# User Interface Design Of Website Roll As Online Marketplace For Photographer Rental Using User Centered Design Method

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#### Abstract

Rapid development of internet produces benefits for society. In its development, many use as social media, information seeking, and other needs that can resolved quickly and precisely. Therefore, information technology cannot be left behind to make significant contribution to today's society activities. In hobby-based businesses like photography, the use of Information Technology benefits in supporting the smooth running of businesses, although currently it has several obstacles. One of the obstacles in this business is experiencing difficulties because it dont have a very influential platform/client to market its name. From society view, people who want to use photography services currently struggle contacting and so on. To overcome these problems, it's necessary to build a website to market and order photography services called Roll. In developing the website, user interface is designed using User-Centered Design (UCD) method, then carried out testing by comparing existing website scores and redesigning the website using the Usability Testing and System Usability Scale (SUS) methods as testing standards. Based on the tests carried out, the results obtained from the existing website design are 54 for design A and 70.3 for design B. Then the redesign process is carried out on design B and retesting results are 81.5.

Keyword: Photography, User Interface, User-Centered Design, System Usability Scale

## **Abstrak**

Perkembangan internet yang sangat pesat telah memberikan manfaat bagi masyarakat. Dalam perkembangannya, banyak yang memanfaatkannya sebagai media sosial, pencarian informasi, dan kebutuhan lainnya yang dapat diselesaikan dengan cepat dan tepat. Oleh karena itu, teknologi informasi tidak dapat ditinggalkan untuk memberikan kontribusi signifikan terhadap aktivitas masyarakat saat ini.

Dalam bisnis vang berbasis hobi seperti fotografi, pemanfaatan Teknologi Informasi sangat membantu menunjang kelancaran bisnis walaupun saat ini memiliki beberapa kendala. Salah satu kendala dalam bisnis ini adalah mengalami kesulitan karena tidak memiliki platform/klien yang sangat berpengaruh untuk memasarkan namanya. Dari segi masyarakat, mereka yang ingin menggunakan jasa fotografi saat ini mengalami kesulitan untuk menghubungi mereka dan lain sebagainya. Untuk mengatasi permasalahan tersebut, perlu dibangun sebuah website untuk memasarkan dan memesan jasa fotografi yang bernama Roll. Dalam pengembangan website ini dilakukan perancangan user interface menggunakan metode User-Centered Design (UCD), lalu dilakukan pengujian dengan membandingkan skor website yang ada dan mendesain ulang website menggunakan metode Usability Testing dan System Usability Scale (SUS) sebagai standar pengujian. Berdasarkan pengujian yang dilakukan, hasil yang didapat dari desain website yang ada adalah 54 untuk desain A dan 70,3 untuk desain B. kemudian dilakukan proses redesign pada desain B dan pengujian ulang didapatkan hasil sebesar 81,5.

Kata Kunci: *Fotografi*, User Interface, User-Centered Design, System Usability Scale

# I. PRELIMINARY

The very rapid development of the internet world has produced many benefits for many people. In its development, many people use it as a medium for social networking, information retrieval, and other needs. Currently, the growth of internet users in Indonesia continues to increase every year. Based on a survey by the "Asosiasi Penyelenggara Jasa Internet Indonesia" (APJII)

the number of internet users in Indonesia in 2018 reached 171 million inhabitants [1].

APJII states on 2017 survey results, the device used to access the internet dominated by personal smartphones and tablets with 44.16% of the total internet users in Indonesia alone then followed by users who have smartphones/tablets along with computers/laptops with 39,28% and ended with users of other devices with 12,07% and only computer/laptop users with 4,49%. This number continues to increase over time, as well as the increasing population in Indonesia until today [2].

In today's socialite life, many social media applications use a photo in the form of feeds as a medium to express what they want to convey. Usually, they upload feeds that contain what they have achieved in their goals, memorable moments in their life such as tourism, weddings, and also their hobbies such as sports, automotive, music, and others. Due to the current trend, many people have started to offer and open photography services to those in need where they are professionals in their respective fields. In Bandung, many people use their services in making their feeds which make these service providers very salable, raise their name, and compete fairly in their respective fields. However, those who are just starting in this profession have a hard time because they do not have a highly influencing platform/client to market their name. Not only from the perspective of service providers, but people who want to use those that have been popular with photography services nowadays have difficulty contacting them, matching schedules, pricing that not listed in their bio, sometimes afraid of veracity, security awareness, and skepticism of end result even from professional service providers.

Based on the description above, the Startup Roll, which is a platform for marketing and media information accommodating works from photographers, was made to solve problems that occur today. This startup was formed for users in the circle of customers and service providers to meet each other on this platform. This startup provides a platform in the form of a website that can be used by internal people from startups, service partners, and customers who are rich in features that can be used by each user.

#### II. THEORITICAL REVIEW

#### A. Startup

Startup is a company, generally called a startup, referring to all companies that have not been operating for a long time. These companies are mainly newly founded companies in the development and research phase of finding the right market. The term "startup" became popular internationally during the dot-com bubble, during which time many dot-com companies were founded simultaneously [3].

For Indonesia, the development is quite good and encouraging. Every year many new startup founders (owners) emerge in Indonesia. According to dailysocial.net, currently, there are at least more than 1500 local startups in Indonesia. The potential of Indonesian internet users, which is increasing from year to year, is

undoubtedly a wetland for establishing a startup. According to Rama Mamuaya, CEO of dailysocial.net, startups in Indonesia are classified into three groups: game creators, educational application startups and trading startups such as e-commerce and information [3].

## B. Business model canvas (BMC)

The Business Model Canvas is a business model that Alexander Osterwalder first introduced in his book entitled Business Model Generation. This business model canvas or BMC is a strategy in management in the form of a visual chart consisting of 9 elements [4]. BMC has nine main elements that will be presented visually, namely Customer segments, Value Proposition, Channels, Customer Relationships, Revenue Streams, Key Activities, Key Resources, Key Partnerships, and Cost Structure.

#### C. User Interface

The UI design of a product has a significant role in determining the quality of the product in the eyes of users. A good interface design must make a program more comfortable when used by the user. On the other hand, a cluttered and disorganized UI will reduce the value of the product in the eyes of the user. User Interface is a visual display of a product that bridges the system with the user (user). UI appearance can be in shapes, colors, and writing designed as attractive as possible. In simple terms, UI is how the appearance of a product is seen by the user [5].

#### D. User-Centered Design

User-Centered Design (UCD) is a design process that focuses on user needs. Products developed with the UCD approach are optimized for end-users and emphasize how end-users need or want to use a product. UCD can be characterized as a multi-stage problem-solving process that requires designers to analyze and imagine users' tendencies to consume a product and validate user assumptions about their behavior in the real world.

there are four main stages in User-Centered Design, namely:

a.Specify context of use: User research is needed to build developer and designer understanding of the people targeted as users of the digital product being developed. b.Specify Requirements: determine ways to solve both design and technical problems. This can be done by defining design and business requirements.

c.Produce Design Solution: preparation of a product design framework to be understood by everyone involved in a product development project.

d.Evaluate Design: Prototype testing and usability testing are essential for good software development.

## E. System Usability Scale

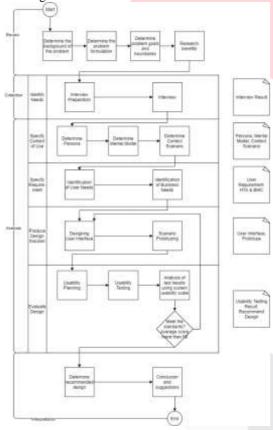
Usability is the extent to which users can use a product by paying attention to a certain level or the extent to which users can use the application to achieve practical, efficient goals and meet user needs in a particular context use [6]. The System Usability Scale (SUS) uses a testing scale that contains ten questions where participants are given a choice of a scale of 1–5 to answer based on how much they agree with each statement on the product or feature we are

testing. A value of 1 means strongly disagree, and five strongly agree with the statement. The System Usability Scale (SUS) method can be used because by using this method, and the designer can find out a high level of test consistency. This is because the statements and questions that have been made and discussed with the respondents are measured using a reliability scale above 0.90 and sentiment 0.70 to achieve feasibility.

## III. RESULTS AND DISCUSSION

# A. Systematic Problem Solving

Systematics research used by Author in solving problems in producing design recommendations from Roll startup platform are divide into four stages, namely reviewing research problems, collecting data, analyzing and presenting data.



# B. Identify Process

At this stage, Author conducted interviews with 20 potential users of the Roll startup platform, five of which were owners of wedding décor, two clothing designers, three food product sellers, and ten others were potential partners of Roll. The interview was conducted using the semi-structured interview method so that Author could explore the interview without having to fully follow the questions to be asked to produce better feedback. Then the interview results were identified as a consideration in creating personas, context scenario, mental model, hierarchical task analysis, are potential users of the Roll startup platform. It is required to find out the problems that both parties often experience in carrying out activities or

daily activities in achieving the goals of the problems experienced.

## C. Specify Requirement Process

At this stage, having previously defined the context of the scenario, the context of the scenario is then divided into several small parts to generate requirements that will become a reference in designing the website system used by the persona. The context of the scenario is divided into a series of capabilities or activities that personas can carry out to achieve goals in a system. After that, analyze business needs is carried out using tools in a Business Model Canvas to identify the business model into nine parts.

## D. Development Process

This stage consists of two stages referring to the User-Centered Design method, namely Produce Design Solution and Evaluation. The steps taken are:

# a. Produce Design Solution

At this stage, the design is implemented from what has previously been collected in an abstract form into a concrete form that potential users can see and use. At the produce design solution stage, it is divided into three stages, namely wireframe, user interface design and after the final form of the user interface design is finished, the next stage is prototyping into several scenarios that are used for the usability testing stage which aims to get feedback from users without having to implement the program first.

## b. Evaluate Design

At this design evaluation stage, two processes are carried out, namely usability planning. At this stage, author searches for potential users who will use the photography messaging service, then conducts usability testing where the prepared scenario will be tested. In addition, the researcher also conducted a question and answered session with the system usability scale as a tool to measure the usability value of each alternative design. A design test was conducted on 20 users who might use photography services at the usability testing stage. The reason for testing these 20 people is to find out the increase in the usability value of the implementation results and the designs that have been made. Testing is carried out in usability testing and measurement utility (SUS).

# E. Usability Testing

At the usability testing stage, testing was carried out on two alternative designs that had been made, namely design A and design B. At this stage, the superior design will be determined, which will later be one of the two designs that are superior to the other, which will be used as a design firm developed for the Startup Roll website application. Suppose some suggestions allow the superior design form to be made better. In that case, it will do a redesign of the superior design and test the redesign results from the Roll website to find out the increase in usability value from the results of the implementation and designs that have been made. Testing is carried out in the form of usability testing.

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After collecting data from participants, then the data was calculated using a standard questionnaire from the system usability scale (SUS). The results of data collection from usability testing on design A can be seen in Figure V.3

Respondent			_		~	_				la constant
Name	Q1	02	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
Ratih Melia Anggraini	4	3	3	2	4	4	5	2	4	2
Erland Panungkas lisniarto	4	3	3	3	3	4	5	2	4	2
Reyza Agung Danendra	4	3	3	3	4	3	4	2	4	2
Akbar Bekti	3	3	3	3	3	4	3	3	3	4
Ozman Azuri Irfansyah	3	3	3	3	3	3	4	3	3	4
Athaya hanin ayudhiya	4	3	3	3.	3	3	4	3	3	4
Sulthan Ramdani	4	3	3	3	3	3	4	3	3	3
Abdul Hakim Amizky Erlangga	3	3	3	4	2	4	4	3	3	4
Aditya Nur Ramadhan	4	3	3	3	3	3	4	3	3	3
Glenis Setiawan	4	3	3	4	3	3	5	2	4	2
Febilia Afifah	3	3	3	3	3	3	3	3	3	4
Audi Ardianto	4	3	3	2	3	2	4	2	3	3
Mutia Astridasari	3	3	3	3	3	3	3	3	2	4
Andra Fathi	3	3	3	3	4	3	3	3	3	3
Muhammad Kafka	4	3	3	3	3	4	4	3	3	3
Agustinus Willie	3	3	3	3	4	2	4	3	3	3
Aden Nurmawan	3	3	3	4	3	3	4	3	3	3
Sekar Perbayun	4	3	3	4	3	4	5	2	4	2
Nadya Nabila Lathifah	3	3	3	3	3	3	3	3	2	4
Fariz Hafizan	3	3	3	3	3	4	4	3	3	3

FIGURE 1 The results of data collection from usability testing on design A

Figure 1 shows the raw score which is the result of the data obtained from the participants after tested design A before being processed into the SUS score in figure 2, the raw data results in figure 1 are converted into scores according to the SUS standard.

- a. For odd numbered questions, the score of each question obtained from the user's score will be deducted by 1,
- b. For even-numbered questions, the final score is obtained from the value of 5 minus the question score obtained from the user,
- c. Then multiplied by 2.5 to get the SUS score from the sum of the scores for each question that has been calculated based on the provisions.

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Akbar Bekti	-2:		2	3.	-2	4	2	100	2	33.00	45	#
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Febilla Affois	27	E	.2	2	2	7	2		2	1.0	45.5	
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FIGURE 2 The results of SUS scoring from usability testing on design A

In figure 2 shows the final result of the calculated SUS score of design A is 54. by comparing the score of design A with the average minimum score for SUS from various references is 68, it can be concluded that design A is "POOR" with grade scale is "F" and acceptability range on "Not Acceptable". The results of this test are then tested with the final results of the SUS score from design B. Respondent raw data from design B can be seen in Figure 3

Responden	t Valu	e Da	ta or	Des	ign	В	_	E 1		-
Name	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
Ratih Melia Anggraini	5	2	5	1	5	2	5	2	5	2
Erland Pamungkas lisniarto	5	2	5	2	5	2	5	2	5	2
Reyza Agung Danendra	4	2	4	2	5	2	4	2	4	2
Akbar Bekti	3	3	4	3	3	3	4	3	4	3
Ozman Azuri Irfansyah	4	2	4	2	4	2	4	2	3	2
Athaya hanin ayudhiya	4	2	5	2	5	2	4	2	4	2
Sulthan Ramdani	4	2	4	2	4	2	4	2	3	3
Abdul Hakim Arrizky Erlangga	4	2	3	3	4	3	4	3	3	3
Aditya Nur Ramadhan	4	2	3	2	4	2	4	3	4	3
Glenis Setiawan	4	2	4	3	4	2	5	2	4	2
Febilla Afifah	3	2	3	3	3	2	4	3	3	3
Audi Ardianto	4	2	4	2	3	2	4	2	4	3
Mutia Astridasari	4	2	3	3	4	2	3	3	3	3
Andra Fathi	4	2	4	2	4	2	3	2	4	3
Muhammad Kafka	4	2	4	2	4	2	4	2	4	3
Agustinus Willie	4	2	4	2	4	2	4	2	3	3
Aden Nurmawan	4	2	4	3	4	3	4	3	3	3
Sekar Perbayun	4	2	4	2	4	2	5	2	4	2
Nadya Nabila Lathifah	4	3	4	3	3	3	3	3	3	3
Fariz Hafizan	5	2	5	2	4	2	4	2	3	3

FIGURE 3 The results of data collection from usability testing on design B

Figure 3 shows the raw score which is the result of the data obtained from the participants after tested design B before being processed into the SUS score in figure 4, the raw data results in figure 3 are converted into scores according to the SUS standard.

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Glenic Setiavan	*		.8		18.		-				75	E :
Febilla Affoli	2		2		4:	4	.31		- 22	- 2	.5%.5	- 6
Audi Ardines	3		3.	3.	- 2:	13	- 31		3-	2	70.	- 6
Motion Autotidances	-		3	2	4.	10	2		-20	- 2	40	0
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Mohammad Kaffea				100	4.			23	3	-2	73.5	<
Agustians Wille		30		1.0	9	18	- 21	23		2	70	6:
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	Te	that									70.375	E .

FIGURE 4 The results of SUS scoring from usability testing on design B

In figure 4 shows the final result of the calculated SUS score of design B is 70,3. By comparing the score of design B with the average minimum score for SUS from various references is 68, it can be concluded that design B is a "OK" design with grade scale is "C" and acceptability range on "Acceptable".

After calculating the SUS score on the results of the two designs from the prospective Roll website, the next thing is to determine which design will be the consideration for the Roll website to be made, the SUS score comparison table can be seen in Table 1

TABLE 1 The final result of the SUS score from both design

Name	SUS	Adjective	Grade	Acceptability
	Score	Rating	Scale	Range
Design A	54	Poor	F	Not Acceptable
Design B	70,3	Ok	С	Acceptable

Based on the comparison of SUS scores in Table 1 for the score from design A to design B, it can be concluded that the design recommendations that become the main design on the Roll website are the result of design B because it has a better score than the product evaluation results, which is 70.3.

Through the results obtained in testing design B, several inputs were obtained from the respondents which will also complement what the current B design lacks, which can be seen in Table 2

TABLE 2 Respondent feedback

No.	Description	Feedback
1.	Like	Overall features are good which with these features the user can do and explore many things.
2.	Dislike	There is a bug in the background that the background object did not reach the bottom of the page.
3.	Wishes	Adding a location filter when ordering a partner because if it is only a category filter and many are displayed that are not sequential, it will confuse users who want to order according to their area
4.	Ideas	Adding a feature to view feedback and rating from other users who have ordered related partners to increase interest and trust

To make design B reach more SUS point, another design B test has been given changes. Author plans to test five respondents with their previous grade level of C to reach grade scale B with these five respondents. After collecting data from the participants, the data was then calculated using a standardized questionnaire of the system

usability scale (SUS). The results of data collection from usability testing on redesigned design B can be seen in Figure 5

	Redesign	Des	ign	В		Va 1	0 10			7.6
Name	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
Sulthan Ramdani	4	2	4	2	4	2	4	2	3	2
Muhammad Kafka	4	2	4	1	4	1	4	1	4	2
Ozman Azuri Irfansyah	4	1	5	1	5	1	4	1	4	2
Athaya Hanin Ayudhiya	4	2	5	2	5	2	4	2	4	2
Sekar Perbayun	4	1	4	2	4	1	5	2	4	2

FIGURE 5 The results of data collection from usability testing on redesigned design B

Figure 5 shows the raw score which is the result of the data obtained from the participants after tested redesigned design B before being processed into the SUS score in figure 6, the raw data results in figure 5 are converted into scores according to the SUS standard.

	505	scor	ing r	ede	sign	Des	ign t					
Name	Q3	02	Q2	04	03	QE	α7	CIR	con	Q10	Sun Score	Grade
Sulthan Ramdani	3	B	1	1	3	9	1	1	2	2	72,5	c
Muhammad Kafka	3	3	3	4	3	2	3	4	3	3	67,5	. 0
Ozman Azuri Irfanoyak	3	13	4	4	4	23	1	4	3		90	A
Athaya Hanin Ayudhiya	3	E	4	3	4		2	3	. 3	3	80	. 0
Sekar Perbayun	3	F	3	3	3		#	.5.	3	3	62,5	8
	To	tal					1.0				81,5	

FIGURE 6 The results of SUS scoring from usability testing on redesigned design B

In figure 6 shows the final result of the calculated SUS score of redesigned design B is 81,5. by comparing the score of redesigned design B with the average minimum score for SUS from various references is 68, it can be concluded that redesigned design B is a "EXCELLENT" design with grade scale is "B" and acceptability range on "Acceptable".

# F. Application Implementation

In this section, the results of the implementation of the Roll website application that has been designed following the stages in the User-Centered Design (UCD) method are shown with the final result of the design using the redesigned design B. As for implementing the application, several parts are not appropriate or undergo minor changes that occur due to receiving reviews or input from the developer or developer. The appearance of the application implementation can be seen in Figure 7 to Figure 18



FIGURE 7 Implementation of Landing Page Application



FIGURE 8 Implementation of Partner Register Page Application

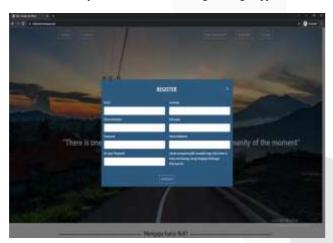


FIGURE 9 Implementation of Customer Register Page Application



Figure 10 Implementation of Login Portal for both Customer and Partner Application

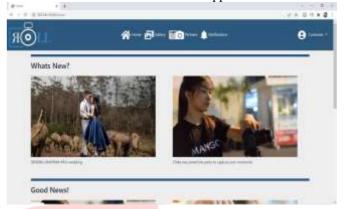


FIGURE 11 Implementation of Home Menu Application

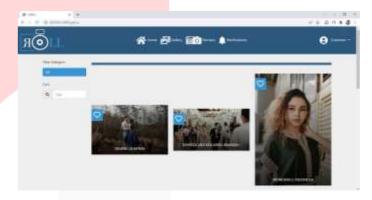


FIGURE 12 Implementation of Gallery Menu Application

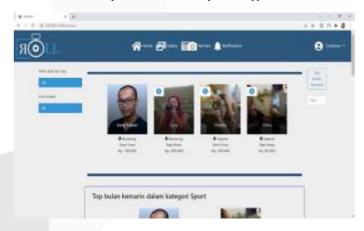


FIGURE 13 Implementation of Partner Menu Application



FIGURE 14 Implementation of Partner Information Application



FIGURE 15 Implementation of Partner Service Category Information Application

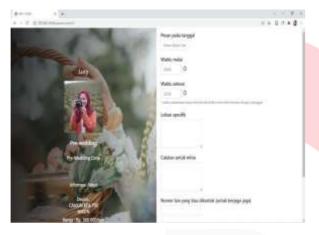


FIGURE 16 Implementation of Booking Form Application

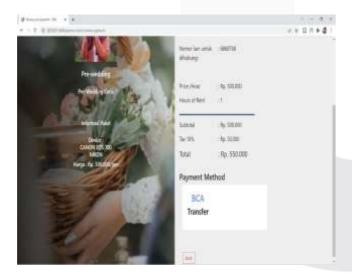


FIGURE 17 Implementation of Booking Checkout Information Application



FIGURE 18 Implementation of Payment Confirmation
Application



FIGURE 19 Implementation of Notification New Order Information Application



FIGURE 20 Implementation of Notification Past Order Information Application

# IV. CONCLUSION

Based on the results of research conducted on the website design of the Roll startup, which was carried out using the User-Centered Design method on the Roll website, it can be concluded as follows:

A. In this study, the User-Centered design method starts from identifying user needs through interviews with 20 potential users using semi-structured interviews. Based on the results of the interviews, it was found that the respondents often experienced problems such as overpriced service provider products, can do service anywhere, cannot track what service provider is doing,

cannot see the results of the service provider or their portfolio as an illustration of the results when ordering them, fraud that occurs from the service provider where they ask for payment first, and refuse to accept the request for further editing to get satisfactory results. Through these problems, proceed with designing a persona framework used to identify scenarios that are carried out by users on the system to be designed. The main focus of this research is the scenario of ordering service providers so that several needs that are considered include: Find out the list of service providers categories listed on the website, Knowing the promos of one or more service providers that are currently ongoing, Find out information about service providers (domicile, prices, services provided, etc.), Allows ordering more than one service provider, It is possible to provide complete information and additional notes to the service provider, Can track the service provider that has been ordered, Can see the previous work from the service provider to be more sure before placing an order. After that, proceed with designing the user interface of each scenario. Design A was produced using tools from Adobe XD Moreover, design B uses tools from Figma, each of which has its advantages in designing. After that, two alternative designs, A and B, were prototyped to produce interactive service provider ordering scenarios. Then evaluate and assess the two designs A and B using usability measurement standards, namely the system usability scale (SUS). Through the results of the previous assessment, Author makes decisions on the design plans developed for service provider ordering service for startup Roll.

B. The conclusion of the comparison conducted on two alternative designs from the Roll website resulted in a usability score of 54 for design A using Adobe XD furthermore, 70.3 for design B using Figma. Where when testing the design form, design A has several shortcomings and feedback from users, including animation bugs that do not appear, then the placement of the main panel, which is placed on the right makes the user confused and unfamiliar, the use of one color and typical same design on each page make users sometimes confused about what features they are actually in, and the small button shape is also in the form of text which makes the user think that it is not a button. For design B, all shortcomings and feedback that the user gave have been overcome, and it is proven by the results of the increased usability score. Through scores and feedback received from users, it is decided that Design B was the design that became the main design of the Roll startup website.

C. Some feedback from users when testing this design B where they ask for a filter for location when viewing a collection of available partners, a button to see the rating given to a partner from several orders he has received before, a button to view a portfolio set from the target partner. Then redesign the design B and then do the prototyping and testing stages for five people and got a score of 81.5, which makes this design classified as an "EXCELLENT" design.

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