

Assignment #3: CogTool Report

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1. Which search procedure is faster, Pamukkale Turizm or KamilKoc?

The mobile app of Pamukkale is faster than KamilKoç when executing the “buying a ticket” procedures. The timings are demonstrated in Figure 1.

Project: BernaYildiran_Assignment3_CogTool - CogTool				
File	Edit	Create	Modify	Window
Tasks	Pamukkale	KamilKoc	Re-Designed KamilKoc	
Buying a ticket	119.4 s	141.4 s	113.6 s	

Figure 1: CogTool Timings

2. Why is the faster procedure faster?

Figma Link: Pamukkale vs KamilKoç

https://www.figma.com/file/Ueb7KV5xgrzdX76cYPR32I/CS449_Assignment3_ReDesigned_Koc_Turizm?node-id=19%3A2

As can be observed from Figure 2, KamilKoç has a more condensed timeline compared to Pamukkale. CogTool predicts the total time required for Pamukkale as 128.4 seconds and KamilKoç as 141.4 seconds. Therefore, it can conclude that it takes longer for KamilKoç to complete the given “buying a ticket” task.

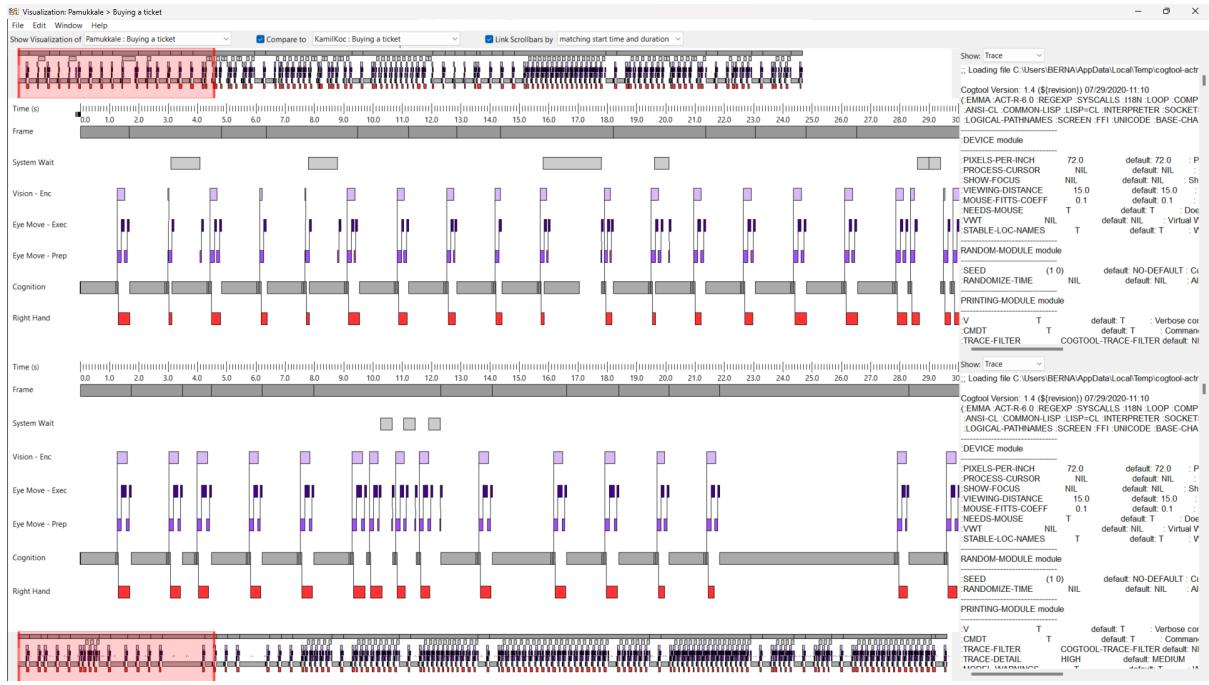


Figure 2: Pamukkale Tourism Visualization vs KamilKoç Visualization

Section 1: Departure and Destination Points Selection

The journey details screens of both apps are very similar to each other, but KamilKoç is slower due to its location search screen which can be seen in Figure 3. Pamukkale used narrow text fields to represent each city in a compact display. On the other KamilKoç preferred wider text fields for each city, forcing users to either type the name of the location or scroll until finding their destination point. As a result, in the KamilKoç app, the cognitive load of the user is much higher compared to the Pamukkale Tourism app.

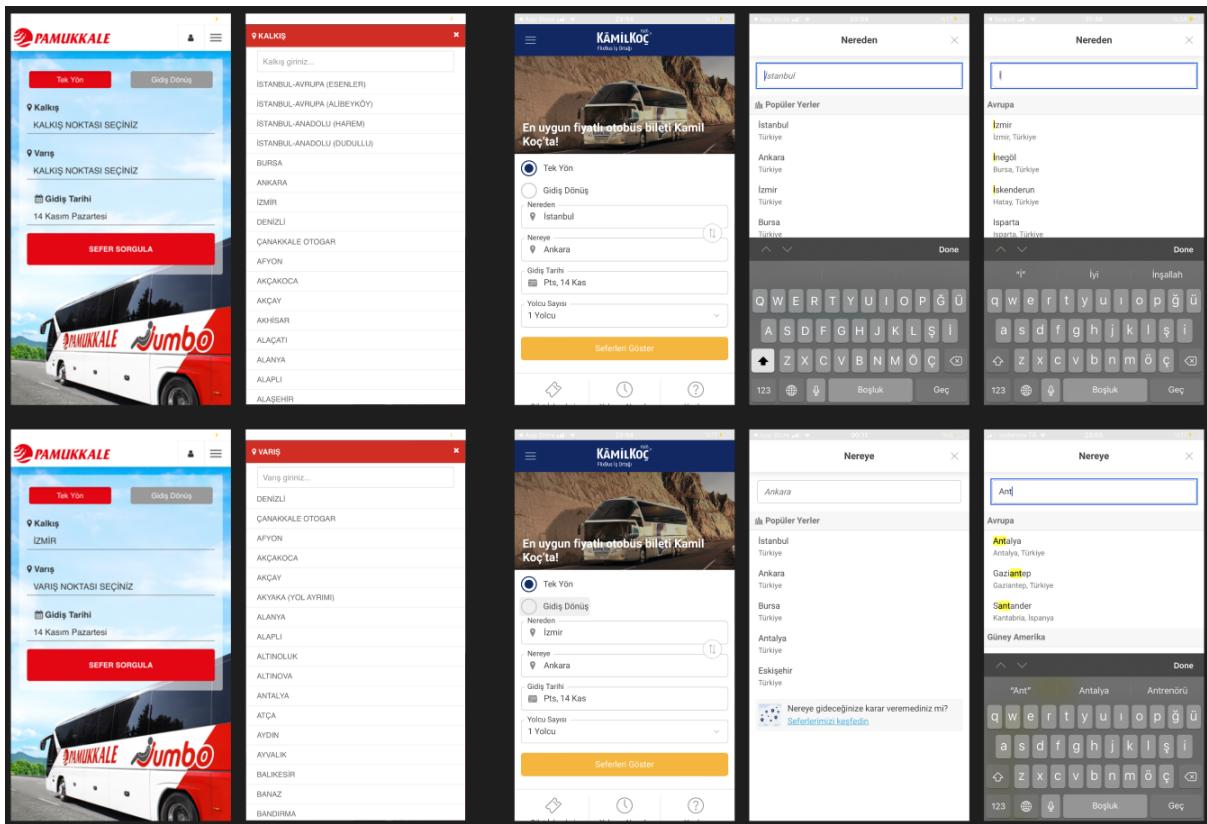


Figure 3: Departure and Destination Points Selection

Section 2: Date Selection

Additionally, selecting the departure date operation is also slower in the KamilKoç because KamilKoç requires an additional click to the “Confirm” button after selecting the date. Pamukkale Tourism does not require further confirmation after the date selection, as seen in Figure 4.

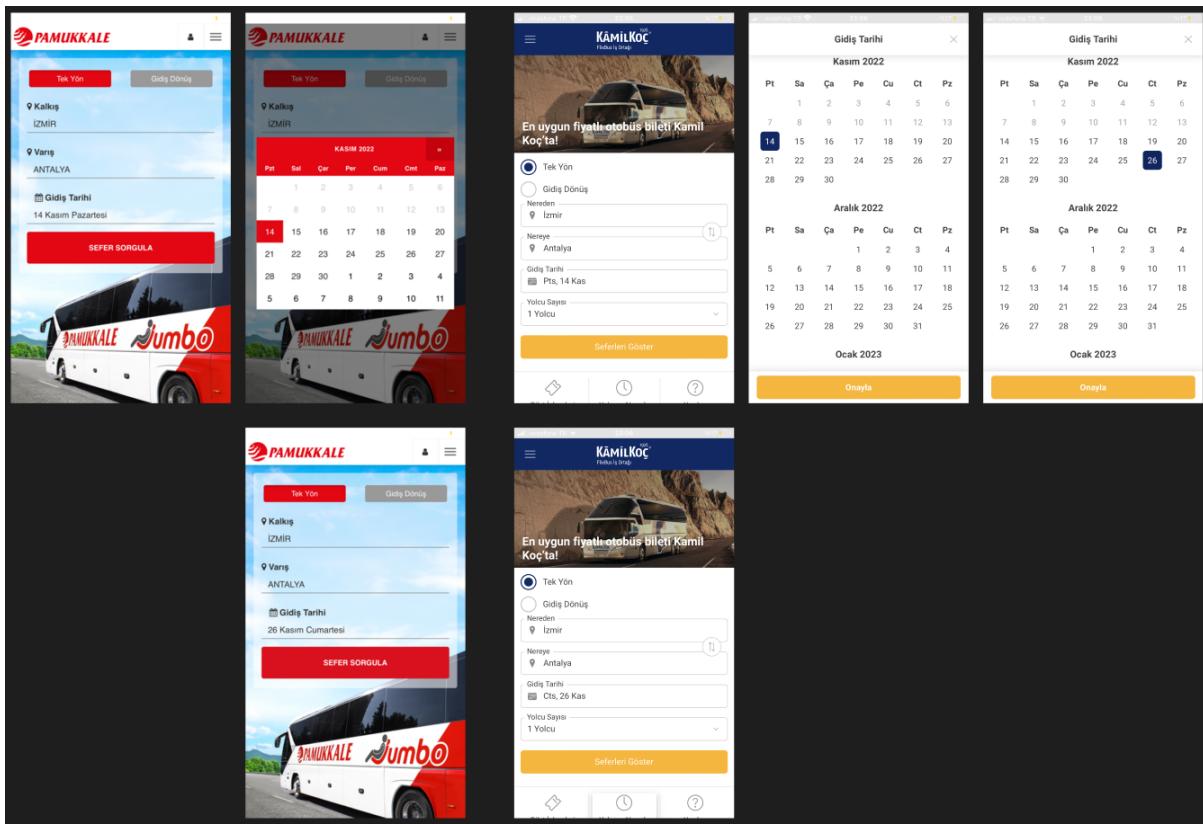


Figure 4: Date Selection

Section 3: Ticket Selection

In Figure 5, it can be observed that Pamukkale Tourism is much faster due to its compact representation of ticket information. In this way, users do not lose time while scrolling the screen or trying to read the details of each ticket, as in KamilKoç's app.

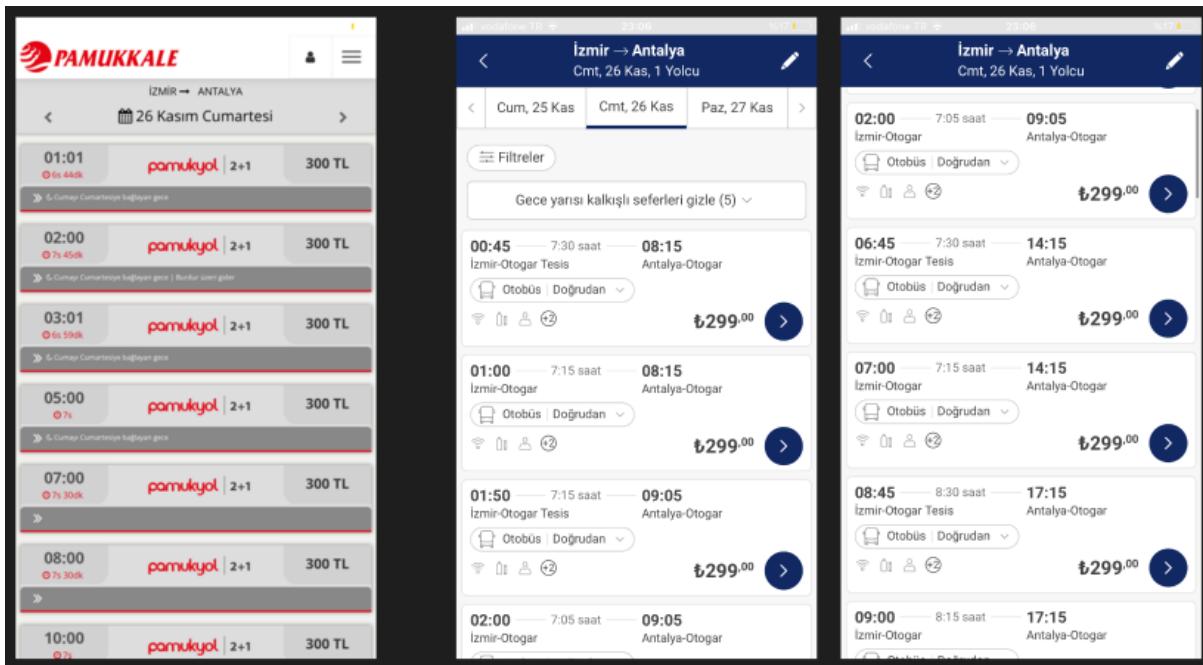


Figure 5: Ticket Selection

Section 4: Seat Selection

In Pamukkale, the seat selection screen opens up immediately after the ticket is selected and it allows user to select their gender during the seat selection process. In contrast, KamilKoç's app requires a button click to open up the seat selection screen, after the ticket selection. It also asks for gender information from the user in a separate screen from the seat selection screen, which causes Koc's app to become much slower than Pamukkale's app. This situation can be observed in Figure 6.

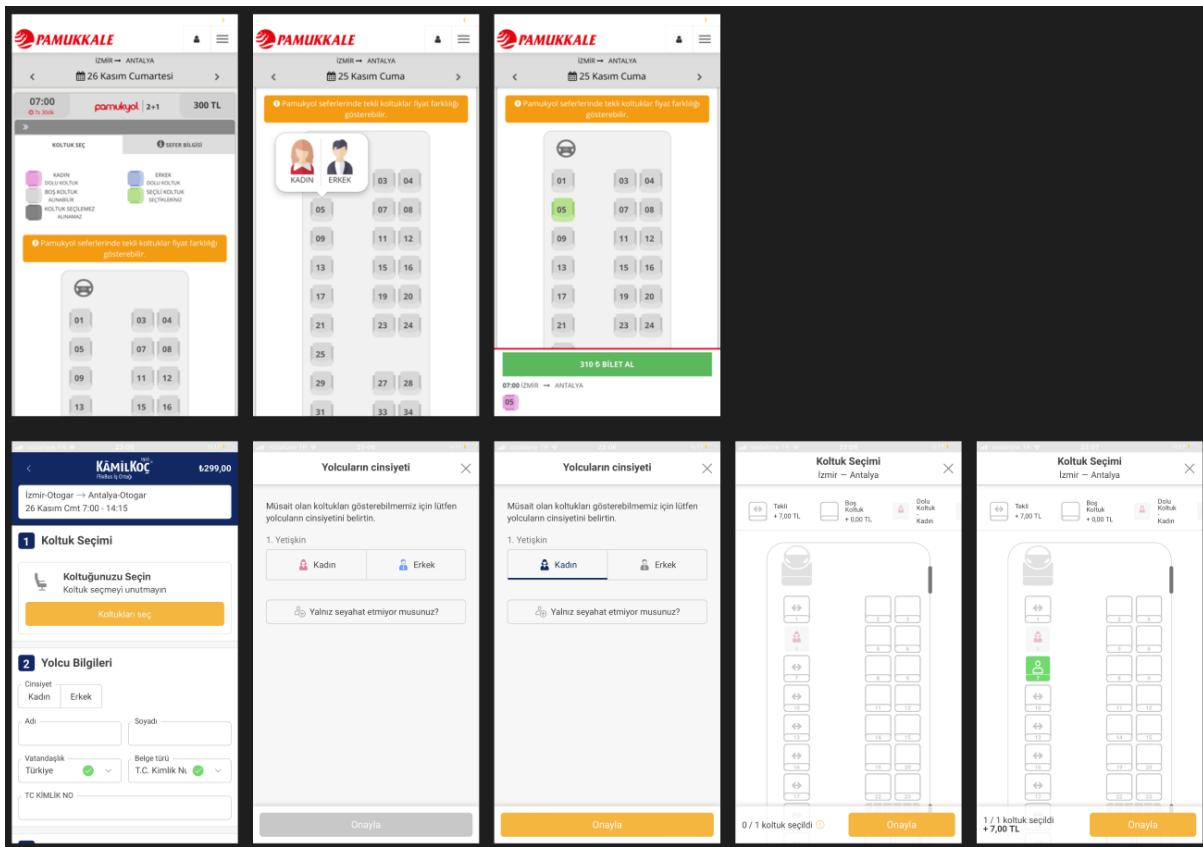


Figure 6: Seat Selection

Section 5: Contact Information

In Figure 7, it can be seen that Pamukkale requires users to enter their phone number as their contact information while KamilKoç requires its user to enter their email and leave their phone numbers as optional. In this case, Pamukkale is much faster since it does not give its user a cognitive load by presenting both phone and email fields together. secondly, typing a phone number is faster than typing an email address which is another reason behind the slowness of the Koç's app.

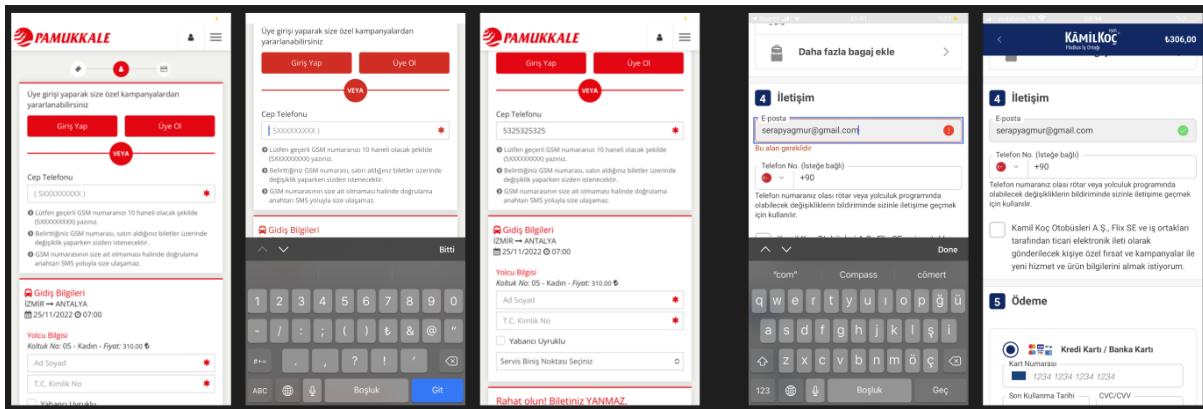


Figure 7: Contact Information

Section 6: Passenger Information

As can be seen in Figure 8, the passenger information section of both apps is very similar except for the name-surname fields. Pamukkale's app provides a faster experience by requesting name - surname in the same text field. On the other hand, even if it is a slower option, KamilKoç minimizes user mistakes by separating the name-surname text fields.

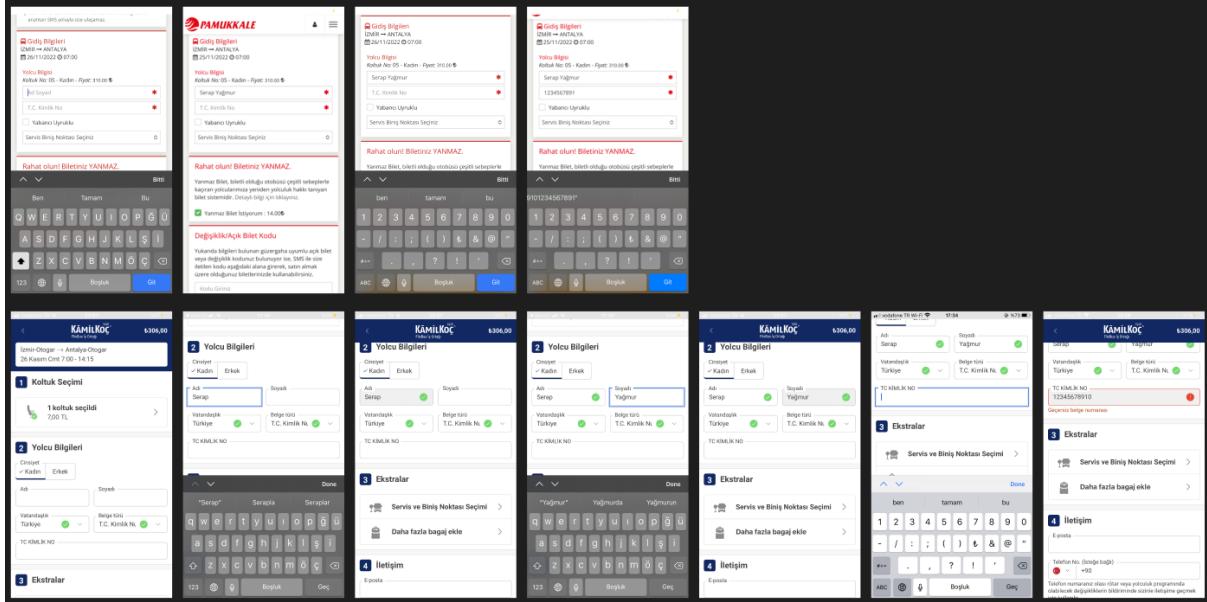


Figure 8: Passenger Information

Section 7: Extras

In the extras section of both applications, which can be observed in Figure 9, KamilKoç provides a faster experience and less cognitive load to its user by minimizing the appearance of the extra features.

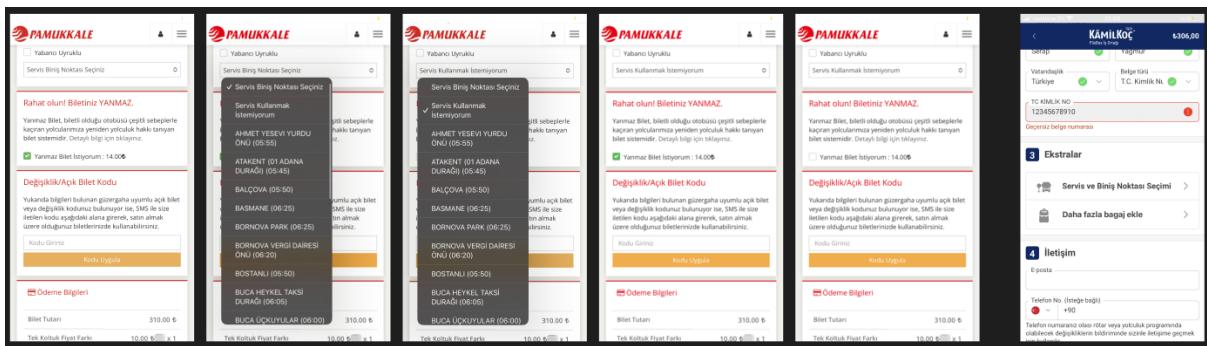


Figure 9: Extras

Section 8: Payment

As can be seen in Figure 10, the payment section of both app is very similar to each other. Therefore both app provides similar experience in the sense of operation speed.

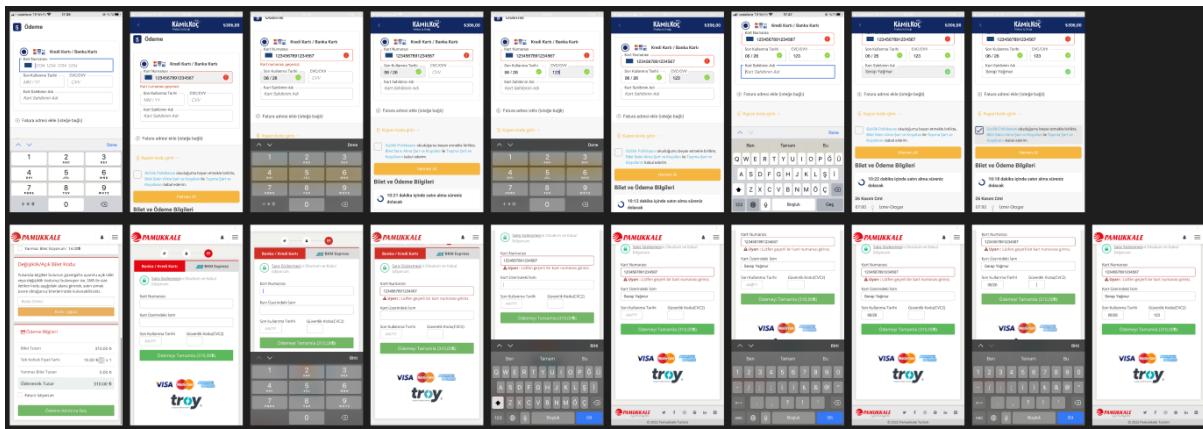


Figure 10: Payment

Literature Review

In each cycle of cognitive processing, information accumulated in the Working Memory starts associatively-linked actions in the Long Term Memory, which is usually referred to as “recognizing”. In this way, Long Term Memory modifies the contents of the Working Memory, which is referred to as “acting”. Due to these recognize-act cycles, organized behaviors are constructed (Card et al., 2008, p.41). Based on this information, it can be deduced that the behaviors or actions which require the support of the Long Term Memory require more cognitive effort than the actions that requires just Working Memory or Short Term Memory. Also, the cognitive system is informed of many things but cannot process more than one thing at a time, this is another reason why cognitive resources should be managed moderately (Card et al., 2008, p.42).

Related to this topic, Alan Dix (2011) highlights that humans can be considered information processors since they get input information from their environment; store, manipulate, use that information and give a reaction as an output (p.55). But Dix (2011) also emphasizes that besides its complexity and sophistication, human perception and cognition also have their own limits (p.55). Therefore in cases where cognitive processes increase, the probability of humans making mistakes increases.

In order to prevent possible mistakes, when designing a user interface, the designer should be aware of these facts and try not to give much cognitive load to the system user.

In the case of the mobile applications of Pamukkale Tourism and KamilKoç, using Pamukkale's app is faster because it does not expect repeating information from its user, and its displays data to the user in a more concise manner. The comprehensive details shown in KamilKoç's mobile app increase the cognitive load of the user and slows down the processes of “buying a ticket” (i.e. ticket details on the ticket selection screen). Lastly, Pamukkale's app demonstrates the information related to each other on the same screen (i.e selecting gender during the seat selection). In this way, it reduces the cognitive load of the user by reducing the number of different screens within the app and supports users' mental models of the app since users will be aware of the current state of the app more easily.

3. How can you make the slower procedure faster? How much time can a user save with this change?

Figma Link: KamilKoç vs Re-Designed KamilKoç

https://www.figma.com/file/Ueb7KV5xgrzdX76cYPR32I/CS449_Assignment3_ReDesigned_Koc_Turizm?node-id=0%3A1

As can be observed from Figure 11, Re-Designed KamilKoç has a significantly sparse timeline compared to KamilKoç's mobile app. Re-Designed KamilKoç improves the total time required for KamilKoç to complete the “buying a ticket” task by 27.8 seconds. Normally KamilKoç’s app takes 141.4 seconds to complete the task, but the re-designed version of the app takes 113.6 seconds for the same task.

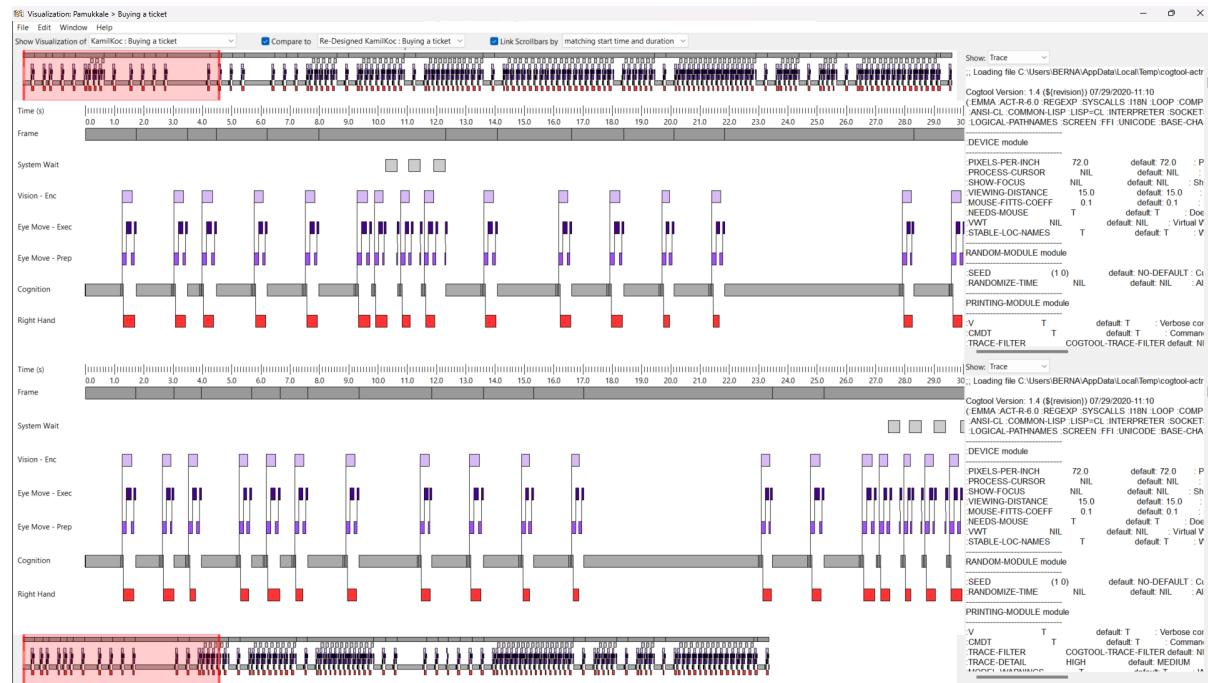


Figure 11: KamilKoç Visualization vs Re-Designed KamilKoç Visualization

Section 1: Re-Designed Departure and Destination Point Selection

In order to improve the duration of the location search, an alphabetic slider is placed on the right side of the screen, as can be seen in Figure 12. Utilizing an alphabetic slider provides a much faster experience compared to typing the name of the location or scrolling the list until finding that location.

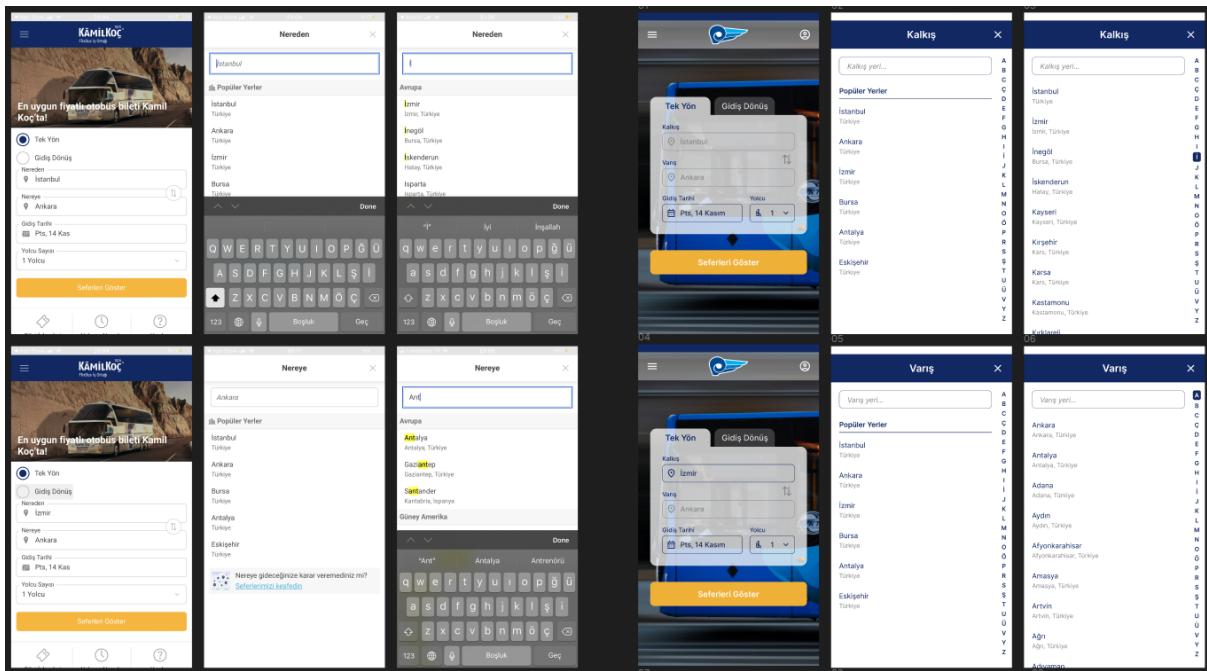


Figure 12: Re-Designed Departure and Destination Point Selection

Section 2: Re-Designed Date Selection

As can be seen from Figure 13, no functional improvements are made on the date selection screen. Only esthetical improvements were made.

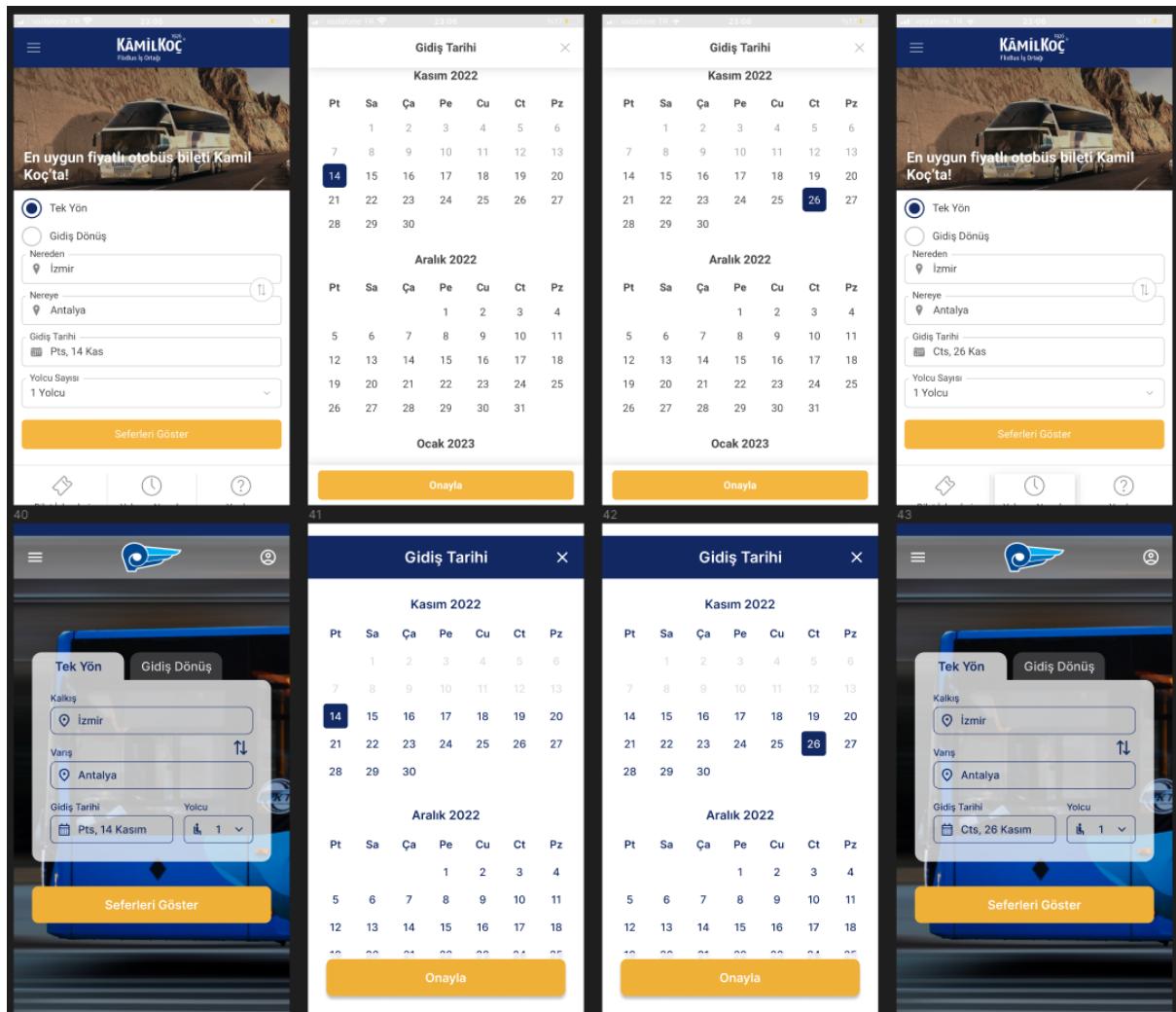


Figure 13: Re-Designed Date Selection

Section 3: Same Ticket Selection

No functional or visual improvements are made on the ticket selection screen, as its demonstrated in Figure 14. The reason behind this is, even if the ticket cards with comprehensive information take much more time to scroll and read, it's a necessary feature for minimizing mistakes done by users. This feature help users to make their choices without any errors by displaying all the necessary information about a ticket openly.

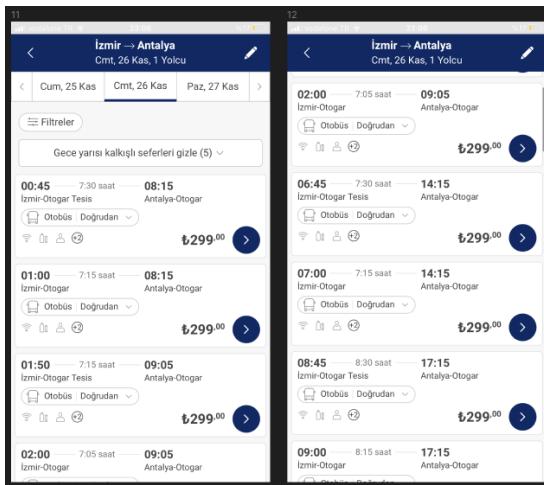


Figure 14: Same Ticket Selection

Section 4: “Buying a Ticket” Flow Format

The “Buying a ticket” flow transformed into a progress bar format as can be seen in Figure 15. In this way, users do not need to click the “Seat Selection” button for displaying the seat selection screen, or do not lose time by scrolling little by little in order to fill in the necessary information. Instead, by utilizing the “Continue” and “Back” buttons, the user can go back and forth between the progress bar stages in a faster way.



Figure 15: Progress Bar

Section 5: Re-Designed Passenger Information

No functional improvements are made on the passenger information screen, as can be seen in Figure 16. In order to reduce the visual density of the screen unused elements such as “Vatandaşlık” and “Belge Türü” is removed from the screen, since only the “TC Kimlik No” field is necessary for the scope of this task.

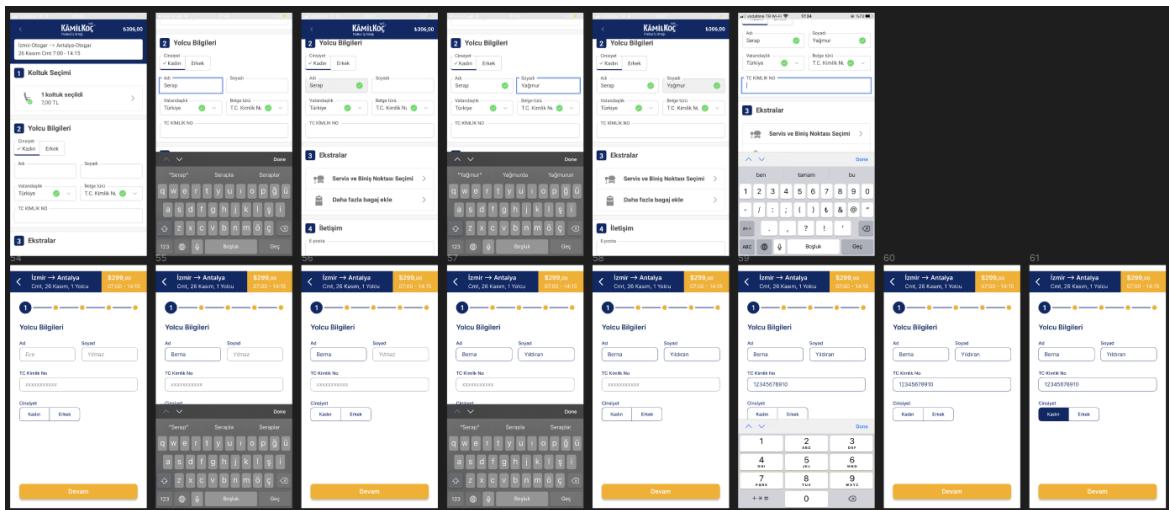


Figure 16: Re-Designed Passenger Information

Section 6: Re-Designed Seat Selection

The major improvement on the seat selection screen is made by changing its place in the “buying a ticket” task flow. In the original KamilKoç app, the seat selection process is done before inputting passenger information. Because of that, the app requires users to enter gender information two times, initially in the seat selection process and secondly in the passenger information process. By determining the passenger information process as the first task, the seat selection process will refrain from two unnecessary operations which are selecting the gender again and clicking on the “confirm” button. The changes can be observed in Figure 17.

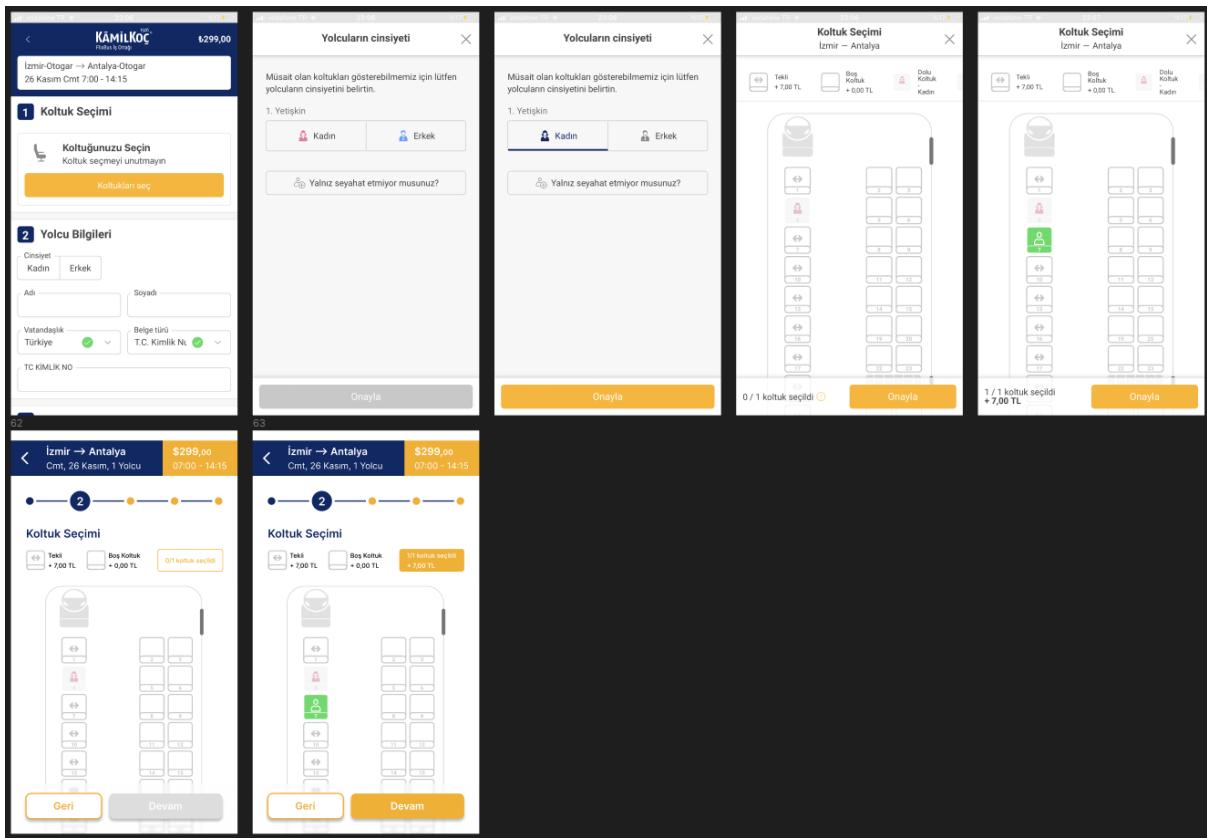


Figure 17: Re-Designed Seat Selection

Section 7: Re-Designed Extras

No functional changes were made in the Extras process, as can be seen in Figure 18. Only the visual design of the page layout is adapted to the rest of the page designs in order to ensure Gestalt similarity and common fate principles.

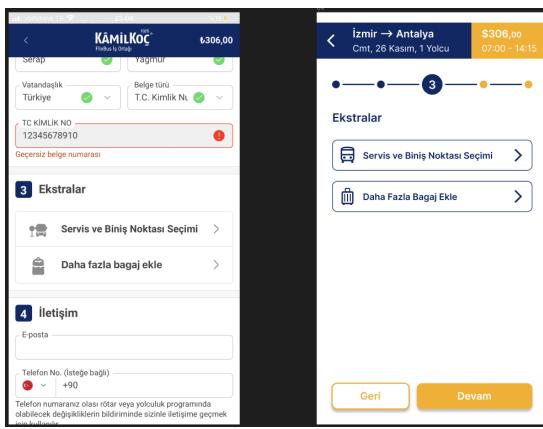


Figure 18: Re-Designed Extras

Section 8: Re-Designed Contact Information

One of the major issues for KamilKoç to become slower is, it requires users to enter their e-mail address which takes a significant amount of time. As a solution for this problem, this page was re-designed by

adding an auto-fill button for users to fill in the required contact information based on the information in their profile. Since email and phone number are essential information while creating a profile within an application. The changes in the visual design and functionality of the screen can be observed in Figure 19.

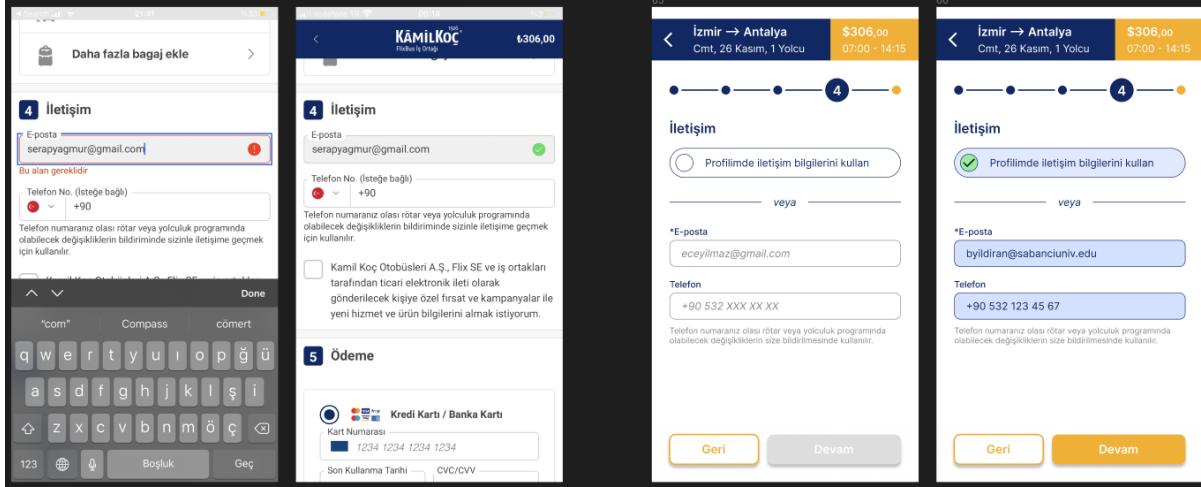


Figure 19: Re-Designed Contact Information

Section 9: Re-Designed Payment

There are no functional changes in the payment screen, just the visual design of the screen is adapted to the rest of the pages, and the spacing between the elements is arranged in order to lessen the cognitive load of the user by reducing the visual density. The changes can be observed in Figure 20.

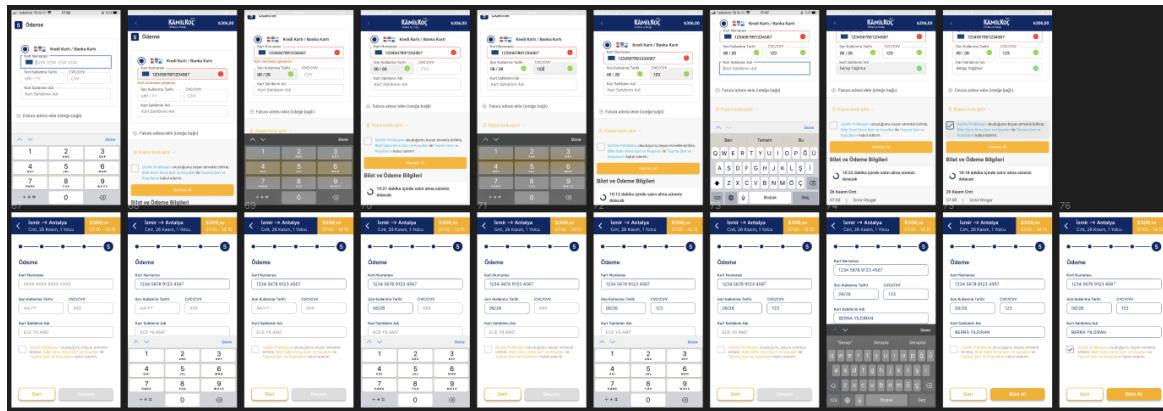


Figure 20: Re-Designed Payment

4. References

- Card, S. K., Moran, T. P., & Newell, A. (2008). 21. In *The psychology of human-computer interaction* (pp. 23–44). chapter, CRC Press.
- Dix, A. (2011). 1. In *Human-Computer Interaction* (pp. 12–57). chapter, Pearson Prentice-Hall.