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The Development of Customer Self-Service Prototype for Readymix Concrete After Sales Service Using Design Thinking Method

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ABSTRACT

In the rapidly evolving digital era, companies face challenges in improving customer service. This research focuses on the development of a web-based Customer Self-Service (CSS) prototype for PT. Adhimix RMC Indonesia uses the Design Thinking method. The main goal is to identify customer needs, solve service problems, and create an effective communication system. The method used includes five stages of Design Thinking: Empathize, Define, Ideate, Prototype, and Test. Data was collected through surveys, interviews, and prototype testing. The results showed that the prototype developed was able to improve service efficiency and customer satisfaction with key features such as shipment tracking and cast schedules. However, further integration with internal systems and user training is still needed for optimal deployment. In conclusion, web-based CSS development can be an innovative solution in improving after-sales service, strengthening customer relationships, and improving the competitiveness of companies in the construction industry.

Introduction

In today's rapidly evolving digital era, companies in various business sectors are facing increasing pressure to improve the quality of their customer service (Kraus et al., 2021). Customers who are increasingly savvy and highly knowledgeable about the products and services they use have changed the competitive dynamics in business (Åkesson, Edvardsson, & Tronvoll, 2014). Likewise, the speed of technological development is changing human lifestyles from traditional to modern patterns, one of which is utilizing information technology, telecommunications and the internet (Hassan & Wood, 2020). Therefore, improving the quality of customer service has become one of the key factors for retaining and attracting customers.

The company that became the research case study was PT. Adhimix RMC Indonesia, as one of the main players in the readymix construction material supplier industry, is not exempt from this challenge. PT. Adhimix RMC Indonesia is one of the

subsidiaries of PT. Adhimix Group which is engaged in construction and has several subsidiaries such as contractors, property development, precast concrete manufacturers, construction support heavy equipment, transportation, manufacturing and entities that focus on readymix concrete production are PT (Hsu, Nguyen, & Huang, 2021).

Adhimix RMC Indonesia. To meet the needs of the market and customers of PT. Adhimix RMC Indonesia carries out digital transformation in all aspects of its business processes. Starting from the ERP (Enterprise Resource Planning) system, connectivity with vendors, HRD system (WEB-based KPI and attendance), dashboard and most recently online sales for the retail segment with the Adhimix Retail application. Digital transformation is stated to be necessary for companies to meet growth targets and efficiency needs in terms of the increasing number of transactions handled. Companies have identified the quality of customer service as a key element in their market share growth and maintenance strategies (Bharmawan & Hanif, 2022). Therefore, the company has committed to continuously improving the quality of their customer service in order to meet customer expectations and achieve competitive advantage.

Readymix Concrete's after-sales service plays a crucial role in ensuring customer satisfaction and building long-term relationships with clients (Murali, Pugazhendhi, & Muralidharan, 2015). Therefore, the development of an optimal technology-based service will not only increase efficiency in the after-sales process, but will also provide added value in terms of customer satisfaction (Masruroh, Sari, Novitasari, & Rini, 2024). In this context, the Design Thinking method is a very relevant approach, namely a human-customer-centric approach that can solve the case of limited communication systems between companies and customers (Darzentas & Darzentas, 2014) and design thinking is one of the ways companies create a lack of innovation to design their services (Panwar & Khan, 2021). This approach not only considers the technical aspects, but also focuses on a deep understanding of the customer's needs and expectations. Thus, the author hopes to create a solution that is not only technically effective, but also in accordance with the customer's wishes.

The main objectives of this study are:

1. To identify the main customers of PT. Adhimix RMC
2. To find needs and identify service problems that occur between customers and the company.
3. Creating an effective communication flow between customers and the company through the design thinking method.
4. To design a WEB-based Customer Self Service prototype to serve their customers so that there is positive connectivity between the company and the customer.

Method

This research is a case study study of a readymix company that has problems and needs to optimize the service process between customers and the company. The research taken is the after-sales process of PT. Adhimix which has the characteristics of after-sales

service that still has a lot to be provided by the company after the sales process is completed, then there is a customer service condition and a marketing team that needs to be improved, then an innovation system in the form of self service technology is needed as conveyed in Chapter 2. The review process and literature review in Chapter 2 provides the selection of the design thinking method as a model method for research and development of the system with the application of customer self service in the after-sales system section at PT. Adhimix. The design thinking method is a customer-centric method or prioritizing customers / users through several stages of the process: Theoretical study, Research, Analysis of needs or the most critical solution and Prototype design then Testing which each stage starts from Research or in design thinking called (Empathize – Online Questionnaire, and Interview), Analysis (Define – User Personal, User Scenario, Critical Items), Design (Ideate – Customer Journey Map, User Flow) then proceed to the Prototype creation stage (Prototype – Wireframe Lo-Fi, Prototype – Hi-Fi), the Testing stage (Test – User Testing and Web Customer Self Service Implementation), the analysis stage and finally the conclusion stage. These stages will use several help sheets (form tools) in the process of implementing data search in the form of customer personas, customer needs, company needs, company visions and missions, research critical mindset, critical items, potential solutions and risks, idea collection, customer journey formation, prototype creation and prototype testing process to the final prototype iteration/improvement process. Each stage has its own form following instructions (Lewrick, 2022).

Place and Time of Research

The location of the research was carried out in the company PT. Adhimix RMC Indonesia in the system development and customer service division. It will take place from December 2023 - March 2024 to collect customer persona data. For the prototype test process, it was carried out in May-July 2024 on 80 customers, CS employees and marketing personnel of PT. Adhimix RMC Indonesia.

Research and Analysis

The stage of design thinking which is included in the Research stage is Empathize where at this stage research is carried out in the form of a questionnaire and to find after-sales needs and understand the problems that exist in PT. Adhimix RMC Indonesia.

System Design and Manufacturing

Design or design is needed so that the creation of an information system can meet the expectations of the construction or creation of the information system. System design is carried out to produce a simple system that can later be developed according to needs when it will be integrated into the actual system or to a pre-existing system.

Results and Discussion

Survey results and problem statements

At the survey stage, the stakeholders of PT. Adhimix RMC has 3 correspondents, namely customers, marketing teams and customer service staff. This is in accordance with the company's Business flow which has been described in figure 4.2. These three parts are the most advanced parts that are directly related to the after-sales process, starting from the process of ordering delivery, product delivery, to the project site and so on until the repeated request process until the order contract is completed. The process of repetitive communication and with many customers with various types of products occurs many interactions, it is possible to make considerable communication errors if the service mechanism still uses conventional methods (Lee & Lee, 2020). The survey conducted with 80 customer respondents collected information on customer needs and several problem statements. This problem statement is an empathize process in the design thinking method and will be analyzed in the next define process by using the main service points or critical points of the company so that they become several service features that can be developed.

From the results of the survey, as many as 80 customer respondents, there were 67 who answered deep questions with specific needs and problems for PT. Adhimix RMC, others did not specifically answer. Furthermore, from the answer data, similar answers are grouped into 10 categories, which are contained in the table below:

Table 1
Types of customer needs and problemsConclusion

No	Jenis kebutuhan dan permasalahan	Jumlah
1	Layanan jadwal	31
2	Informasi pengiriman	15
3	Kecepatan respon	6
4	Info status pembelian	4
5	Layanan info harga	3
6	Keluhan Produk	2
7	Informasi keuangan	2
8	Layanan customer Service	2
9	Kemudahan pembayaran	1
10	Informasi perusahaan	1
	Total	**67**

From the problem table, the process of problem statement or HMW (How Might We) question will be continued, this allows the problem to be formulated concisely in one sentence which is then used as the starting and ending point of the problem space in the design way of thinking. At first, various WH (why, who, when) questions can be asked about the issue. Then based on these answers, the formulation of the problems is developed iteratively so as to create a statement of how we redesign a communication system for customers / users so that their needs are satisfied. The problem table and in-depth needs of the survey results with each user persona in accordance with the design thinking canvas in figure 1 are listed in table 2. To fill in the how column on the table by thinking in a design "how to solve" the 10 problems and customer needs. Questions such as "how should we" complete the schedule service are answered by providing some problem solving with a form of communication system for the cast schedule feature that will be developed and of course must provide convenience for customers. Each problem must be answered by one or more solutions that meet the elements of customer needs.

In addition to surveys to customers, surveys are also conducted to the marketing and customer service teams. This is to see service needs data from the side of the company's internal persona involved in communication-services that lead to human-centric design. The number of internal respondents as many as 12 people consisting of sales executives, marketing heads, division heads, customer service staff, sales executive supervisors and marketing managers can be seen in figure 1. These internal respondents have a lot to do with customers where 5 to more than 10 customers per day as shown in figure 2. The results of this internal respondent survey recorded the information on customer service needs presented in figure 3. From the results of the survey with internal marketing, 66.7% stated that communication with customers must be done quickly and this is in accordance with one of the survey results with customers, namely customers need speed of response in the interaction process.

Table 2
How Might We Analysis from Problem Groups

Why	Who		When			How
Jenis Kebutuhan dan Permasalahan	Jabatan	Lokasi tugas	sebelum kontrak	sebelum cor	setelah cor	Bentuk layanan komunikasi, sistem flow/prosedur dan fitur
Layanan jadwal	Project Manager	proyek		v	v	Membuat sistem layanan penjadwalan oleh pelanggan
	Site Manager	proyek		v	v	Sistem komunikasi Jadwal menggunakan media yang mudah
	Manager operasional	pusat		v		
	Logistik	proyek		v	v	
	Pelaksana	proyek		v	v	
	QC leader	proyek		v	v	
	SPV Project	proyek		v	v	
	Procruiment	pusat		v		
	Project Product Manager	proyek		v	v	
	Direktur	pusat		v	v	
	Quantity Surveyor	proyek		v	v	
	PPC Staff	proyek			v	
Informasi pengiriman	Staff Keuangan & GA	proyek		v		Menciptakan sistem informasi tracking truk mixer
	Project Manager	proyek		v	v	Menciptakan sistem informasi proses persiapan pengiriman
	QC leader	proyek		v		Menciptakan proses status transaksi
	Foreman Maintenance Civil	proyek			v	
	Site Engineer	proyek			v	
	Project Engineering Manager	proyek			v	
	Site Manager	proyek			v	
	Ka.Logistik	proyek			v	
	Wakil Direktur	pusat		v	v	
Kecepatan respon	General Superintendent	proyek	v			Membuat komunikasi dengan media digital
	Owner	pusat	v	v	v	membuat sistem layanan mandiri
	Staff	pusat			v	menggunakan sebagian layanan chatbot
	Logistik	proyek			v	
	Quantity Surveyor	proyek			v	
Info status pembelian	Kepala SCM	pusat		v		Menbuat sistem status pembelian dan transaksi
	Logistik	proyek		v		
	Staf proyek	proyek		v		
Layanan info harga	Kabag SCM	pusat	v			Menciptakan layanan permintaan info harga / penawaran
	Staff Procrument	pusat	v			
Keluhan Produk	Logistik	proyek			v	Mencitakan sarana komplain untuk pelanggan
	Site Manager	proyek			v	Keluhan komplain terintegrasi dengan tim QC
Informasi keuangan	Project manager	proyek		v	v	Menciptakan menu informasi piutang atau saldo plafon
	Ka.Logistik	proyek		v	v	
Layanan customer Service	Project Manager	proyek		v	v	Integrasi layanan mandiri dengan saluran komunikasi CS
	Kadep SCM	pusat		v	v	
Kemudahan pembayaran	Owner	pusat	v			
Informasi perusahaan	Koordinator Procrument	pusat	v			menyediakan company profile pada web perusahaan yang mudah diakses pelanggan

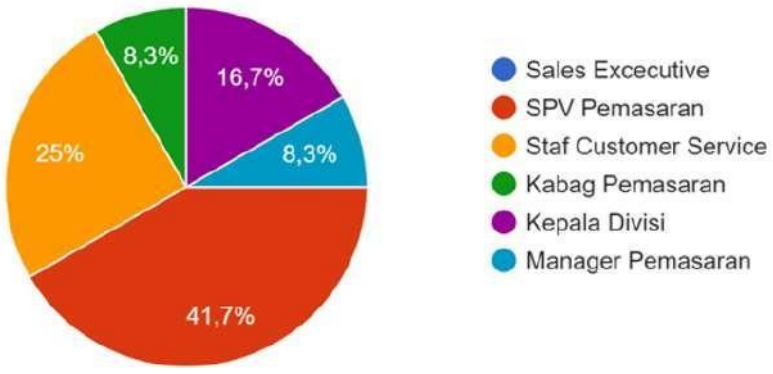
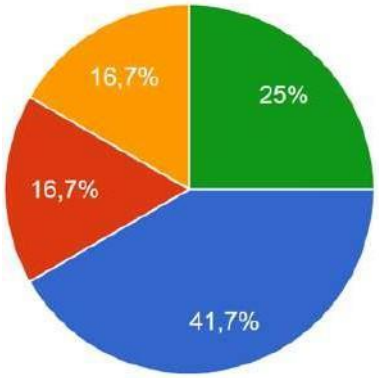
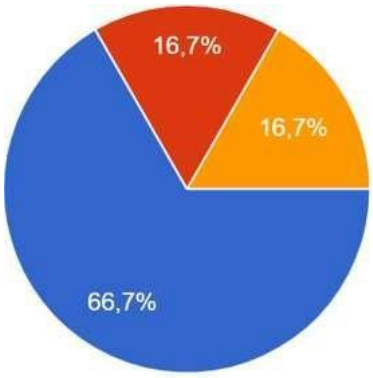


Figure 1
Internal marketing respondent personas by job title



Pengalaman Kerja Internal	Jumlah
< 5 Tahun	3
5 - 7 Tahun	2
8 - 10 Tahun	1
> 10 Tahun	5

Figure 2
Respondent experience persona



Kebutuhan komunikasi	Jumlah
Cepat	8
Tepat	2
Banyak informasi	2

Figure 3
Communication needs by customers

Critical Needs Identification Process (Define Process)

In this process, there are several stages that are carried out, namely firstly defining the most critical needs of the main customer into an optimal service, secondly looking for the important elements that are achieved to achieve service success including the company's visions and missions, thirdly making an HMW diagram to summarize how we solve these problems so as to produce a service that satisfies customers. This define process is an analysis process that produces initial ideas, later it will be used in the ideate process to find the appropriate form of service and prototype, of course in the first iteration process. The important elements in the creation of this initial idea are the discovery of problem solving, customer experience, function and future expectations (Lewrick, 2022). To get these important elements, a critical diagram is created that mentions four experiences and four functions, with one of them focusing on new expectations or the future.

Before entering the critical diagram process, information related to the company's vision and mission should be conveyed and become part of the forming elements of the

functions and experiences that must be present in creating service ideas (Daga, Nawir, & Pratiwi, 2021).

The process of exploring the vision and mission using the questionnaire method to the management of PT. Adhimix RMC Indonesia. The respondents who took part in this survey were 9 people ranging from commissioners, directors, managers and division heads and the results are as follows. In figure 4.8 the question "I use customer input in building innovation" shows that as many as 5 company management people strongly agree and 4 other people answered yes, this is according to the management of PT. Adhimix RMC Indonesia agrees that innovation must be done through the process of understanding the needs and problems of customer input. In figure 4.9 with the question "To what extent do you believe that the development of human resources and technology can help the company achieve its vision to be at the forefront of the readymix industry?" resulting in the answers of 6 people are very confident and 3 people are confident, this states that the company's management is confident that the development of human resources and technology makes the company at the forefront.

Figure 4
Customers as the basis of corporate innovation

Figure 5
The level of confidence in the company's growth through human resource and technology development

Figure 6
Company improvement priorities

Figure 4 shows the company's management priorities in improving its business processes and services and the results are as follows. Three management people stated the need to prioritize improving the communication system and 3 other people answered that business processes are a priority for improvement to advance the company. One person stated that the quality of after-sales service was a priority for improvement and the other 2 management people answered different priorities, namely improving human resources and product quality. From these results, it can be concluded that the management of PT. Adhimix RMC in a question about the company's vision that innovation and company development are based on customer input with priority improvement in terms of customer communication and after-sales processes through human resource and technology development.

Ideate process of developing the Customer Self Service System

The ideate process is the creative phase of working, the brainstorming phase, the phase where innovative to get a solution to a problem. In the previous chapter, it discusses several stages of design thinking starting from the process of understanding and observing the needs of users / customers then the stage of defining critical problems then entering at this stage, namely formulating ideas and solutions so that they can be implemented in an initial prototype development. In table 4.6 formulates some HMW results that are the basis in the process of finding solution ideas, this is made easier from the table by grouping the functions that have been determined from table 4.7 in the form of marketing functions, delivery functions, administrative functions and billing functions. These solution ideas are the initial solution ideas that will be applied into prototypes that will be tested later as the first iteration to some customers. The form of these ideas and solutions will be discussed not only in the form of service feature concepts but also prototypes that are complete with customer experience flows and user interfaces.

Testing Prototype

Prototype testing is the final process in the design thinking stage. In the design thinking process, a prototype testing process is needed for prospective users, this is to ensure whether the prototype made is feasible from the side

customer needs, efficient, no errors, user satisfaction and functionally effective. This prototype is close to the MVP (Minimum Viable Product) so it requires good visualization close to the real application later. Therefore, the prototype system in this

case study will be made web-based but still using a dummy database or on a pre-production server and has not yet entered the PT. The real Adhimix RMC. In the case study of creating a communication system in a readymix company, it is indeed necessary to introduce potential users who have their own challenges. There are two predetermined personas of prospective users, namely the head office login and the login for the project office, so that it is simulated with two different menu conditions.

This prototyping uses the WordPress PHP system by controlling the shortcodes that are already in the WordPress library. The use of WordPress aims to make it easier for the process of creating an application next in the coding process by using the PHP Laravel platform to become an application that is integrated with the database. The pre-built Flow Figma is used to guide you in creating navigation commands in this prototype. With this WEB-based platform, users are invited to experience this prototype like a real application and this prototype is the final prototype that will be used in testing to potential users. From the testing objectives explained earlier, this prototype must be feasible in terms of customer satisfaction, effective-efficient, convenient and error-free. The display design has also been made mobile responsive and has the theme of a company profile with gray, red, white and black colors. It comes with the company logo and is made in harmony with the company's existing design as shown in figure 4.12. A view of the final prototype of the mobile or mobile version is shown in figure 4.25. This final prototype is tested to potential customers using a questionnaire system connected by a link form in the final process after each customer conducts an independent trial. The questions from the results of this test partially use the Likert scale which provides qualitative answers related to the efficiency, error conditions, satisfaction, functionality and effectiveness of this CSS application experiment.

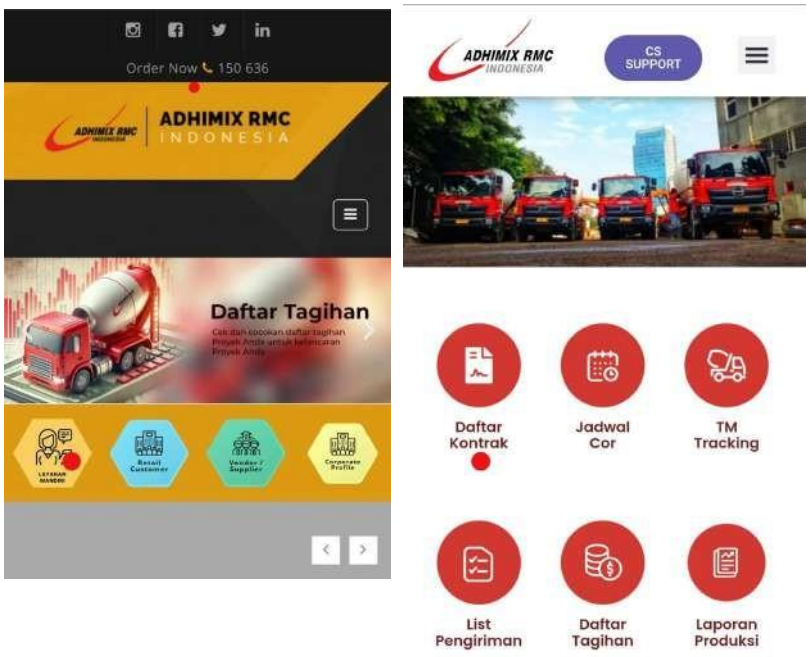


Figure 7
Mobile version of CSS login page and front page display

From the results of the questionnaire, there were a total of 17 respondents where 23.5% were owners, 17.6% implementers, 17.6% site engineering, 11.8% project managers, the details in figure 4.26 responded to the CSS application prototype experiment presented in table 4.9. These customers work in project offices as much as 35.3% and in the head office as much as 64.7%.

Table 3
Results of prototype testing to customers

Criteria	Pertanyaan UAT :	Jawaban									
Efficiency	- Dari mana anda mengakses aplikasi CSS ?	HP	64,7%	Laptop	23,5%	PC	11,8%	Tablet	0%		
	- Berapa kali percobaan anda berhasil mengakses aplikasi CSS PT.	1	88,2%	2-3	11,8%	4-5	0%	>5	0%		
	- Berapa kali anda mencoba dan akhirnya paham fitur dalam CSS minimal satu fitur menu?	1	64,7%	2-3	35,3%	4-5	0%	>5	0%		
	- Darimana anda mendapatkan informasi penggunaan aplikasi CSS ?	sales	5,90%	tim kantor	70,6%	tim prod	23,5%	coba2	0%	lainnya	0%
	- Dari percobaan di atas seberapa anda paham dari menu dan fitur CSS PT. adhimix RMC?	Tidak paham								sangat paham	
		1	0%	2	0%	3	5,90%	4	41,2%	5	52,9%
Error	- Berapa sering anda mendapatkan kendala error dari aplikasi CSS?	Tidak perna								Sangat sering	
		1	41,2%	2	17,6%	3	17,6%	4	23,5%	5	0%
Satisfication	- Apakah anda menyukai tampilan aplikasi CSS PT. Adhimix RMC?	Tidak suka								Sangat suka	
		1	0%	2	0%	3	17,6%	4	41,2%	5	41,2%
	- Menu mana yang menurut anda paling bagus ?	Lacak pengiriman 58,8%; Jadwal cor 17,6%									
	- Menu mana yang menurut anda tidak penting ?	Rekap kontrak 23,3%; Daftar pengiriman 11,8%									
	- Dari nilai 1-5 apakah aplikasi CSS ini membantu Anda dalam berkerjasama dengan Adhimix?	1	0%	2	0%	3	11,8%	4	35,3%	5	52,9%
	- Dari nilai 1-5 apakah aplikasi CSS ini membantu Anda dalam mendapatkan informasi transaksi?	1	0%	2	0%	3	11,8%	4	41,2%	5	47,1%
	- Seberapa mudah Anda melihat penggunaan menu Daftar kontrak?	1	0%	2	0%	3	0%	4	52,9%	5	47,1%
	- Seberapa mudah Anda melihat penggunaan menu Jadwal Cor?	1	0%	2	0%	3	17,6%	4	41,2%	5	41,2%
	- Seberapa mudah Anda melihat penggunaan menu TM tracking?	1	0%	2	0%	3	5,9%	4	52,9%	5	41,2%
	- Seberapa mudah Anda melihat penggunaan menu Permintaan Penawaran Harga?	1	0%	2	0%	3	0%	4	64,7%	5	35,3%
	- Seberapa mudah Anda melihat penggunaan menu Komplain?	1	0%	2	0%	3	0%	4	52,9%	5	47,1%
	- pengiriman?	1	0%	2	5,9%	3	5,9%	4	41,2%	5	47,1%
	- produksi?	1	0%	2	0%	3	11,8%	4	47,1%	5	41,2%
	- tagihan?	1	0%	2	0%	3	5,9%	4	64,7%	5	29,4%
	- Seberapa besar keinginan Anda untuk dapat menyarankan orang lain untuk menggunakan aplikasi ini?	1	0%	2	0%	3	5,9%	4	47,1%	5	47,1%
Functinonality-Effectiveness	- Secara keseluruhan dinilai dari 1-5 seberapa anda memahami tiap fungsi CSS ini ?	1	0%	2	0%	3	17,6%	4	47,1%	5	35,3%
	- Dari skala 1-5 seberapa besar CSS ini membantu pekerjaan anda?	1	0%	2	0%	3	5,9%	4	47,1%	5	47,1%
	- Secara keseluruhan dinilai dari 1-5 seberapa mudah CSS ini	1	0%	2	0%	3	11,8%	4	35,3%	5	52,9%
	- Berikan kritik dan saran dalam implementasi dan sosialisasi CSS	Sdudah OK, Lebih dipermudah, Teknisi harus selalu di proyek , mobile app									

The results of the test in terms of efficiency criteria with the question of how many attempts to enter the application resulted in 88.2% of respondents needing one time to successfully enter the application and as many as 11.8% of respondents answered 2-3 attempts to enter the application and no customer answered more than 4-5 attempts or even more than 5 attempts. And the results of other efficiency tests with the question of how many attempts to understand one CSS menu-feature, respondents answered 1 time as many as 64.7% of respondents, answered 2-3 attempts as many as 35.3% of respondents and no customer answered that they needed 4-5 attempts even more than 5 attempts. From the level of customer understanding from the results of the questionnaire as many as 52.9%, customers are very familiar with the CSS function with a score of 5 and those who rate 4 as much as 41.2%, score 3 as much as 5.9%, rate 2 and 1 as much as 0%. In the question related to the number of errors that occurred that answered never as many as 41.2% with a value of 1 and answered a value of 2 as much as 17.6%, answered

The value of 3 is 17.6%, the answer to the value of 4 is 23.5% and the answer is 5 or very often 0%. This states that there are still error events in this CSS application experiment both from the navigation system and page controls that need to be evaluated. From the results of the test of the level of user satisfaction, respondents who answered strongly liked the display as much as 41.2% with a score of 5, respondents who answered a score of 4 as much as 41.2%, respondents who answered 3 as much as 17.6% and no customers who answered a score of 2 and 1 did not like the CSS display. The results of the questionnaire related to which menu is the best for customers answered the track delivery menu as much as 58.8% and the cast schedule as much as 17.6%, this will be the flagship menu or feature of the CSS application. And the results that stated the unimportance of the menu and features from the questionnaire results were the contract recap menu as much as 23.8% and as many as 11.3% answered the delivery list. From the question about the CSS application, it helps to cooperate with 52.9% answered very helpful or a score of 5, answered a score of 4 as much as 35.3%, answered a score of 3 as much as 11.8% and no one answered a score of 2 and a score of 1 for CSS applications did not help to cooperate with PT. Adhimix RMC.

Conclusion

The conclusion of this study shows that the development of a Customer Self-Service prototype for Readymix Concrete after-sales service using the Design Thinking method has great potential to improve customer satisfaction and operational efficiency. Through a structured development process, the author succeeded in creating a solution that focuses on user needs and experience. The results of the prototype test showed positive adoption from users, with a level of confidence and comfort in using the new system. Nevertheless, the study also identified several areas that need further improvement. One of them is better integration with the company's internal systems to ensure data consistency and effective information management. Additionally, more intensive training and socialization strategies for new users could increase the adoption and usage rate of this system in the future.

Bibliography

Åkesson, Maria, Edvardsson, Bo, & Tronvoll, Bård. (2014). Customer experience from a self-service system perspective. *Journal of Service Management*, *25*(5), 677–698.

Bharmawan, Agus Surya, & Hanif, Naufal. (2022). *Service Marketing Management: Strategy, Measuring Customer Satisfaction and Loyalty*. Surabaya: Scopindo.

Daga, Rosnaini, Nawir, Fadliyani, & Pratiwi, Dhita. (2021). Strategies to Improve Service Quality Through Digitalization of Banking Services at PT. Bank Negara Indonesia (Persero) Tbk. *Quantitative Economics and Management Studies*, *2*(5), 318–325.

Darzentas, John, & Darzentas, Jenny Siobhane. (2014). Systems thinking in design: service design and self-services. *FORMakademisk*, *7*(4).

Hassan, Heba E., & Wood, Van R. (2020). Does country culture influence consumers' perceptions toward mobile banking? A comparison between Egypt and the United States. *Telematics and Informatics*, *46*, 101312.

Hsu, Pei Fang, Nguyen, Tuan Kellan, & Huang, Jou Yu. (2021). Value co-creation and co-destruction in self-service technology: A customer's perspective. *Electronic Commerce Research and Applications*, *46*, 101029.

Kraus, Sascha, Jones, Paul, Kailer, Norbert, Weinmann, Alexandra, Chaparro-Banegas, Nuria, & Roig-Tierno, Norat. (2021). Digital transformation: An overview of the current state of the art of research. *Sage Open*, *11*(3), 21582440211047576.

Lee, Sang M., & Lee, DonHee. (2020). "Untact": a new customer service strategy in the digital age. *Service Business*, *14*(1), 1–22.

Lewrick, Michael. (2022). *Design thinking for business growth: how to design and scale business models and business ecosystems*. John Wiley & Sons.

Masruroh, Nikmatul, Sari, Rini Fatika, Novitasari, Indri Dwi Putri, & Rini, Anggi Amanda Septia. (2024). Internalization of Smart Service Management in Improving Service Quality: The Case of Regional Library. *Klabat Journal of Management*, *5*(1), 90–103.

Murali, S., Pugazhendhi, S., & Muralidharan, C. (2015). Evaluation of performance of after sales service–a comparative study involving home appliances manufacturing firms. *ARPN Journal of Engineering and Applied Sciences*, *20*(13), 5614–5619.

Panwar, Tapish, & Khan, Kalim. (2021). Integrating design thinking in service design process: A conceptual review. *Journal of Design Thinking*, *2*(1), 23–36.