Evaluation and efficient measurement I-Canang digital startup in Bali with questionnaire user experience and lean startup machine validation board

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Abstract. Digital startups are more cutting edge for the young entrepreneurs in this year and always growing in numbers (1). This cause is affected change in business patterns in Indonesia, including Bali. This research aims about how to create a digital business with Lean Startup Machines and Questionnaire User Experience method (UEQ). This business originated from the fact that careers women in Bali had difficulty to buy traditional ceremonial equipment. We developed the early stage of software startup model. First of all, we must concept our ideas and manage it before provides clear criteria and then product ideas. Lean startup model is designed to minimize the risk of returns from products made for market needs. One of tools in this method for customer validation is the validation board. From the research obtained from the core assumptions to survey directly prospective customers for the minimum success criteria that are required. This research had 70% of success required which up to 3 times for the pivot. While the results of the Questionnaire User Experience method (UEQ) the opinion of the community about the system that had made get the overall average impression of Attractiveness (1.71), Persiciuty (1.35), Efficiensy (2.66), Dependability (0.92), Stimulation (1.28) dan Novelty (0.69).

1. Introduction

“We thought we should get a gold star just for listening to our customers. Except they did not like our product, understand what they want” [1,2].

This is our favourite quote from Eric Reis Lean Startup Machine and our inspiration for this research. Most importantly, Reis was not afraid to share his successes and mistakes. I-Canang is also a lesson learned of our first experience for startup digital. This research experience for creating, launching and marketing new customer. Lean Startup Machine learned about how to identify your market validation from the customer hypothesis, customer problem until a solution for local business in Bali particularly Hindu’s ceremony equipment. The philosophy name of “I” in I-Canang means an emphasis on the mention of a name in the Balinese Society. “I” can also mean the first name for a man and “Canang” is a symbol of worship of gods in Bali. So one of the causes we developed this startup is for increasing the startup ecosystem in Bali fast and strong like a man.

2. Method

Gary defines digitalization is the use of digital technologies to change a business model and provide new revenue and value-producing opportunities; this method is one of the processes to moving to a digital business. This method has a goal to realize digitalization like a clear relationship between offered by
businesses and the actual needs of customers [3]. Stave Blank describes an enormous corporation has always been a hit-or-miss proposition. According to the decades-old formula, his method is 1. write a business plan, 2. pitch it to investors, 3. assemble a team, 4. introduce a product, and 5. start selling hard. And somewhere in this sequence of events, they probably suffer a fatal setback. Onken used Lean Startup with a business model canvas [4].

After knowing the new method, we called that the Early Stage Software Startup Development Model (ESSSDM) by applying Lean Startup principles [1,5]. Our research combining qualitative customer feedback with Questionnaire User Experience (UEQ) [6].

2.1. Validation board

The concept of lean startup is a methodology that is assembled and functioned as a way to minimize the risk of failure of innovative products made for market needs. In lean startup, there are tools used for customer validation called validation boards [7]. The stages contained in the board validation include customer hypothesis the contents are the initial assumptions of the problems raised, such as customers who experience problems, then hypothesis problems include the author’s assumptions about the problems that occur, brainstorming supporting assumptions that strengthen from the initial assumption, after that determine the most influential assumptions contained in the list of assumptions and if not proven then this will dissolve the hypothesis we have made, interview the source of the problem, then determine the minimum success criteria, if the initial assumption is not proven to do pivot, get out of the building / GOOB or survey directly to prospective users continuously so that it meets the minimum success criteria [8,9].

![Validation board](image_url)

**Figure 1.** Validation board.

We had interviewed 100 people to validate the market for users of this application.

2.2. User Experience Questionnaire (UEQ)

User Experience Questionnaire (UEQ) has advantages there are free, decision-maker, fast, flexible, and easy to use questionnaire tools to validate User Experience in using the product. UEQ enables rapid assessment of interactive product user experiences. Questionnaire format supports users to express the impressions, feelings, and attitudes that arise when they use of product. The questionnaire scale includes
impression of the user experience. UEQ has 6 scales and 26 answer items, namely: 1. Attractiveness, 2. Efficiency, 3. Perspicuity, 4. Dependability, 5. Stimulations, 6. Novelty [10].

The formula used in this method is to find the mean, variance and standard deviation as follows:

- Mean \( \bar{x} = \frac{\sum x}{n} \): mean or average.
- Variance formula \( S^2 = \sigma^2 \), the variance value obtained from the results of the standard deviation squared.
- Standard deviation formula \( \sigma_{n-1} = \sqrt{\frac{\sum (x - \bar{x})^2}{n-1}} \).

If the value above 0 or > 0 is a positive evaluation and if the value < 0 is a negative evaluation. The scale range is between -3 and +3, this value means the final value of the specified scale.

### 3. Result and discussion

#### 3.1. System implementation

3.1.1. Analysis with the validation board. Based on the results of the interview, the process will be presented to find valid problems using the validation board method began with determine 7 assumptions, namely 1. career woman, 2. difficult to find canang, 3. unable to make canang, 4. running out of canang, 5. lazy to buy canang, 6. forgetting for Balinese Ceremony, and 7. uneven prices which are considered to be a problem in this study. 7 point assumptions included in the validation board chart who has a 70% reference, so if 70 out of 100 people answer correctly from the assumptions given then the data obtained is valid as well as the opposite, then enter the first point that is the career woman into the customer hypothesis, it turns out invalid, then entered again to the second assumption that is difficult to find canang, that result not valid again, after that the third issue thrown in that is cannot make a canang, invalid again until point 6 turned out to be invalid as well, finally entering uneven prices turned out to be valid, the solutions offered were price equalization, then pivoted into product quality with a seller recruitment solution. The conclusion obtained from the results of this interview is that there is a solution in the form of an application that can make canang buyers easily get canang at prices that are relatively stable every day and the quality is maintained.

![Figure 2. Product review.](image)
3.1.2. **Blackbox testing.** After testing the system with the black box method on all stages found in the ordering information system with the CodeIgniter framework, the results show that all stages can run correctly.

3.2. **Results of the User Experience Questionnaire (UEQ) method**

The data collection process is to find out how the public opinion about the product ordering system information using framework CodeIgniter uses the user experience questionnaires or UEQ method. Questionnaires were distributed to 11 respondents randomly representing the most occupational categories of 100 career women who had answered the first step questionnaire Market validation using the Lean Start-Up Model, they are 1) Housewife who has children/grandchildren more than two, 2) Banker, 3) Public Civil Servant, 4) Teacher, 5) Lecturer/ Researcher, 6) Entrepreneur, 7) Private sector worker, 8) Designer, 9) Doctor, 10) Nurse, 11) Stewardess. In which 26 question items had 7 rating scales.

After obtaining data from the questionnaire which contains a rating scale from 1 to 7. After that the data is entered into the table and then converted to the weight that has been determined sequentially, the following are the scale pairs and the weights are (1, -3), (2, -2), (3, -1), (4.0), (5.1), (6.2), (7.3). Of the 11 respondents who represented the careers of women in Bali answered, the mean, variance, and deviation calculations were made, here is one of the data that was done.

**Table 1. Data sample.**

| No | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | Σ   |
|----|----|----|----|----|----|----|----|----|----|----|----|-----|
| X  | 3  | -3 | 2  | 4  | 5  | 6  | 7  | 8  | 9  | 2  | -3  | -4  |
| X² | 9  | 9  | 4  | 16 | 25 | 36 | 49 | 64 | 81 | 4  | 9   | 66  |

a) Calculate the mean of one of the answer data

\[ \bar{X} = \frac{\sum X}{n} = \frac{-4}{11} = 0.4 \] for the results of the mean.

b) Calculating variance

\[ S = \sigma^2 = 2.5^2 = 6.5 \] result from variance.

c) Calculating standard deviation
\[
\sigma_{n-1} = \sqrt{\frac{\sum (X - \bar{X})^2}{n-1}} = \sqrt{\frac{5 \cdot (-4)^2}{1}} = \sqrt{\frac{-144}{1}} = \sqrt{6.5} = 2.5\text{ the result of the standard deviation.}
\]

The results are grouped with several colours according to the scale, namely attractiveness, perspiration, efficiency, dependability, stimulation, and novelty.

The average value of impression is a normal evaluation value, the value > 0 is a positive evaluation while <0 is a negative evaluation. It can be seen from all the values that lead towards 1 so that from the above graph the results of the booking information system using the CodeIgniter framework tend to have positive impressions from the community.

| Table 2. Result. |
|-------------------|
| **UEQ Scales (Mean and Variance)** |
| Attractiveness | 0,758 | 1,71 |
| Perspicuity | 1,114 | 1,35 |
| Efficiency | 0,568 | 2,66 |
| Dependability | 0,773 | 0,92 |
| Stimulation | 1,068 | 1,28 |
| Novelty | 0,545 | 0,69 |

4. Conclusion
This research had 70 from 100 of minimum success required, we had up to 3 times for the pivot. While the results of the Questionaire User Experience method (UEQ) overall average impression of Attractiveness (1.71), Perspicuity (1.35), Efficiency (2.66), Dependability (0.92), Stimulation (1.28) dan Novelty (0.69).

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