

## Development of a Space Rental Website Using Design Thinking

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### Abstract

The large number of events held in Malang City has created a need for a place to hold these events. This need opens opportunities for developing venue rental applications to make it easier to search and book rooms according to the needs of each event. This research develops "Paketempat", which is a rental website located in Malang City using the Design Thinking method. The DT phases used include inspiration, ideation, and implementation. The Paketempat website was successfully developed using Laravel and MySQL. Based on the TAM questionnaire distributed to 20 testers, the majority answered strongly agree or gave 3 points. This proves that Paketempat can bridge space providers and tenants easily and quickly. Through Paketempat, individuals, communities, organizations, and groups can rent a suitable venue for their desired event or activity according to their budget and needs.

### 1. Introduction

There are so many activities held in Malang City, both business, educational, social, cultural, and sports. This is because Malang City is known as the Tri Bina Cita City or the city of students, industry, and tourism [1]. In 2022 the rate of economic growth in Malang City will increase by 6.32 and become the highest record in the last decade [2]. This increasing economic growth automatically means that events or activities in Malang City also increase.

Some events often held in Malang City include music festivals, art exhibitions, fairs, seminars, workshops, or similar activities. With the large number of events being held, the need arises for a place to hold these events. This need opens opportunities for developing venue rental applications to facilitate searching for and booking rooms according to the needs of each event. Based on the competitor identification carried out by researchers, there is still no website for renting a place in Malang City at an affordable price and with many choices of places. Therefore, this research intends to develop "Paketempat" which is a rental website located in Malang City. The hope is that this package can become a platform and bridge between space providers and tenants easily and quickly. Through Paketempat, individuals, communities, organizations, and groups can rent a suitable place for desired events or activities according to their budget and needs.

The development of Paketempat in this research was carried out using the Design Thinking (DT) approach. The DT approach is one method that can be used for application development which can produce solutions that are more suited to user needs and experience [3]. The DT method has been proven to be able to meet user needs and desires by utilizing technology and business strategies [4][5]. In recent years, DT methods have become popular for producing applications that emphasize humans as the center of innovation [6]. The DT phases begin with a process of empathy for a need leading to sustainable innovation based on user needs [7]. The aim of applying the DT method is to create innovative and user-centered solutions [8]. Thus, the DT approach produces innovation to a problem by providing better products and services so that it can increase productivity and operational improvements [9].

There are several studies that use DT to develop applications, including research that uses the DT method to create a tsunami disaster mitigation application in Indonesia [9], development of an independent support application for breast cancer sufferers in Taiwan [10], creation of a mobile application for lending and borrowing books. in the library [12]. Apart from that, there is research that uses DT to design user experiences, including redesigning the UX of the Civil Registry Service Office application [13] and the UX for the audit monitoring system [3]. The results of previous research prove that DT can produce applications that have complete functions and an attractive appearance. Therefore, this research chooses the DT method to develop a rental application.

Most existing applications tend to focus only on increasingly sophisticated functions and an appearance that attracts users. This causes the use of increasingly complex applications and less than optimal applications to solve problems that exist in society [14]. In this research, we want to focus on 3 aspects, function, appearance, and usefulness

of the application to solve problems. Thus, the four packages produced in this research not only have superior functionality and an attractive appearance but are also easy to use by space providers and tenants as application users. Through Paketempat, it is hoped that the place provider and renter will both benefit. The room provider gets material benefits from renting out the place and the tenant can rent the place according to the activity theme, budget, and requires a little time.

Measurements need to be carried out to determine the achievement of the above aspects. This research will use the Technology Acceptance Model (TAM) to measure the usability of Paketempat. TAM can be used to measure user acceptance [15]. Through this measurement, it is hoped that the space rental website in Malang City which was developed using the DT method can fulfill aspects of the function, appearance, and usefulness of the application to solve existing problems in Malang City.

## 2. Research Method

Design Thinking (DT) is an approach that can recognize problems and create innovations that emphasize design that focuses on human needs. One of the key steps in this process is identifying the problem as an initial step in finding a solution [16]. DT is described as a people-oriented approach, implemented through collaboration and participation between designers and stakeholders [17].

In the initial stage of the research, researchers identified competitors for websites that were like Paketempat. Next, the researcher carried out open collaboration with people who had the potential to become Paketempat users as participants during the DT phase. The DT phase used refers to theory [16] which states that the stages are inspiration, ideation, and implementation.

Inspiration is an activity to find problems or opportunities that can be used to produce solutions. Ideation is an activity to develop ideas that have been generated. Meanwhile, implementation is the activity of applying an idea so that it can be used by users. During these phases, participants are invited to collaborate actively to be able to provide feedback so that solutions are created that meet user needs. The three DT phases used are repetitive each time a new component is identified during a continuous decision-making process so that the expected results can be achieved. Figure 1 explains the framework for this research.

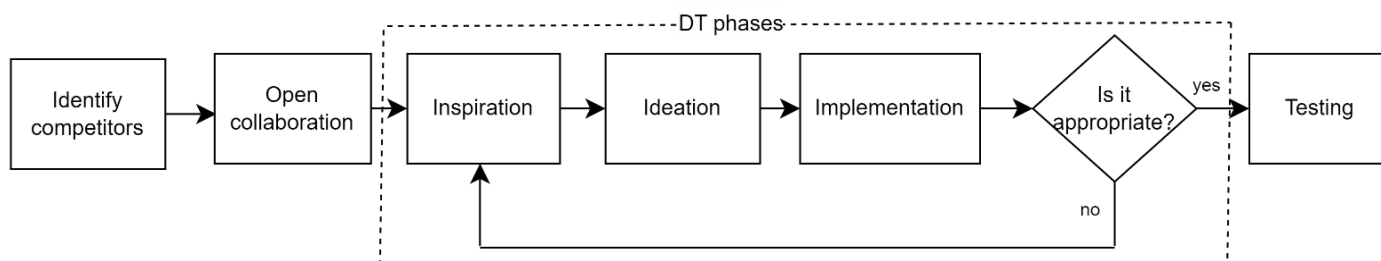


Figure 1. Research framework

## 3. Results and Discussion

### 3.1 Identify Competitors

With the advancement of the digital world, digital ideas among startups are growing rapidly. This led to the emergence of ideas that were almost like Paketempat. Several applications like Paketempat include ngalup.co, a website that provides space for meetings and events located in Malang but is limited to one building only. This website only rents out several rooms available in one building for various kinds of events [18].

There is also coworker.com, a website that provides space to work, or what is now commonly called coworking space. Although there are many choices of places to rent all over the world, there are not many available in Malang, Indonesia. The fairly high prices make this site more aimed at the upper middle class. Additionally, coworker.com's focus is only on coworking spaces, not including events or other gatherings [19]. Apart from coworker.com, there are also websites such as regus.co.id [20] and instanoffices.com [21] which have similar features.

Of these competitors, there is still no website for renting spaces in Malang City. Apart from that, the prices offered are still quite high for students or newly established startups. Most of the existing websites are for rentals all over the world, so when it comes to renting in Indonesia there are still very few choices. In Malang City, there is a website called ngalup.co, but this website can only rent out one building, so it tends to be full more easily during the student event season. And the price offered is fixed to the building provider, you cannot choose according to your budget. Based on the competitor identification above, this research wants to build a rental website application called Paketempat.

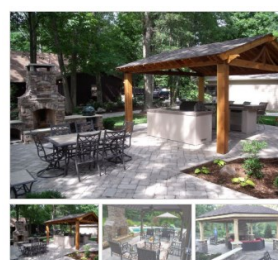
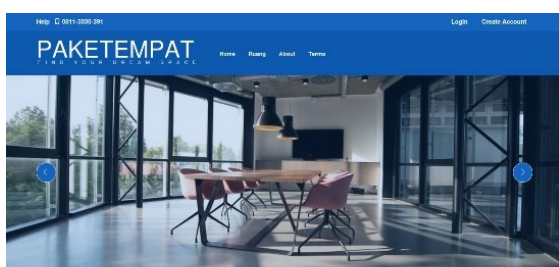
### 3.2 Open Collaboration

There are 4 target users for the Paketempat website, including students, employees, startup owners, and venue owners. Students are considered the main target because they often hold gatherings between classes and organizations. Apart from students, there are also employees as targets who often hold office meetings or gatherings. The startup owner in question is a novice businessman who also often holds meetings on a low budget. Due to the increasing growth of startups in the city of Malang, both those who are still students and those who have graduated from college. These people are business beginners who need a place or room for meetings, planning strategies, or meeting people in privacy. The next target is the owner of an empty place that is not used so that the place can be used by another party. Based on this target user, the researchers invited 20 participants consisting of 10 students, 3 employees, 2 startup owners, and 5 place owners.

### 3.3 DT phases

In the inspiration and ideation phase, researchers brainstormed with participants. In the inspiration phase, the motto Paketempat "Find Your Dream Space" was produced. so that Paketempat can help users find a room or place according to what the user dreams and hopes, both in terms of theme, location, size, and price. Next, in the ideation phase, produce a user journey map to describe the flow of renting a place and an information architecture to describe the menu. Based on these two things, the researcher proceeded to the implementation phase by creating Paketempat using Laravel and MySQL.

Figure a is the home display. The 'Home' page is the first page when a user opens the Paketempat website. On this page, the user has not logged in, so the menus that are available and can be opened are only 'home', 'space', 'about', and 'terms'. On the 'Home' page, users can see several room options. If the user has logged in, the user will be able to open a special user index, with more complete room specifications as shown in Figure b.



Omah Cipu

Quick Overview

Garden, Kamar Mandi luar 1

Jl. Simpang Sulfat Barat 1/23, Malang - Jawa Timur

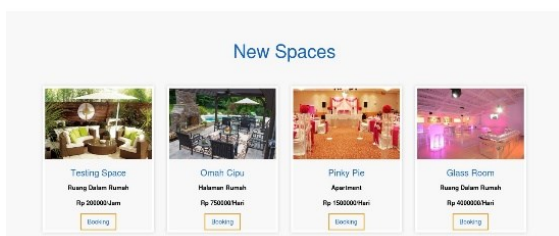
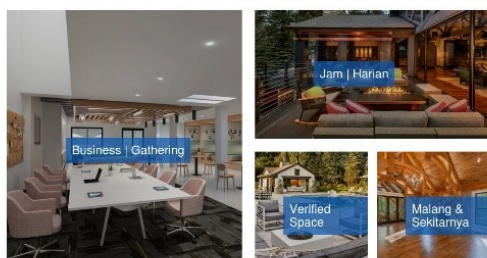
Halaman Rumah - 500 m2 (Lantai 1)

25 orang

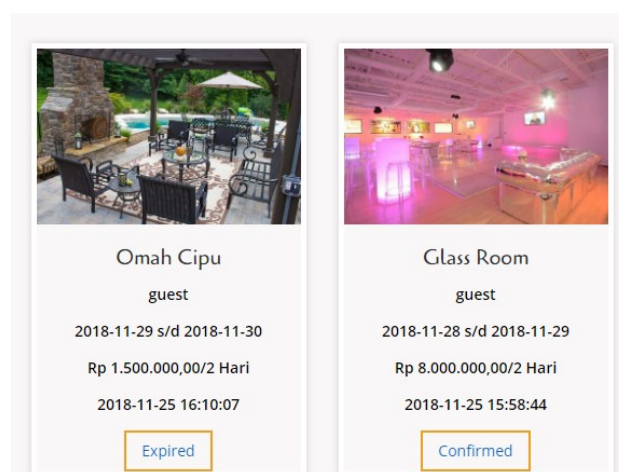
750000/Hari

Booking

(b)



(a)



(c)

Figure 2. Paketempat website page

Room specifications appear in a popup when the room image is clicked by the user. When the user has not logged in, the user can only see the room specifications, but still cannot make a booking. So, if you want to carry out the booking process, the user will be directed to the 'login' page. When the user has logged in, the user can use the 'Add Space' menu. This menu is intended for owners who will rent out their place. If the owner has successfully added a place, it will immediately appear on the 'Home' page of other users.

The 'MySpace Booking' page is a list of rooms owned by users (as owners) that are in the process of being booked by other users (as renters). In this process, you can see the status of the room booking process. During the initial booking process, the owner can confirm whether the room is ready or full, just by pressing the button provided. To confirm room availability, the owner is only given 2x24 hours from the time of booking by the tenant. More than the specified time limit and the owner has not confirmed, the system automatically gives Expired status, which means the booking process failed.

### 3.4 Testing

This research uses TAM to carry out testing. The TAM questionnaire used in this research is shown in Figure 3. Based on the TAM questionnaire distributed to 20 testers, the majority answered strongly agree or gave 3 points. From the results of the questionnaire, it can be concluded that the Paketempat website is quite able to help users as renters and owners to be able to get the room they want and rent out rooms or places that are not in use. Apart from that, the website is easy to use, and the loading process is quite fast, which can also help users to find the room they want, without having to leave the house. The terms of use and rental status are also very clearly explained and displayed on the website. This website is intended specifically for viewing on PC/Laptop and browsers on smartphones. It's just that the display on the smartphone is less attractive and a bit complicated because the smartphone layer is too small to search for too many rooms and make bookings.

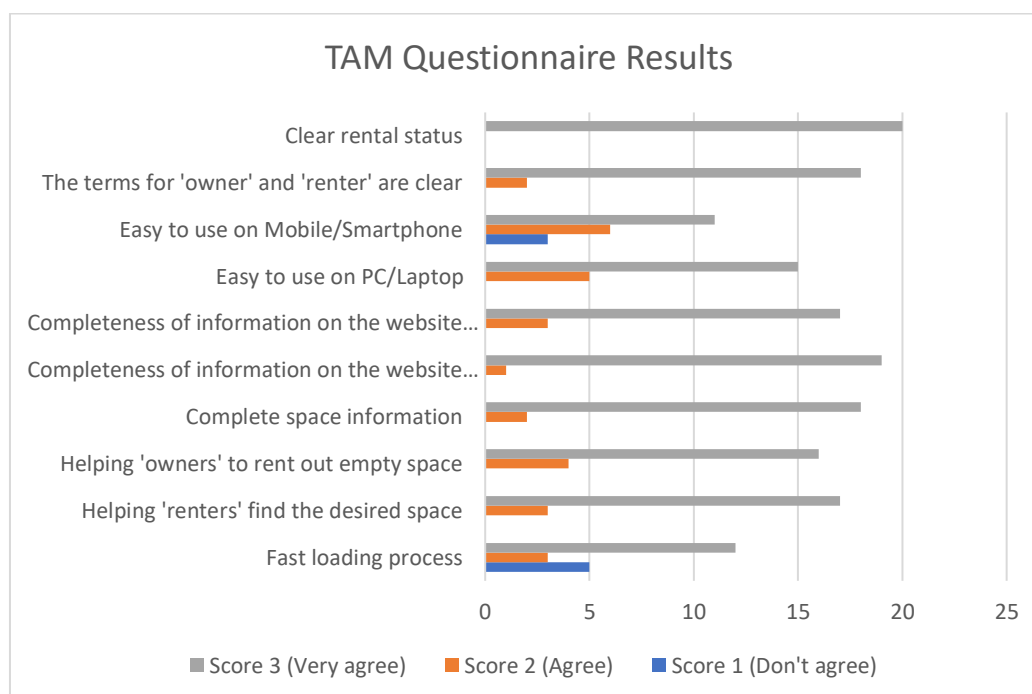


Figure 3. TAM questionnaire results

### 4. Conclusion

The DT approach was used to develop the Paketempat website which is a means for renting space in Malang City. Paketempat's motto is "Find Your Dream Space", so Paketempat can help users find a room or place according to what the user dreams and hopes for, both in terms of theme, location, size, and price. Through testing using the TAM questionnaire, the results showed that on average the testers who were potential users of Paketempat expressed the opinion that they strongly agreed that Paketempat had high usability.

From the results of the questionnaire, it can be concluded that the Paketempat website is quite able to help users as renters and owners to be able to get the space they want and rent out space that is not in use. Apart from that, the website is easy to use, and the loading process is quite fast, which can also help users to find the room they want, without having to leave the house. Through this research, Paketempat which was developed using the DT method can fulfill aspects of the function, appearance, and usability of the application to solve existing problems in Malang City.

### References

- [1] Pemerintah Kota Malang (2023). Tri Bina Cita, [Online]. Available: <https://malangkota.go.id/sekilas-malang/tri-bina-cita/>
- [2] Badan Pusat Statistik Kota Malang (2023), [Online]. Available: <https://malangkota.bps.go.id/>



- [3] R.S. Pradini, I. Aknuranda, and A.S. Budi, "How Can Design Thinking Improve the User Experience for Audit Monitoring System?," *Proceedings of the 6th International Conference on Sustainable Information Engineering and Technology (SIET'21)*, pp. 23-28, Sept. 2021, DOI: <https://doi.org/10.1145/3479645.3479671>
- [4] U. Lichtenthaler. 2020. "Agile Innovation: The Complementarity of Design Thinking and Lean Startup". *International Journal of Service Science, Management, Engineering, and Technology*, vol.11(1), 157-167, DOI:10.4018/ijssmet.2020010110
- [5] A. Wölbling, K. Krämer, C.N. Buss, K. Dribbisch, P. LoBue, & A. Taherivand," Design Thinking: An Innovative Concept for Developing User-Centered Software," *Management for Professionals*, in: Alexander Maedche & Achim Botzenhardt & Ludwig Neer (ed.), *Software for People*, edition 127, pages 121-136, 2012, DOI: [10.1007/978-3-642-31371-4\\_7](https://doi.org/10.1007/978-3-642-31371-4_7)
- [6] M. Dolata, and G. Schwabe, "Design Thinking in IS Research Projects," In: Brenner, W., Uebernickel, F. (eds) *Design Thinking for Innovation*. Springer, Cham, DOI: [https://doi.org/10.1007/978-3-319-26100-3\\_5](https://doi.org/10.1007/978-3-319-26100-3_5)
- [7] A.A. Razi, I. R. Mutiaz, & P. Setiawan, "Penerapan Metode Design Thinkingpada Model Perancangan UI/UX Aplikasi Penanganan Laporan Kehilangan dan Temuan Barang Tercecer. *Jurnal Desain Komunikasi Visual, Manajemen Desain dan Periklanan*, vol. 03, no. 02, September 2018, 75-93. DOI: <https://doi.org/10.25124/demandia.v3i02.1549>
- [8] L. Carlgren, I. Rauth, & M. Elmquist, "Framing Design Thinking: The Concept in Idea and Enactment," *Creativity and Innovation Management*, vol. 25, no.2, May 2016. DOI: <https://doi.org/10.1111/caim.12153>
- [9] J.C. Pereira, and R. de F.S.M. Russo, "Design Thinking Integrated in Agile Software Development: A Systematic Literature Review," *Procedia Computer Science*, vol. 138, pp. 775-782, 2018, DOI: <https://doi.org/10.1016/j.procs.2018.10.101>
- [10] A. Suzianti, A. D. Wulandari, A. H. Yusuf, A. Belahakki, and F. Monika, "Design Thinking Approach for Mobile Application Design of Disaster Mitigation Management," In *Proceedings of the 2020 2nd Asia Pacific Information Technology Conference (APIT '20)*. Association for Computing Machinery, New York, NY, USA, 29–33. 2020. DOI: <https://doi.org/10.1145/3379310.3379324>
- [11] I. Hou I, M. Lan, S. Shen, P.Y. Tsai, K.J. Chang, H. Tai, A.Tsai , P. Chang, T. Wang, S. Sheu, P.C. Dykes, "The Development of a Mobile Health App for Breast Cancer Self-Management Support in Taiwan: Design Thinking Approach," *JMIR Mhealth Uhealth*. 2020;8(4):e15780. DOI: [10.2196/15780](https://doi.org/10.2196/15780)
- [12] S. Amalina, F. Wahid, V. Satriadi, F.S. Farhani, & N. Setiani, "Rancang Purwarupa Aplikasi UniBook Menggunakan Metode Pendekatan Design Thinking," Seminar Nasional Aplikasi Teknologi Informasi (SNATi), pp: 50-55. 2017. ISSN: 1907-5022.
- [13] R. Yulia, R.M. Candra, M. Irsyad, & T. Darmizal, "UI/UX Redesign of INHIL Dukcapil Application Using the Design Thinking Method," *INFOKUM*, 10(5), 481-488, 2022.
- [14] S. Adam, and S. Widiatoro, "Rancang Purwarupa Aplikasi Becakap Bagi Masyarakat Pesisir dengan Pendekatan Design Thinking," *Journal of Applied Informatics and Computing (JAIC)*, vol. 3, no.2, pp.96-101, Dec 2019. E-ISSN: 2548-6861
- [15] S. A. Salloum, A. Qasim Mohammad Alhamad, M. Al-Emran, A. Abdel Monem and K. Shaalan, "Exploring Students' Acceptance of E-Learning Through the Development of a Comprehensive Technology Acceptance Model," in *IEEE Access*, vol. 7, pp. 128445-128462, 2019, DOI: [10.1109/ACCESS.2019.2939467](https://doi.org/10.1109/ACCESS.2019.2939467)
- [16] T. Brown, "Design Thinking. *Harvard Business Review*," 86(6), pp. 84–92, 2008.
- [17] K. Tschimmel, "Design Thinking as an effective Toolkit for Innovation," *Proceedings of the XXIII ISPIM Conference: Action for Innovation: Innovating from Experience*. Barcelona. ISBN 978-952-265-243-0.
- [18] Collaborative Network, [Online]. Available: <https://ngalup.co>
- [19] Coworker: Coworking Space and Shared Office Space, [Online]. Available: [www.coworker.com](http://www.coworker.com)
- [20] Regus: Serviced Office Space, Coworking & Virtual Offices, [Online]. Available: [www.regus.com](http://www.regus.com)
- [21] Instan Office: Office Space for Rent, Serviced Offices & Flexible Office, [Online]. Available: [www.instantoffices.com](http://www.instantoffices.com)