eat reservation and order application is very effectively implemented using lean startup and service design. The lean startup approach speeds up the Eat-Eat prototype development process through three phases (build, test, measure) and achieves outstanding iteration results for its improvement. Service design, through service blueprints, makes the offered service product increasingly aligned with customer needs, significantly impacting the prototype testing results

The feasibility testing of the Eat-Eat restaurant reservation application prototype using the SUS (System Usability Scale) method by 11 respondents resulted in a score of 88. The interpretation shows that this score is in grade B with a percentile range of 88 (above the average of 68), meaning the prototype is considered acceptable (feasible).

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