Research Article

Adoption of crowdsourced delivery: An online focus group interview

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Abstract: This research aims to investigate university students' perceptions of crowdsourced delivery and identify factors that influence crowdsourced delivery platform acceptance as a consumer and as a driver. Research design is a qualitative exploratory case study that was performed on university students' perceptions of crowdsourced delivery in Turkey. Online focus group discussions were used to collect data with 35 university students. Data included six online focus groups and were analyzed using thematic analysis. To increase credibility and trustworthiness, the researcher triangulation was applied. The findings show that as a consumer; performance expectancy, price sensitivity, social influence, and perceived risk and as a driver; compensation, working environment, and perceived risk affect acceptance of crowdsourced delivery. The findings are helpful for crowdsourced delivery platforms to increase the acceptance rate in the beginning stage of crowdsourced delivery and provide suggestive knowledge for other emerging countries. This paper highlights what factors influence students' acceptance of crowdsourced delivery in the introduction phase from the perspective of a group of university students in an emerging country. Therefore, crowdsourced delivery platforms that want to increase their market share quickly should organize custom campaigns for university students.

Keywords: Crowdsourced delivery, emerging market, technology acceptance, last mile delivery solutions, B2C delivery

Kitle kaynaklı teslimatın benimsenmesi: Bir çevrimiçi odak grup görüşmesi

Özet: Bu araştırma, üniversite öğrencilerinin kitle kaynaklı teslimat algılarını araştırmayı ve bir tüketici ve bir sürücü olarak kitle kaynaklı teslimat platformunun kabulünü etkileyen faktörleri belirlemeyi amaçlamaktadır. Araştırma tasarımı, Türkiye'de üniversite öğrencilerinin kitle kaynaklı teslimata ilişkin algıları üzerine gerçekleştirilen nitel bir keşifsel durum çalışmasıdır. Veri toplamak için 35 üniversite öğrencisinin dahil olduğu odak grup görüşmeleri gerçekleştirilmiştir. Veriler altı çevrimiçi odak grup görüşmesini içermiş ve tematik analiz yöntemi kullanılarak analizleri gerçekleştirilmiştir. Verilerin inandırıcılık ve güvenirliğini arttırmak için araştırmacı çeşitlemesi kullanılmıştır. Bulgulara göre, tüketici olarak; performans beklentisi, fiyat duyarlılığı, sosyal etki ve algılanan risk ve bir sürücü olarak; gelir, çalışma ortamı ve algılanan risk, kitle kaynaklı teslimatın kabulünü etkilemektedir. Bulgular, kitle kaynaklı teslimat platformlarının, kitle kaynaklı teslimatın başlangıç aşamasında kabul oranını artırması ve diğer gelişmekte olan ülkeler için anlamlı bilgiler sağlaması açısından yararlıdır. Bu makale, gelişmekte olan bir ülkedeki bir grup üniversite öğrencisinin bakış açısıyla, giriş aşamasında öğrencilerin kitle kaynaklı teslimatı kabul etmesini etkileyen faktörlerin önemini ortaya koymaktadır. Bu nedenle pazar payını hızla artırmak isteyen kitle kaynaklı dağıtım platformları, üniversite öğrencilerine özel kampanyalar düzenlemelidir.

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1. Introduction

E-commerce has created radical changes in many areas of human life. The comfortable purchasing experience has significantly affected consumer habits, and its usage has become widespread. While there were no e-commerce companies just 30 years ago, the industry has continually increased such that Amazon, an electronic-based company, is one of the largest retail companies in the world today (Berg & Knights, 2021). In 2020, The global retail trade market reached 26,5 trillion USD and increased by approximately 4.4% compared to the previous year. The share of e-commerce from that market is 15.4%, 4.1 trillion USD (Cramer-Flood, 2020). However, last-mile delivery capabilities have struggled to develop along with this trend.

The extreme demand for online sales has increased convenience and comfort for customers but has brought environmental and economic difficulties. While a significant number of vehicles creates multifarious social costs (Kapser & Abdelrahman, 2020), it is a substantial parameter of environmental effects, especially air pollution and noise, affecting the health of the most vulnerable inhabitants (Allen et al., 2015). On the other hand, today's customers expect faster and more comfortable services even if delivery is provided within 24 hours (Goetting & Handover, 2016). Increasing customer expectations and accumulated orders have created obstacles in the logistics process. They have pushed industry stakeholders to seek a solution that will provide a suitable offset between their costs and customer needs, speed, price, and environmental effects (Chen & Chankov, 2017). Although many innovative delivery solutions have been introduced, such as drones, parcel lockers, and autonomous delivery vehicles, the prevalence of these technologies is quite limited. Crowdsourced delivery differs from these solutions in that it is rapidly becoming widespread. Crowdsourced delivery provides an adaptable, cost-effective, efficient, and scalable solution to last mile delivery problems, and retailers are beginning to become aware of the potential of Crowdsourced progressively (Buldeo Rai et al., 2021a). Despite the potential benefits, consumer perception toward crowdsourced delivery is a critical issue in realizing these benefits.

Crowdsourced delivery platforms have been growing for several years, and though most of them are based in the US, new initiatives have started to emerge in the rest of the world (Punel and Stathopoulos, 2017). As it is a new business model, behavioral research on crowdsourced delivery is scarce on both the consumers and carriers (Le et al., 2019; Wicaksono & Tavasszy, 2021). From in consumer perspective; price (Punel and Stathopoulos, 2017; Buldeo Rai et al., 2018; Punel et al., 2018), environmental awareness (Buldeo Rai et al., 2018; Punel et al., 2018), societal awareness (Buldeo Rai et al., 2018; Punel et al., 2018), reliability, privacy, accountability (Devari et al., 2017), driver reputation, speed (Punel and Stathopoulos, 2017), qualitative delivery (Buldeo Rai et al., 2018), without damage, delivery on time, product type (Le & Ukkusuri, 2018) and location (Punel et al., 2018) have influences on acceptance of crowdsourced delivery. From in driver perspective, compensation (Paloheimo et al., 2016; Huang, et al., 2020; Buldeo Rai et al., 2018; Le & Ukkusuri, 20019a), good working environment (Paloheimo et al., 2016; Buldeo rai et al, 2018), environmental awareness (Paloheimo et al., 2016; Buldeo Rai et al, 2018), enjoyment of the previous job, trust entry barriers to work (Huang et al., 2020), innovativeness, societal awareness, (Paloheimo et al., 2016), clear legislation and good platform operation (Buldeo Rai et al., 2018), have influences on acceptance of crowdsourced delivery. However, these studies have focused on a few countries; USA (Le & Ukkusuri, 2019a; Le & Ukkusuri, 2019b; Lee and Ukkusuri, 2018; Le et al., 2019; Punel and Stathopoulos, 2017; Punel et al., 2018; Devari et al., 2017), Vietnam (Lee & Ukkusuri, 2018), Finland (Paloheimo et al., 2016), Belgium (Buldeo Rai et al., 2021a; Buldeo Rai et al., 2018) and China (Huang et al., 2020).

Most studies evaluate the consumer behaviors about acceptance of crowdsourced delivery in a developed country context. Also, studies are conducted in different markets, which are mostly growth phase in the product life cycle. The introduction phase of crowdsourced delivery acceptance is understudied in the literature, especially in the emerging country context. In places where Crowdsourced delivery applications are widespread, people have started to know how they operate, but it is

still a relatively new service for Turkey. In this study, the data is collected from university students, because young populations tend to be early adopters of last-mile delivery innovations (Moroz & Polkowski, 2016; Punel et al., 2018; Chen et al., 2018). This paper aims to investigate university students' acceptance of crowdsourced delivery as consumers and as drivers.

The structure of this paper addresses the methodological approach in the second section, while the third section presents results on research findings. The fourth section is given to discussion, and conclusions take place in the fifth section.

2. Methodology

An exploratory qualitative approach was selected, as this has previously been proven to provide comprehension to the researcher if there is no prior knowledge regarding the subject (Chawla & Sondhi, 2016). This study seeks a comprehensive evaluation of crowdsourced delivery adoption in the Turkish B2C market. Participants are university students, as they tend to have high technological adaptation and e-commerce usage potential. Through a review of the existing literature, 13 questions about delivery methods and Crowdsourced concept were settled on and refined. Having conducted six focus group discussions with a total of 35 participants, we obtained evaluations that helped us to comprehend the causes for why they were willing to use the crowdsourced delivery system or not. This exploratory research was conducted in Turkey, which has the 19th largest economy globally. Approximately 8 million students attend higher education in 203 universities there (YÖK, 2021).

The study obtained human subjects' approval from the Ethics committee of Istanbul Ayvansaray University. Background questionnaires and online focus groups were employed as data collection methods. The background questionnaires provided data about demographic information and e-commerce habits, and the online focus group discussions captured more information regarding crowdsourced delivery to respond to our research objectives. Internet technology provided an opportunity to conduct focus group discussions in a web environment, termed "online focus groups," instead of at real in-person meetings (Gundumogula, 2021). All the sessions were held online using the Zoom platform. The online focus group method eliminates location problems and ensures the ability to select a wide range of suitable participants for a particular subject (Gundumogula, 2021). Therefore, we chose university students in different parts of Turkey. Properly conducted group discussions can also produce more exploration than one-on-one interviews, thanks to mutual participation within the discussion (Willis et al., 2009). As was selected in this study, online group discussion is an effective method to research different technologies (Hancock, 2017; Morrison et al., 2020).

2.1. Participants

The inclusion criteria are as follows:

• Participant must be aged at least 18 years or older.

• Participant must be a student at one of the Turkish universities.

• Participant must be an e-commerce customer.

We used two recruitment methods: social media and word of mouth. Participants were determined based on purposive sampling. All participants were selected without considering their prior knowledge or usage of the crowdsourced delivery app to enlarge the understanding of crowdsourced delivery adoption. The demographic characteristics of participants are shown in Table 1. In the age group of 19-27 years, 35 participants were selected and informed us that they were willing to participate. In total, six focus group discussions were carried out. Studies on focus group sizes recommend various numbers (Prince & Davies, 2001; Krueger & Casey, 2002). Therefore, we selected group sizes of 5 to 7. Discussions are more likely to be effective and may reveal more with fewer participants than a larger one (Krueger & Casey, 2002).

Table 1: *Focus group participants*

Participant Number	Age	Sex	Average Number of Parcels per Year	Group No.
Participant1	22	Female	75	
Participant2	23	Male	25	
Participant3	21	Male	10	
Participant4	21	Female	65	Group 1
Participant5	21	Female	110	
Participant6	21	Male	15	
Participant7	21	Female	60	
Participant8	20	Female	50	
Participant9	21	Female	45	
Participant10	20	Female	35	
Participant11	19	Female	15	Group 2
Participant12	20	Female	30	
Participant13	21	Female	50	
Participant14	23	Male	20	
Participant15	21	Male	10	
Participant16	20	Male	10	
Participant17	23	Male	5	Group 3
Participant18	22	Female	100	
Participant19	21	Male	20	
Participant20	20	Male	35	
Participant21	20	Male	25	
Participant22	22	Male	45	Group 4
Participant23	24	Female	40	
Participant24	21	Female	10	
Participant25	22	Female	30	
Participant26	22	Female	50	
Participant27	21	Male	25	Group 5
Participant28	21	Male	25	
Participant29	22	Female	45	
Participant30	21	Female	20	
Participant31	26	Male	60	
Participant32	24	Female	20	
Participant33	27	Male	30	Group 6
Participant34	25	Male	30	
Participant35	25	Female	40	

2.2. Data collection

Focus groups were carried out using Krueger and Casey's (2002) standard procedures. At the beginning of each focus group, the purpose of the study was first explained to the participants. Then the moderator informed them about anonymity and group discussion norms and asked for their verbal consent. Each group also agreed that what was discussed in the focus group would not be disclosed anywhere else. Six online focus groups were conducted between October and December 2021, and each was recorded in the Zoom platform. Each focus group ranged between 36 and 67 minutes and was moderated by an academic, while one observer oversaw technical issues and took notes. In total, 5 hours and 19 minutes of group discussions were recorded. Qualitative research considers the point where the data reach saturation by repeating more than the number of participants (Creswell, 2013). Therefore, data collection was continued until sufficient saturation was achieved in the data.

The moderator conducted the group discussion using semi-structured interview questions and one short quantitative survey (see appendix A). Some of the questions are adapted from Buldeo

Rai et al. (2021b). Following an explanation of the research goal, some videos and PowerPoint presentations were presented to inform participants who had no prior knowledge of crowdsourced delivery.

Participants were then asked about their attitudes and perceptions about crowdsourced delivery. In addition, they were led to discuss the reasons for their positive and negative feelings toward this delivery method and what characteristics of the delivery method and the drivers would lead to its acceptance.

2.3. Data analysis

Focus group discussions were transcribed, reviewed, anonymized, and checked for accuracy by the main moderator. The transcriptions then underwent qualitative thematic content analysis. Thematic analysis is a flexible and understandable analyzing method preferred in qualitative studies, including focus group studies (Aitken et al., 2019). Two researchers conducted the analysis separately. The three researchers compared the coded themes and discussed them until a consensus was reached on the codes. As a result of the agreement, the codebook was created, and the final revision was carried out by seeking and receiving feedback from an academic experienced in qualitative methods. Microsoft Word and Excel were used for analyzing the data. It was ensured that the main themes were formed using induction approach.

3. Results

3.1. Adoption Factors of Consumers

Performance expectancy. Across all focus groups, participants expressed that they have faced various problems with last-mile delivery. Most participants chose the last-mile delivery method that would cover their performance expectations. They stated that they would like to change their last-mile delivery method to improve their experience.

Delivery time is one of the consumers' main problems in last-mile delivery. Although the participants' expectations regarding delivery times differed according to the product types,

most participants were seen to give importance to a short delivery time.

Participant 3: "If the products I'm going to buy are groceries, I expect to receive them within that day, even half an hour."

Participant 5: "If the product arrives in a shorter time, I say that can be a preferred factor that is more important than the delivery fee."

Having a delivery arrive after the estimated arrival time causes a negative service perception for many participants, who may make a purchase decision according to the delivery date.

Participant 28: "[Say] I'm buying a gift for my friend's birthday. When that delivery arrives late, I'm waiting for it in such an angry way."

Participants state that the current last-mile delivery is relatively inflexible. The broad time window and the inability to change the process limit the consumers. Offering more flexible options to consumers, such as a shorter time window, location change option, and delivery day selection affects consumer preferences.

Participant 32: "If the delivery comes to my house when I'm not at home, it's a big problem because then I have to go and pick it up. I think this situation creates a lot of trouble. In other words, the lack of a certain time window with last-mile delivery companies is a serious problem."

Participant 22: "What I am experiencing very often these days, for example, [is that] I receive a message that it will be delivered today, but it is not clear what time it will arrive. I am [left] waiting for it all day long, and I cannot focus on other work."

Participant 4: "When I enter the app, if there are options such as [whether to] let [my delivery] be left with my neighbor or delivered on another date, I would prefer the option to have it delivered on another date. Because it shows that the product will come tomorrow, but I won't be at home tomorrow. For example, I want to change it to Saturday, [because on the original delivery day] I'm not at home, so I do not want to be stressed [about it]. Otherwise, I must call and talk to the last-mile delivery company, so I would like to [be able to] select the day I am at home directly from the app. I think this would be an outstanding service."
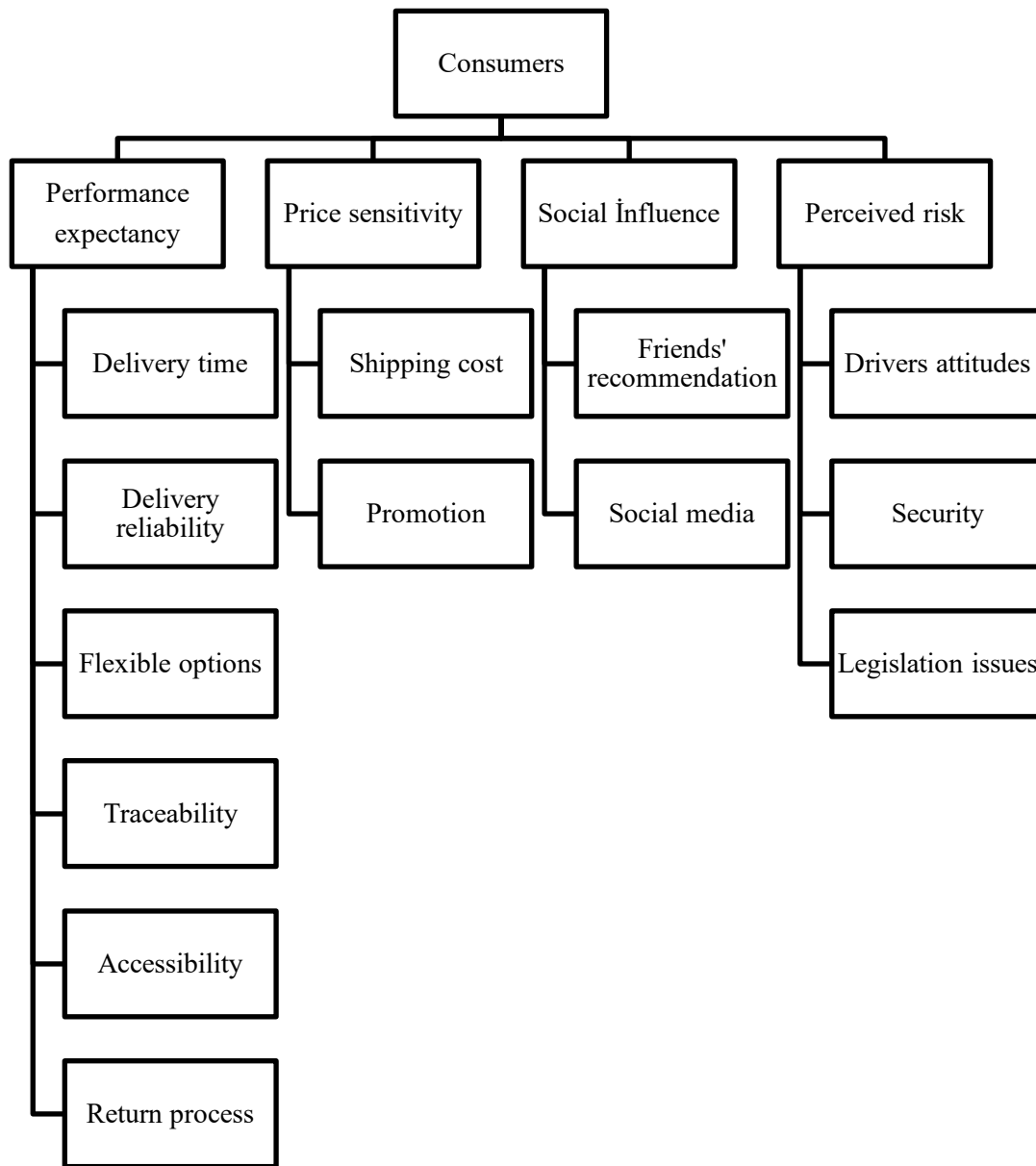
Figure 1*: Acceptance factors of consumers*

Participants want to get information about the status and delivery time of their products to plan their daily activities. They state that this data is often not entered in the shipment information system with last-mile delivery, or it is entered incorrectly or incompletely. Today's technology allows real-time tracking of deliveries, but traditional last-mile delivery companies don't provide this technology to consumers. Many participants want to benefit from this feature.

Participants who wish to avoid the "you were not at home" problem think that the shipment tracking system is a significant advantage.

Participant 17: "I don't know the exact delivery date when I place an order for books, clothes, etc. It is uncertain whether it will arrive in a week, in a day, or two days. I need to see the delivery date."

Participant 6: "For example, I think it is important to inform consumers that 'Your order is on its way, your order will arrive between these dates.'"

Participant 12:" I need to know in how many days the product I bought will arrive. The system says a week, [but it may come] in three days or four days; we don't know now how many days it will [take to] arrive. I want to know what day and what time it will come when ordering."

Participant 5: "Features such as a live help option, [or the ability to check the location of an] order or remaining delivery time seem to encourage people to use [the service]."

Participant 22: "Maybe if there is a company that works with a real-time location service or makes a call before [delivering], I guess it would be good for me."

Most last-mile delivery companies do not deliver to rural areas or have on certain days. Users living in these areas must take delivery from collection points, as this is the only option. Some participants would prefer companies that provide services in line with their expectations.

Participant 13: "I always choose home delivery, but since I live in a village, it always stays at the collection point, so I have to go and pick it up all the time."

Participant 10: "There is no last-mile delivery company that does home delivery where I live, so I usually have to pick it myself."

The last-mile delivery is a backward- as well as a forward-operating system. Both aspects of this operation need to be planned to meet consumer expectations. Some participants were concerned about how the return processes will be managed in crowdsourced delivery.

Participant 19: "If I choose crowdsourced delivery, and the item comes to as broken, how can I send the item back?"

Price sensitivity. Price was a crucial factor for the participants and directly affected their behavioral intentions. A significant number of participants stated that various price-related factors would influence their use of crowdsourced delivery. Paying the shipping cost was perceived as inconvenient by the participants. Also, most of the e-commerce companies in Turkey offer free shipping services over a certain shopping amount, so consumers do not know how much money is usually paid for shipping. If the crowdsourced shipping cost is less than other last-mile delivery methods, it is an important alternative.

Participant 2: "If the thing coming to me is something precious, and if there is a considerable shipping fee difference from a traditional last-mile delivery company, I will use crowdsourced delivery."

Participant 16: "I might consider whether this option would be cheaper in terms of price compared to standard last-mile delivery."

Promotion is very effective in the diffusion of new technologies and their rapid adoption by consumers. Participants are positive about different delivery promotions related to the last-mile delivery. Likewise, they stated that they would try at worst if the crowdsourced delivery offered a promotion. In addition, promotional offers can create a social impact and be shared among students.

Participant 35: "Actually, picking up from the delivery point is not my first choice, but if there is a promotion or discount, I can pick it up from the delivery point."

Participant 29: "If there is a discount or promotion somewhere, I want to inform my friends and take advantage of [it]."

Participant 10: "I use it. We love discounts and free things as a nation, so I use them too."

Social influence. One of the essential factors in adopting new technologies is social influence. Social influence is the state of being affected by the ideas of those around us. Participants mentioned that their friends' recommendations could be an essential factor in adopting crowdsourced delivery as their last-mile delivery of choice.

Participant 6: "Frankly, if a friend of mine used it, and she/he was satisfied and recommended it to me, I would use it too."

Participant 11: "If the people around me do not have problems with it, or the problems they are experiencing are minimal ones that can be solved, I [will feel able to] use it."

Along with their friends' recommendations, participants said that other users' ratings and comments about crowdsourced delivery could also influence their adoption of it. Although positive comments could positively affect their

use of the service, negative comments and ratings could also have a negative effect.

Participant 4: "The ratings of the users are also a necessary detail in my opinion since as the application settles, people who are early users will have comments, ratings, notes on how much shipping they do, etc. If they give me confidence [in the service], then I can use it."

Participant 8: "If people complain a lot or I see bad reviews, I make my choice accordingly."

Social media play such a significant role in people's lives. Followers care about social media influencers and celebrities choices.

Participant 7: Maybe first we will learn to recognize [the service] thanks to influencers, and then we will get used to it.

Perceived risk. It was observed that the participants were not familiar with crowdsourced delivery and found it different from traditional last-mile delivery in terms of its non-corporate nature. Three aspects affected the risk perceived by the participants. First, the drivers' attitudes can have an impact on participants' acceptance or rejection of this delivery method. While the participants who had enjoyed a positive driver experience approached this method positively, some thought that drivers might have negative attitudes because of the lack of corporate structure.

Participant 33: "Drivers do not have any managers to regulate their behavior. Problem-solving can be difficult when drivers show bad attitudes, or we have a conflict between us."

Participant 8: "We have many negative experiences even with the personnel working in the [regular] last-mile delivery companies. I cannot predict the attitudes of these self-employed people."

With last-mile delivery, many damages can occur during the transportation and transfer of the products. Participants attached importance to undamaged product delivery, as damage to the products requires the user to make an extra effort, such as complaints and returns.

Participant 10: "It is crucial to me that the product arrives undamaged. Most of the makeup products I buy are dented. I have similar problems with clothes."

Participant 18: "I need to receive my product undamaged."

Another critical issue is the rights and responsibilities of the users in case of a damaged product or conflict. Participants were concerned about the delivery process and their rights in crowdsourced delivery.

Participant 8: "Traditional last-mile delivery companies give me more confidence. Since I will be dealing with the company rather than a single person when I have a problem, different solutions can be found, but otherwise, it seems like the possibilities are more limited."

Participant 26: "What will the e-commerce company's attitude be like? For example, if I first see a statement [from the company] that if there is any problem, we are behind you and we will not victimize you in any way, then I can think about using [the service]."

Lastly, security was one of the top concerns of the participants. Specifically, participants were concerned that drivers are not employees of a company and about the privacy and security of the products and themselves.

Participant 28: "Even a last-mile delivery company employee can add us from social media because he/she knows our names and surnames. In such cases, we can complain to the company. [Crowdsourced] drivers will have information about our name, surname, and even our address. How will this delivery method ensure our security and privacy?"

Participant 13: "Our safety is an important point. We don't know who the next delivery person will be. For example, we know the people who usually come as we constantly shop with a standard delivery company. We don't know who will come with this."

3.2. Adoption factors of Drivers

Compensation. The most crucial issue for the participants was the income level they would obtain from the service they would be providing. If the income level was satisfactory, most participants were willing to work in this type of last-mile delivery service.

Participant 8: "I can do it for the benefit it gives me. I [am] cost-oriented; if it does not provide me profit, why should I do that job?"

Participant 31: "If I'm going to make money, I'd like to work, but if I can't make enough money, why would I try?"
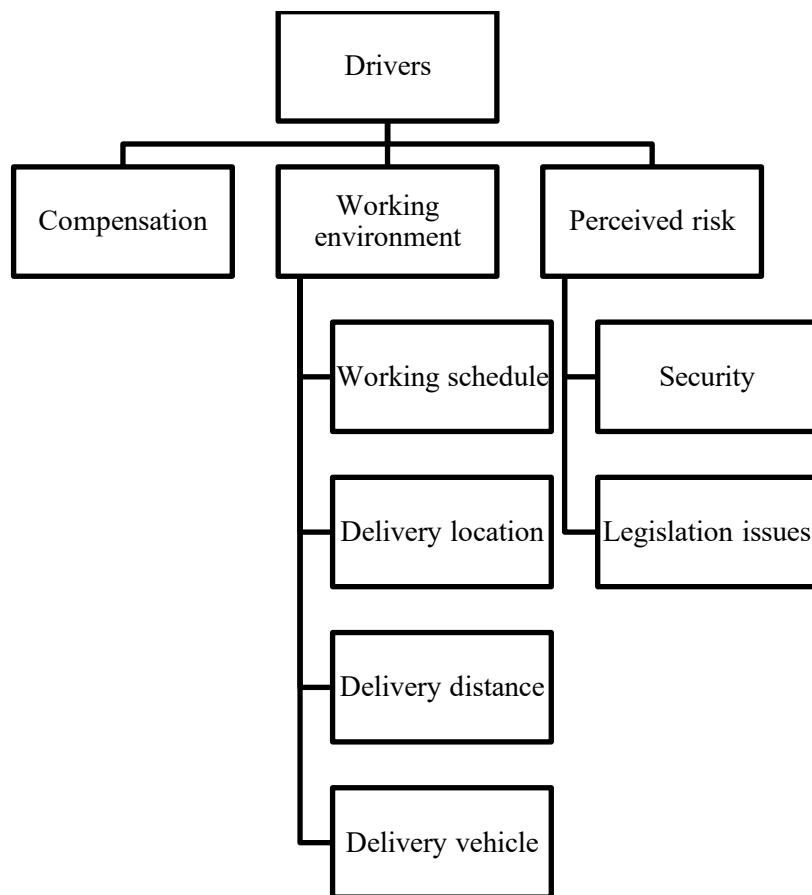

Figure 2: Acceptance factors of drivers

Working environment. A good working environment is one of the main driving forces for participants to work as drivers. Participants seem willing to work in this delivery method to decide many processes for themselves—the possibility of choosing time windows, delivery distance, delivery location. For example, a working schedule is significant for participants. They want to work part-time in a way that depends on their university or personal program.

Participant 3: "I would like to work as long as my time allows, that is, in the free time that is beside [my] daily schedule."

Participant 11: "This is a freelance job. I'm not an employee of a company. [If] I want to deal with my other personal business that day or I have a more important problem to deal with, then I won't work, but if I'm available, I would like to work."

Also, delivery location is another crucial factor. Participants stated that they would like to deliver to points on their regular travel routes or locations within a specific area in their neighborhoods.

Participant 28: "It might make sense to do if it's on our travel routes."

Participant 22: "If I work on the European side of Istanbul and if I live on the Anatolian side, I can take the needs of the people where I live, so it will be an extra job."

There are also uncertainties about which vehicle the delivery will be made by. While some participants wanted to make deliveries using environmentally friendly vehicles such as public transportation or bicycles, some participants stated that it would be easier to deliver with their vehicle.

Participant 26: "Bicycles may be suitable for everyone to do, but there must be a bicycle road. Otherwise, it is hazardous in Turkish traffic."

Participant 6: "If a student can buy a car in Turkey, it means that his/her income is high. Therefore he/she doesn't want to work in this business. I think public transport and cycling are the two best options, but cycling can be dangerous in traffic."

Participant 24: "Due to weather conditions and to be safe, I want to deliver with my car."

Perceived risk. Perceived risk has a significant impact on working in crowdsourced delivery and using it. Participants' concerns about adopting crowdsourced delivery as a worker match two of the elements observed in user adoption. Clarifying the participants' rights and responsibilities regarding their problems during the process may facilitate their intention to work in this field.

Participant 4: "I need to know whether I will be responsible or not if the product is damaged, even if it is not my fault."

Participant 15: "How do I know what they will [have me] transport? So there seems to be a great deal of mutual trust. How can I be sure [whether] what I'm carrying is legal or illegal, and how can I know that there is nothing different in the package I'm delivering? So, when I think about it from the driver's point of view, it didn't seem reliable to me."

Another concern is about the security of the drivers. The attitudes of the people at the delivery addresses or the security problems that may occur there affect the intention of the participants to become employees.

Participant 20: "We see what last-mile delivery workers are going through in Turkey in the news. Last-mile delivery workers can be attacked. I might be concerned about security as this is a job [where] that is likely to happen."

4. Discussion

E-commerce is overgrowing all over the world. Hayashi et al. (2014) propose that e-commerce success depends mainly on the success of delivery services. Therefore, managers and academics have focused on improving different aspects of the last-mile delivery process. Crowdsourced delivery is one of the innovative business models that has sprung up to help with efficient last-mile delivery. Still, despite this, it has been the subject of little scientific research. This study presents original findings on the acceptance of crowdsourced delivery in Turkey, a country with approximately 8 million university students: an important distinction, as the results suggest that university students perceive crowdsourced delivery as both a new income opportunity and a new alternative for last-mile delivery. Although our focus groups' participants expressed positive perceptions of the acceptance of crowdsourced delivery in general, a certain distrust in using this new business model was also revealed. Four major themes (performance expectancy, price sensitivity, social influence, and perceived risk) were found to affect participants' adoption of crowdsourced delivery as consumers, and three major themes (compensation, good working environment, and perceived risk) were found to affect their acceptance of crowdsourced delivery as a driver.

The present study results show that performance expectancy acts as an antecedent to the adoption of crowdsourced delivery. Considering the participants' general tendency, the acceptance of this delivery method is based on whether the benefits provided are better than other last-mile delivery options. Participants will be willing to adopt this method if crowdsourced delivery offers better delivery speed, flexible options, on-time arrival, information sharing, real-time tracking, accessibility, and return processes, which are problematic in traditional last-mile delivery. These findings are consistent with previous studies concerning delivery speed (Carbone et al., 2017; Le and Ukkusuri, 2018; Mckinnon et al., 2016, Punel and Stathopoulos, 2017), flexible options (Le and Ukkusuri, 2018; Punel et al., 2018; Ghajargar et al. 2016), delivery on time (Le and Ukkusuri, 2018; Punel and Stathopoulos, 2017), information sharing, real-time tracking and return processes (Carbone et al., 2017).

The price sensitivity also strongly affects the acceptance of crowdsourced delivery. Turkish e-commerce companies do not charge delivery fees for purchases over a certain amount; therefore, consumers do not know the total cost of the shipping fee. However, the participants believed that the shipping cost should be below

a specific cost. Offering the crowdsource delivery option for products under a certain amount may provide consumers an advantage in receiving deliveries at an affordable price (Rougès and Montreuil, 2014; Archetti et al., 2015; Miller et al., 2017). Also, while we found that the shipping cost is an essential aspect for users, Punel and Stathopoulos (2017) argue that although crowdsourced delivery firms use cost reduction as their primary advertising point, it is not one of the significant usage factors. In our study, price sensitivity emerged as a critical factor, as the delivery fee is essential for students with limited budgets. Promotions, such as collaborations and discounts that might be offered with crowdsourced delivery, also created a very positive perception of the participants' acceptance. Likewise, the participants stated that compensation is substantial for drivers. Previous research was also in line with this finding (Le et al., 2019a; Miller et al, 2017).

Perceived risk is another vital determinant for the adoption of crowdsourced delivery. Many participants explained that they had problems with trusting this method. The possibility of theft and damaged or lost products concerned them (Mckinnon, 2016). Participants have doubts about loss or theft of the product, insure

5. Conclusion

Last-mile delivery is a logistics service that allows consumers to receive their deliveries seamlessly. The rapid growth of e-commerce in recent years has led to innovations in last-mile delivery. One of these innovative business models is crowdsourced delivery. Crowdsourced delivery is an app or web-based business that allows users to get their products faster, within a specified time frame, at a lower price. This delivery method has already been used in many countries such as Germany, the USA, Japan, and China. However, the factors affecting consumers' intention to use this business model may differ in each country.

After the covid-19 pandemic, the new normal created a massive opportunity for the crowdsourced delivery companies because many people use online channels even in their grocery purchasing. The quality of the service they receive is important for people to maintain these habits. Delivery is an essential element in this service quality. Crowdsourced delivery applications are still in their infancy in Turkey,

the products, and communication problems with a driver. It is challenging to provide sufficient service quality with freelance drivers (Devari et al., 2017). In addition, sharing personal information with crowdsourced drivers causes privacy issues (Mckinnon, 2016). However, as the experience of crowdsourced delivery increases, there is less focus on the privacy, security, and trust issues that users are concerned about in the early stages (Punel et al., 2018). Regarding the acceptance of crowdsourced delivery as the driver, the participants' decisions were affected by the possibility of the transported goods being illegal or dangerous and questions of how to solve insurance-related problems in case of damage to the product. This finding matches the literature (Mckinnon, 2016; Le et al., 2019a; Le and Ukkusuri, 2018).

The last factor affecting acceptance as a driver is the excellent working environment. Since the participants want to work without interrupting their education, they want to decide on their working conditions. Miller et al. (2017) report that those who want to work as drivers mostly want to do so in their spare time with flexible time zones. Therefore, crowdsourcing platforms that provide flexible working options can find a larger driver supply.

and a significant portion of the population is unaware of this method. This study evaluates Turkish university students' adoption of crowdsourced delivery, both as drivers and consumers. Therefore, it provides excellent insights for crowdsourced delivery platforms, as listed below.

• Crowdsourced delivery platforms should highlight the positive aspects that distinguish them from traditional last-mile delivery companies, and offer experiences that the consumer expects, such as speed, flexibility, and traceability.

• The delivery fee should be kept lower than standard delivery at entry-level because one of the reasons for consumers' transition between competing suppliers is delivery prices (Punel et al., 2018).

• Discounts on delivery fees and collaborations with other retailers should be offered in the dissemination period among students. The compensation they are expecting to earn for

drivers should be determined, and the number of drivers should be increased.

• Social influence is effective for participants. Thus, the word-of-mouth effect should be used, and drivers should also be leveraged as an advertising tool. In addition, celebrities, mainly social media influencers, should be encouraged to share their experiences using crowdsourced delivery on YouTube, Twitter, and Instagram platforms. A rating system for crowdsourced platforms will also be a positive reference for many users. The rating system can be an effective tool in supporting good drivers and eliminating bad drivers from the system, reducing risk perceptions related to credibility and professional inadequacy (Carbone et al., 2017).

• Advertisements and information should be shared about the precautions and insurances taken to protect participants against theft, loss, and damage.

• One of the biggest obstacles to controlling the service quality offered by drivers is the low barriers to being a driver (Huang et al. 2020). For this reason, candidate drivers should be trained and tested for security and privacy concerns, and the criminal records of candidate drivers should be checked.

• The crowdsourced delivery models currently available in Turkey offer almost the same as the traditional delivery model for drivers. Good
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working options should be provided to encourage students to enter the system and increase the number of drivers.

The focus of this study is limited to the acceptance of B2C crowdsourced delivery. Therefore, the acceptance of other existing types should be investigated in future studies. In addition, qualitative research does not aim to generalize due to its nature; for this reason, we cannot generalize the findings of this study to all university students in Turkey. Quantitative research methods should be used to generalize the result. This study was conducted on university students, one of the groups with the highest technology integration, so a quantitative and qualitative study should be carried out on a middle-aged and older sample that is low in technology integration and more conservative towards new delivery models. In this study, there are students from different universities in the discussion groups. This may have prevented the emergence of a location-based perspective. Future studies can be conducted on specific locations. Lastly, since the study was carried out using the questions prepared by the researchers, some issues were not mentioned, and therefore some factors may not have been revealed. In the future, with the widespread use of the application, usage behaviors and continuation intentions can be examined through technology acceptance theories.

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Appendix A

Focus Group Questions

Demographic questions:

Age ( ), Gender ( ), The average number of e-commerce shopping in a year (   )*

Opening questions

- Which delivery methods would you prefer to use? why?

Introductory questions

- What factors affect your delivery method choices?

Transition questions

- How important is delivery to you? What are your expectations from a good delivery?
- How often do you have problems with delivery?

Key questions

- What do you think are the advantages and disadvantages of the crowdsourced delivery service?
- Would you use crowdsourced delivery as a delivery method?
- How does the crowdsourced delivery method differ from the delivery methods you use?
- What do you think about the ease of use of the crowdsourced delivery service?
- How does the spread of crowdsourced delivery method affect your use of this delivery method?
- What do you think of the trial proposals for the crowdsourced delivery service?
- Do you want to work as a driver in crowdsource delivery service?
- Which vehicle would you prefer for delivering the packages?

End questions

- What changes do you think should be made in future delivery methods?

* you can round up the last digit as 5 or 0.