Data Economics Final Report

SU Online Platform Development Project- Strategies, Effects, and How It Failed

by

Name: Chia-Yu Chen
Student-Nr.: S158800

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Introduction

Due to diminishing its market share in the carputer market, Company SU, an automotive electronics manufacturer, has attempted to shift from producing carputers to providing an online reservation and order service through the self-developed car-based digital platform. Unfortunately, after two years, the platform develop project was terminated. This case study will analysis the digital transformation process, including the IT-intensive market features, strategies for standing out in a winner-takes-all market, information asymmetry issues, and factors contributing to the project's failure.

Background

SU is a Taiwanese company specialising in producing and selling smart connected automotive electronics, including carputers, in-car entertainment systems, and dashcams that can be controlled with smartphones.(Porter & Heppelmann, 2015) Their flagship product is a voice-operated carputer that allows drivers to navigate, connect to YouTube and Netflix, adjust the map display, synchronise their phone's contacts and calendar, and control the car's temperature and lighting using voice commands. The carputer's operating system can also be remotely updated, ensuring ongoing service. (Porter & Heppelmann, 2015)

Challenge and Digital Transformation- the carputer-based platform as the solution

With more car models equipped with standard carputers, Company SU has experienced a decline in revenue as they are not the official supplier of any automobile manufacturers. To remain competitive, Company SU has begun developing the SU platform, a voice-controlled reservation and ordering platform based on a carputer, which can be connected to a smartphone or iPad through the corresponding apps. The platform is built on the navigation system of the carputer and uses its search engine function and data collected from various apps to coordinate online bookings and orders, provide price comparisons, and offer customised suggestions, creating a new carputer-based service ecosystem. (Alaimo et al., 2020) Company SU has

divided the platform development project into three stages:

1. Online food takeaway reservation service: As start point to build a large installed base.

2. Platform extension: Extending service to different industries, including car maintenance reservations, parking, and online ticket booking.

3. Different industries integration: integrating different industries, such as restaurants, accommodations, and ticket booking services, into a one-stop trip planning and booking solution.

This paper will mainly focus on the first stage, the SU platform as a voice-controlled food takeaway reservation platform.[1]

The Change in the Company Identity and Core Value Preposition

The company has shifted its focus from manufacturing to online services. Specifically, company SU is moving away from its original objective of providing every driver with affordable carputers and automotive accessories to offer a new lifestyle based on carputers. This transition is not just about introducing new technology but also changing the company from a physical product-dependent manufacturer to an online service provider. According to research by Wessel et al. (2021), this shift represents Company SU's digital transformation process.

Online Platform as an IT Intensive Industry

The online platform operation is a part of IT-intensive technology. The economics of scales not only means that the industry can generate a high gross profit margin, making company SU overcome its difficulty but the market's high concentration and turbulence features should also be considered. (Clemons et al., 1993; McIntyre & Chintakananda, 2014)

Network Effect and the Positive Effect in the Winner Takes All Market

The platform market experiences a significant positive cross-side (indirect) network effect,

[1] To know more about how the platform works, please check the Appendix 2: How does SU platform work?

where users prefer to use platforms with a larger selection of stores and restaurants. This encourages businesses to join the platform to reach more customers. (Alaimo et al. 2020; Eisenmann et al., 2006; Gregory et al., 2021; McIntyre & Chintakananda, 2014) The same-side (direct) network effect is also critical in the platform market, as more users lead to more reviews which can present more accurate information to other users, increasing the platform's value. (Alaimo et al. 2020; Eisenmann et al., 2006; Gregory et al., 2021; McIntyre & Chintakananda, 2014) Increasing the number of users also improves the recommendation system and user experience since the more data used in training the AI algorithm, the better performance the system can provide. (Gregory et al., 2021) Although the searching algorithm reduces the searching cost of users (Susarla et al., 2009) and increases the competition between restaurants, the positive direct and indirect effects on the demand side still outweigh the negative same-side effect on the supply side, leading to the strong positive effects in the platform market. (McIntyre & Chintakananda, 2014; Shapiro et al., 1999) As a result, only a few top companies can survive in the market (McIntyre & Chintakananda, 2014), such as Food Panda, which captures around 80% of the market share in the Taiwanese online food takeaway market. (Institution for Information Industry, 2022)

Multi-homing Strategy and its Potential Risk

To avoid competing directly with the dominant player in the platform market, the SU platform uses the carputer-based platform as the complement technology to differentiate SU platform with smartphone-based online food reservation platform. (McIntyre & Chintakananda, 2014) The SU platform differentiates itself from smartphone-based online food reservation platforms by utilising carputer-based and speaker recognition technologies as complementary features. The strategy avoids direct competition with the dominant player in the platform market. (McIntyre & Chintakananda, 2014) Company SU needs to manage the lock-in cycle to users' switch costs, triggering the positive effect. (Shapiro et al., 1999) The first step of building the

lock-in cycle is that platform SU should build up a certain level of installed bases. (Alaimo et al. 2020; Eisenmann et al., 2006; Gregory et al., 2021; McIntyre & Chintakananda, 2014; Shapiro et al., 1999) For this reason, platform SU must be available to most cars to increase the number of users accessing the platform. However, since the car market is competed by technology and the lock-in effect provided by the brand, the car market and the carputer operation system market, as a car component, perform the features of low network intensive and low industry concentration. (McIntyre & Chintakananda, 2014; Shapiro et al., 1999) Due to the variety of carputer operation systems, the SU platform must have at least six different apps, including three carputer versions for three main car manufacturers and two mobile-connected apps (IOS / Android), and an app designed for iPad to cover half of the users.[2] The cost to access the different carputer operation systems and maintain and provide updates for various apps should also be considered. The cost of a multi-homing strategy might offset the effect of the economics of scale. (Clemons et al., 1993; McIntyre & Chintakananda, 2014)

If Company SU sticks to its own carputer brands, the number of users might be too small to reach the criteria level that the network effect can generate great value.[3] (Alaimo et al. 2020; Eisenmann et al., 2006; Gregory et al., 2021; Iansiti & Lakhani, 2020; McIntyre & Chintakananda, 2014; Shapiro et al., 1999) Another possible solution is to co-develop the carputer-based app with mainstream automotive companies. The strategy can not only let the platform framework cover most drivers to dominate the market but also reduce the cost of maintaining and developing the platform. The following section will discuss pricing strategies to improve user and restaurant engagement and build the install base and lock-in effect.

[2] According to the statistic from ACEA (2023), the Volkswagen Group, which has the highest market share, only obtained 25% of the market share, followed by Stellantis at 18% and the Hyundai Group at 10%.

[3] According to the statistical data in Company SU, the number of carputers installed and used is 3574 at 2022.

Discount, Versioning and Bundling, Strategies to Tigger the Lock-In Effect

The platform generates revenue through three methods: a service fee charged upon completion of each reservation or order, marketing services for stores seeking additional exposure, and additional service bundles, including hardware-software combination support and IT-enabled processes, such as digitalising the menu and opening an online shop.

Due to the low demand on the variety of online order services, restaurants and stores are highly sensitive to pricing. A discount strategy[4] should be applied during the introductory period to increase user engagement. (Shapiro et al., 1999)

To enhance the lock-in effect, versioning can be applied to the marketing services. (Shapiro et al., 1999; Stremersch & Tellis, 2002) The SU platform offers modularised marketing services, allowing stores to self-select when and how their shops are promoted. (Shapiro et al., 1999) Additionally, price bundling strategies enable stores to buy long-term marketing services at a lower price, increasing stores' incentive to stay on the platform. (Shapiro et al., 1999; Stremersch & Tellis, 2002) The SU platform also provides different levels of online platform operation and marketing services bundles for small stores and restaurants seeking online store operation solutions. These bundles include the menu digitalisation, e-POS[5] introduction, and adapted services to marketing services, reducing switching costs regarding adopting new systems. (Stremersch & Tellis, 2002)

Versioning strategies segment the market and allow stores to self-select the needed services,

[4] According to the user terms on Food Panda and Uber Eats, the service fee charged for each order is 30% of the order. In the first year of platform introduction, the SU platform will charge a 10% service fee for each completed order and 30 New Taiwan dollars for each reservation.

[5] E-POS system: A electronic point-of-sale system that combines hardware and cloud-based software, providing sales and payment receive functions.

increasing their engagement on the platform. Bundling strategies add additional value while increasing restaurant switching costs, enhancing the lock-in effect. (Shapiro et al., 1999; Stremersch & Tellis, 2002)

Information Asymmetry, the Potential Risk of Online Platform

The quality of a platform's service is also critical in gaining an advantage in a competitive market. (McIntyre & Chintakananda, 2014) On the digital platform, restaurants always have more information about their products than users before the order is picked up. Information asymmetry, which always exists on the digital platform, might significantly decrease the platform's value for users (Dawson et al., 2011; Kreps, 2003; Marginal Revolution University, 2015; Spence, 1973) as they may assume that stores or restaurants will use the information they do not know to earn more profits, reducing users' willingness to pay. (Kreps, 2003; Spence, 1973) As a result, users will tend to buy from stores or restaurants offering dishes at below-average prices, leading to the adverse selection issue. (Kreps, 2003; Spence, 1973) In such cases, stores offering meals at reasonable but not the lowest prices may be eliminated, leaving only low-priced and low-quality options on the platform. This will significantly reduce the value of the platform. Additionally, the IT infrastructure reduces users' costs on product search and comparison, facilitating the process of market failure. (Dawson et al., 2011; Kreps, 2003; Marginal Revolution University, 2015; Spence, 1973)

Review System, a Signalling Strategy to Mitigate the Information Asymmetry

One widely applied strategy to mitigate information asymmetry is signalling. (Kreps, 2003) To enable restaurants to send the signal, the platform can establish a review system[6] where users share their order experiences, providing valuable information to uninformed other users. (Kreps, 2003; Spence, 1973) Since high-quality restaurants can easily obtain positive reviews without

[6] For More information regarding how the review system in the SU platform works, please see Appendix 2 (Step 6: Leave Reviews and Order Completion Rate)

paying any cost while low-quality ones can only get negative reviews, high-quality restaurants have a high incentive to ask users to leave the review after purchasing, building their reputation. (Kreps, 2003; Spence, 1973)

To ensure the quality of information in the system, the SU platform has adopted two mechanisms to increase the cost of producing fake signals. (Kreps, 2003; Spence, 1973) Firstly, IT technologies adopted by the SU platform can ensure that only users who have completed the order can leave reviews. This helps decrease negative reviews resulting from personal issues and prevents restaurants from paying third parties to leave fake positive reviews. Secondly, to keep the good reviews, restaurants are motivated to cancel an order if they cannot deliver the food on time. In such situations, restaurant order completion rates drop, reducing the uncertainty about ordering food online.

The economics of scales feature of online platforms makes establishing wild accessible reviewing systems more easily, reducing the cost of signalling. (Clemons et al., 1993; Iansiti & Lakhani, 2020; Susarla et al., 2009) By leaving reviews after completing the transaction, platform users can access more information before placing orders, mitigating the adverse selection problem. (Kreps, 2003; Spence, 1973) Moreover, increasing reviews and transaction data enabled the platform to provide users with more detailed and precise information, triggering the positive data network effect. (Eisenmann et al., 2006; Gregory et al., 2021; McIntyre & Chintakananda, 2014; Shapiro et al., 1999)

How Does the Digital Platform Affects Company SU and its Stakeholders?

Apart from analysing the features of the online platform market and the strategies that can help the SU platform enter and thrive in the platform market, this section will focus on how the SU platform impacted the stakeholders.

Due to market imperfection, different parties would need to spend the additional cost on coordinating (searching) and monitoring other parties' behaviour after reaching the agreement. (Cordella, 2006; Susarla et al., 2009) The SU platform's search function and recommendation system can reduce the time buyers use to search and decide on the restaurant they want to visit. It also reduces the financial cost that restaurants invest in marketing and the cost of exchanging information on products' supply and demand. (Clemons et al., 1993; Cordella, 2006; Susarla et al., 2009) By using the SU platform, the interaction between users from both sides will be more standardised, reducing communication costs such as the time spent answering the phone or making the phone call. (Clemons et al., 1993) The SU platform, acting as the third party, uses technology to pre-authorise the amount of money for orders before completing the transaction, enhancing transaction security in society.[7] (Newell & Marabelli, 2015) The transaction security and search cost reduction are exchanged for users' privacy. (Newell & Marabelli, 2015)The SU platform collects user behaviour and payment data through carputers and smart devices to provide better service, but it also gathers data from and shares data with third parties, which users might never be aware of.[8] Additionally, by analysing personal data, platforms' algorithms may interpret users' undisclosed information and categorise people in different categories based on that information, causing possible discrimination and tension in society.

The Failure of the SU Platform

Although the existence of the SU platform can lower transaction costs, mitigating the imperfection of the market (Susarla et al., 2009), and the carputer-based platform has the potential to create a new ecosystem, the platform development project was terminated in

[7] For instance, restaurants may decline big orders between the transaction when they find out they cannot prepare the orders in time or receive more profitable ones. In another way, the pre-authorisation of the order can discourage users from making hoax orders.

[8] For more detail about the dataflow of SU platform, please check Appendix 3: The data flow of SU platform.

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Ignore the Market Conditions of the Carputer Market

Company SU failed to consider the condition of the carputer market, which hindered their multi-homing strategy. Due to low concentration features and the differences in technical capabilities of carputers, the carputer version SU platform can only be installed on their own carputers. (McIntyre & Chintakananda, 2014; Shapiro et al., 1999) Additionally, the voice control technology, which is new to the market, does not grant users enough incentive to switch from their existing carputers to SU's carputer. Compared with the platform, switching between physical products is more costly since users not only need to pay for the new products (financial switching cost) but also need to face the risks that the SU carputer might not be compatible with their car (rational and procedural switching cost). (McIntyre & Chintakananda, 2014; Shapiro et al., 1999) As a result, the Platform failed to build enough installed base in the carputer-based platform, forcing the SU platform to compete directly with Food Panda, which is already dominant in the market. (Alaimo et al. 2020; Eisenmann et al., 2006; Gregory et al., 2021; McIntyre & Chintakananda, 2014; Shapiro et al., 1999)

Misestimating the Costs that Require to Survive During the Cold Start Period

Due to the failure of carputer-based app escalation, the SU platform needed to compete with the dominant platform in the market. Unfortunately, there was no technology available that could change the current ecosystem of the online platform and increase users' incentive to join the new platform. (McIntyre & Chintakananda, 2014) Furthermore, the low demand for the variety of online order services reduces both restaurants' and users' incentives to join the new platform, despite no financial cost involved. (McIntyre & Chintakananda, 2014; Shapiro et al., 1999)

Although the platform SU has invested a large amount of money in increasing users'

engagement, including discounts, subsidies, and introduction prizes, the increase in the number of active users on the platform is insignificant in the first year. Since the value generated from the online platform is relatively low until the installed base reaches a certain level (Iansiti & Lakhani, 2020), the disproportionate marketing expenditure and revenue flows forced company SU terminated the project.[9]

Conclusion

According to the case of Company SU, it is imperative for companies to evaluate below factors when they plan to enter the online platform market. Firstly, they need analysis of the intensity of the network effect in their target market while also factoring the state of the upstream and downstream industries, such as the carputer market in this case. Secondly, timing is a critical factor, as users' switching costs play a significant role in the construction of the installed base. Since switching costs are higher in the dominant market, entering the market when new technology is introduced can significantly reduce switching costs, encouraging users to join the new platform. Thirdly, while the datafication of transactions reduces the costs of information exchange, the information asymmetry features of online platforms may offset the benefits of datafication. Therefore, companies should establish policies or mechanisms, such as review systems and monitoring algorithms, to mitigate the uncertainty of online transactions. Finally, the value generated by the platform is low initially; companies must allocate a budget and various strategies such as bundling, discounting, and versioning to increase user engagement. Additionally, companies must consider revenue streams on which they can depend during the lock-in cycle construction and installed base build-up period, which may take more than one year.

[9] According to the internal statistics, the monthly revenue of the SU platform is less than NT$ 50,000 in the first year, but the expenditure on operation and marketing is over NT$300,000. Active users who have made the reservation in a month are less than 300.

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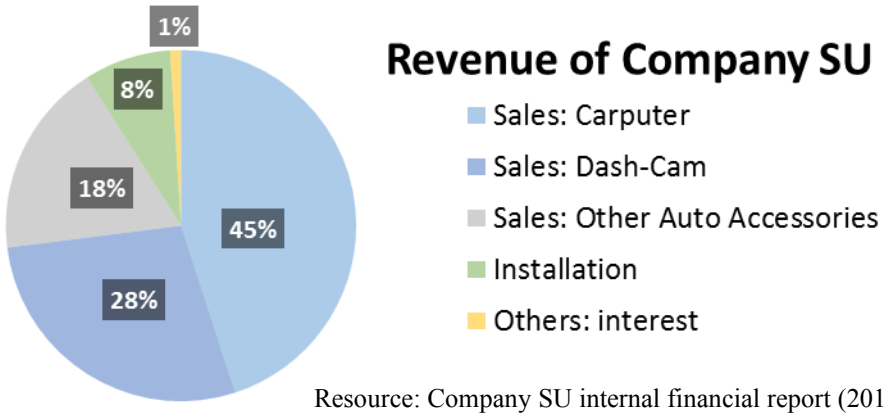
Appendix1: The Revenue Composition of Company SU



Resource: Company SU internal financial report (2019)

Figure 1 The revenue composition of Company SU in 2019[10]

Appendix 2: How does SU platform work?

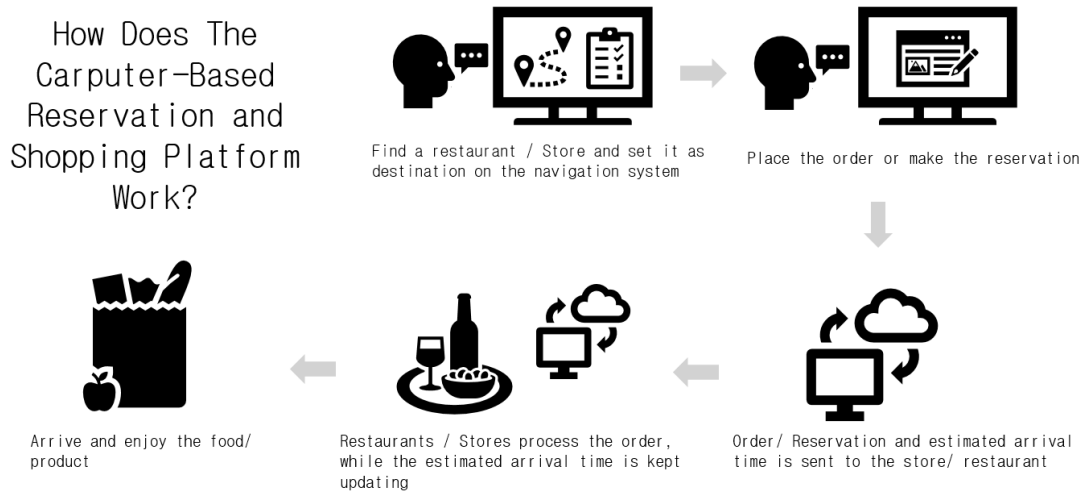


Figure 2 The process of make a reservation/ order via Company SU's platform.

The Structure of SU Platform and Installation

SU platform can be accessed via two mediums- the carputer-based app and the smartphone-based app. For the carputer-based platform, the platform is built-in and depends on the navigation system. Therefore, after installing the carputer, the user can register the account on the reservation and shopping platform. For the smartphone-based app, users need to download the SU platform's app, which can also link and synchronise with the carputer app.

[10] Due to the covid pandemic, the sales and revenue composition has been serious affected during 2020 to 2021. To present the more general situation, the 2019 revenue records is be used in this essay.

Step 1: Search and Choose the Food (User)

Users can search for the destination name (restaurant name), the type of food they want to eat or the specific dish they want to eat and set the destination in the navigation system (or smartphone apps) by voice control. The search result can be sorted by the price of dishes, restaurant ranking, distance, or the additional travel time to achieve that place.

Step 2: Order or Reservation (User)

Users can use the voice to order and ask the AI to provide the relevant information. Users can ask the platform to read the menu and the review for them and make a reservation or order. For the reservation, users just need to provide the number of people that will attend and give the expected arrival time if the reservation is for days before. For the takeaway function, the user can order the dishes directly. After the confirmation, which will ask the user to say, "I confirm the order", the money for food will be charged in advance.

Step 3/4: Order Receiving and Preparation (Restaurants/ Stores)

After reservation/ order, the name and contact number of the reservation person, the content of the order/ reservation and the estimated arrival time will be sent to the restaurant or store. Restaurants and shops can check the reservation and order on the specially designed app (iPad based), which is planned to integrate with the e-POS system, organise the order and contact the reservation person via the app. The apps also allow restaurants to check users' locations, which can better help them provide the food on time, improving user experience. When the restaurant starts to prepare the food, they can change the order's condition to preparation, synchronising the information with users.

If some dishes are sold out, restaurants can use the app to communicate with users and cancel the order. After the system in the platform confirms the order cancellation, the pre-authorisation transaction will be cancelled. If users change their minds, they can freely cancel the order before the order condition changes into preparation.

Step 5: Take-Away the Order

When the users arrive, they can show their order and the QR code that represents the order on the smartphone. When food is checked and taken away, the restaurant will scan the QR code as a confirmation. Then, the transaction will be defined as completed.

Step 6: Leave Reviews and Order Completion Rate

After completing the order, the users will have access to the leaving review regarding their takeaway experience. If the transaction is cancelled by users before starting preparation, users do not have the right to leave the review. If the restaurants cancel the order, the order completion rate of the restaurants will be reduced.

Appendix 3: The data flow of SU platform

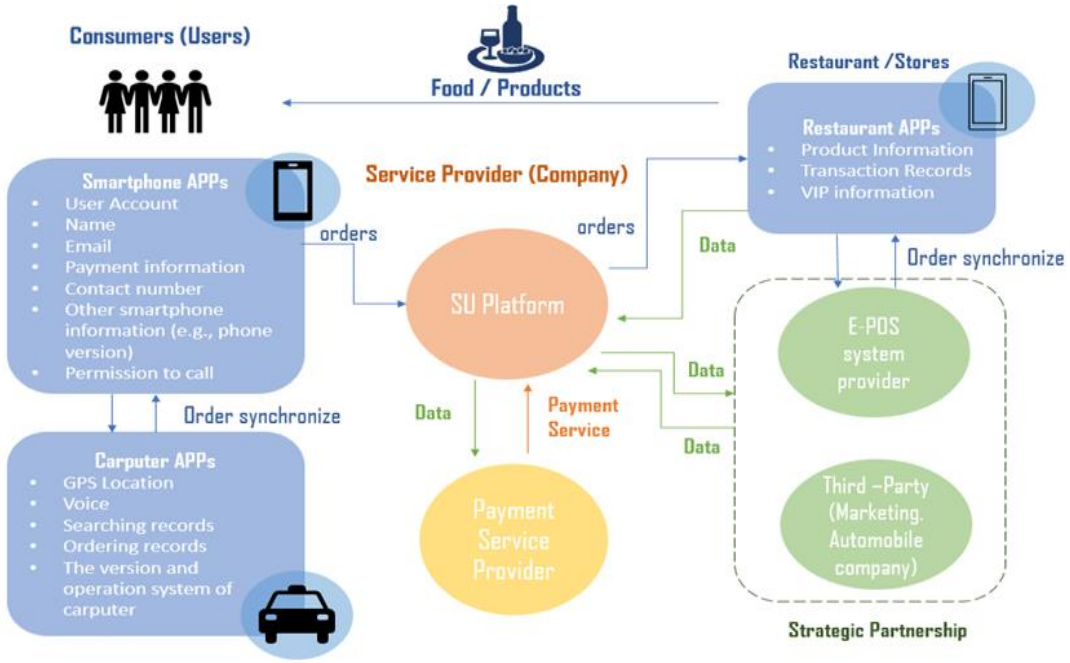


Figure 3 The data flows of platform SU

The SU platform collects information regarding user account, name, payment information, contact number and e-mail through smartphone apps for placing the order online and sending the invoice. The voice is collected to train the speaker recognition algorithms to provide the voice control service and the GPS location to calculate a more accurate arrival time. The carputer version is used for doing the app development and remote updates. The information is

not mentioned above, and the personal data collected through a third party will be used to improve the user's experience. In other words, training the algorithm adopted on the platform.

For the data outflow aspect, the transaction-related data such as estimated pickup time, name and order content would be shared with restaurants. The payment information will send to the payment services provider. Personal behaviour data, such as transaction records, search records, and driving routes, might be shared with third parties.