



Shifting towards Technology-based On-demand Transportation Business Models: A Comparative Research

Teknoloji Tabanlı Talebe-Dayalı Taşımacılık İş Modellerine Geçiş: Karşılaştırmalı Bir Araştırma

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Abstract

Today, the world has been witnessing to structural changes at different levels and some external factors (e.g. COVID-19) have particularly accelerated these changes. In the new world order, people seek effective solutions to some challenges they confront in their daily lives while organisations are in quest for becoming more competitive by using innovative technologies to address these needs. As a result, with the introduction of digitalisation, there has been a transformation from traditional business models towards technology-based on-demand business models to be used in transportation. Especially, considering the complex structure and high density of metropolitan cities, such as Istanbul, using on-demand transportation platforms can be worthwhile for passengers. However, despite the increasing attention paid to these platforms, there is a limited number of studies exploring these business models and their impacts from different aspects. Therefore, this research aims to investigate the practices of two exemplary technology-based on-demand transportation business models, Uber and BiTaksi, and to propose strategies based on several prominent attributes. Consequently, the discussions and proposed strategies regarding the established attributes hold a significant potential to advance the nascent knowledge about digital transportation business models, especially in the comparison of an international and a national platform, and to offer strategic guidance to practitioners and policy-makers in business environment.

Keywords: BiTaksi, digital business models, on-demand transportation business models, technology-based service platforms, Uber

Paper Type: Research

Öz

Dünya, günümüzde, farklı düzeylerde yapısal değişikliklere tanıklık etmekte ve bazı dış faktörler (COVID-19 gibi) bu değişiklikleri özellikle hızlandırmaktadır. Yeni dünya düzeninde, insanlar günlük yaşamlarında karşılaştıkları bazı zorluklara karşı etkili çözümler ararlarken, örgütler de bu ihtiyaçları karşılamak için yenilikçi teknolojiler kullanarak daha rekabetçi olma arayışına girmektedirler. Sonuç olarak, dijitalleşmenin hayatımıza girmesiyle birlikte, ulaşım, geleneksel iş modellerinden teknoloji tabanlı talebe-dayalı iş modellerine bir dönüşüm olmaktadır. Özellikle, İstanbul gibi büyükşehirlerin karmaşık yapısı ve yüksek yoğunluğu göz önünde bulundurulduğunda, talebe bağlı taşımacılık platformlarını kullanmak yolcular için faydalı olabilmektedir. Ancak, bu platformlara gösterilen ilginin artmasına rağmen, literatürde bu iş modellerini ve bunların etkilerini farklı açılardan inceleyen sınırlı sayıda çalışma bulunmaktadır. Buna bağlı olarak, bu araştırma, teknoloji tabanlı talebe-dayalı iki örnek taşımacılık iş modeli olan Uber ve BiTaksi'nin pratiklerini araştırmayı ve öne çıkan çeşitli niteliklere göre stratejiler önermeyi amaçlamaktadır. Sonuç olarak, belirlenen niteliklere ilişkin tartışmalar ve önerilen stratejiler, taşımacılıktaki dijital iş modelleri hakkında yeni oluşmaya başlayan bilgileri iletme, özellikle uluslararası ve ulusal bir platformun karşılaştırılmasında, ve iş çevresinde yer alan gerek uygulayıcılara gerekse de politika belirleyicilere stratejik rehberlik etme konusunda önemli potansiyel taşımaktadır.

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Anahtar Kelimeler: BiTaksi, dijital iş modelleri, talebe-dayalı taşımacılık iş modelleri, teknoloji tabanlı hizmet platformları, Uber

Makale Türü: Araştırma

Introduction

With the year 2000, the new millennium has brought along different opportunities and challenges in various fields and technology has become a key tool to be used at different levels. At the business level, organisations seek to become more competitive by using innovative technologies while at the individual level, people strive for exploiting technology-based services to make their lives easier. That is to say, individuals start exploring collaborative platforms and smartphone applications which initiate organisations to develop new business models with the use of Internet technologies (Bălan, 2016).

In addition, technological developments also activate the intensive interplays among the pillars of sustainability. For instance, today, more than half of the world population live in big cities (Walter, 2019) and, as a result of these recent developments and other external factors (e.g. COVID-19 outbreak), people are in search of more effective solutions to some sensitive issues or challenges they confront in their daily lives, such as cost of travel time (economic side), congestion (social and environmental sides), pollution (environmental side). On the other hand, in metropolitan cities (e.g. Istanbul, London), due to several reasons (e.g. paying higher charges in the city centres, paying higher prices to rent or buy a vehicle), it also becomes more difficult to use own vehicles in traffic. In response to these issues, certain options become favourable: using public transportation and taxis (including private hire taxis).

In the former case, public transportation offers cheaper services (Kale et al., 2017); however, it holds some risks, such as delay in arrival time of vehicles, poor management (Gebeyehu and Takano, 2007), difficulty of carrying a large of number belongings or heavy materials, and possibility of catching epidemic illnesses (Xu et al., 2013). Among these risks, considering the recent news about the effects of Coronavirus (or COVID-19) both on people and on economies, this option nowadays seems riskier and more hazardous. In the latter case, when taxis are used, these risk factors are relatively diminished but other challenges then tend to appear, such as unforeseen fares or rates during rush hours and paying more while being stuck in traffic. Nevertheless, among the pros and cons of these options, the latter seems more rationale and manageable.

In the latter option, given the fact that people in this era are getting more “mobile” and “connected”, the idea of using convenient door-to-door transportation through new mobility services placed on digital platforms come to the forefront more to deal with such problems (Ercoskun and Ocalir, 2018). This being the case, the concept of using on-demand transportation has recently received growing interest by academics and practitioners (Cohen and Kietzmann, 2014; Täuscher and Laudien, 2018; Mohamed et al., 2019). More specifically, on the one side, mobility-on-demand services cause a shift in transportation and people tend to use these services more in the first and last miles within their trips (Kayikci, 2018). On the other side, when people live away from transit stops, they see less reason to choose public transport and they then turn to use these services also for the entire trip (Cohen and Kietzmann, 2014).

Yet, despite such importance and the dramatic growth in the interest regarding on-demand services over the past few years, there is a small number of studies exploring these business models from different aspects (e.g. strategic) (Mitchell and Strader, 2018) and their impacts on industries and transportation (Mohamed et al., 2019). In parallel, there is a lack of knowledge about the business model characteristics of these services (Täuscher and Laudien, 2018). Accordingly, in order to address the aforementioned complex challenges, the paradigm shift

towards new business models developed over the Internet needs to be explored in the passenger transportation sector (Kahya, 2018). From this point forth, this research sets out to investigate and compare the practices of two eminent exemplary technology-based on-demand transportation business models, Uber -a widely used platform at the international level- and BiTaksi -a national-wide application-, and to propose strategies through several prominent attributes with the help of secondary sources (e.g. journal papers, company websites, application contents).

The remainder of this paper is organised as follows. First, the extant literature is reviewed in relation to both platforms in Section 1 whilst the methodological approach is explained in Section 2. In Section 3, Uber and BiTaksi systems are compared based on some prominent attributes and these comparisons reveal the strategy proposals for each platform explicated in Section 4. Finally, in Section 5, the conclusions and insights are provided with the inclusion of future research directions.

1. Literature Review

Business excellence, conceived largely as a blend of strategy and application, is a moving target in connection with a robust business model. In general, a business model is regarded as a conceptual outlook that enables comprehending the strategy of a business (Martikainen et al., 2014) and articulates the logic, data, and the applicable structure of revenues and costs for delivering the desired value by also considering external factors and different stakeholder interests (Beh et al., 2016). That is to say, the business model concept encapsulates a holistic view of analysing internal and external parameters ranging from description of elements to designing themes and operations (Täuscher and Laudien, 2018). Yet, although there is no uniformity in the definition of the business model term, the following statement of Teece (2010, p.191) can be used as suitable for the purpose of this study: “A business model describes the design or architecture of the value creation, delivery and capture mechanisms employed”. Thus, based on these definitive discourses, it is explicit that incorporating the business model notion in the literature review searches is of great importance for the success of a business model-focused research.

In terms of the studies reviewed in this research, it is worthy of noting that the extant literature was scrutinised in a structured manner. In this respect, first, particular keyword pairs, namely “transportation”; “business model” ; “on-demand”, were initially searched within abstracts, title, and keywords of the articles and reviews indexed in the two commonly known databases: ScienceDirect and Scopus, in order to comprehensively examine the practices of technology-based on-demand transportation business models. After these searches, it was deduced from the studies that Uber could be seen as a common denominator of majority of these studies (e.g. Ho et al., 2018; Shaheen and Cohen, 2018; Li et al., 2019; Lee et al., 2019). Accordingly, in order to uncover the practices and strategies of an internationally known technology-based on-demand transportation business model, Uber, the following keyword pairs were used in a similar way: “business model”; “on-demand”; “Uber”. On the other hand, in order to capture the practices and strategies of a national-wide on-demand transportation business model, BiTaksi, the keyword pairs of “business model”; “BiTaksi” were searched within the abstracts of studies indexed in the ULAKBIM database (“EKUAL Keşif” in the Turkish system) since “business model”; “BiTaksi”; “on-demand” keyword pairs did not reveal any article. In these performed stages, the Uber-related searches disclosed 12 papers whereas only one research was found related to the BiTaksi search. However, among these papers, two studies were not accessible through the university database system of the author. In this regard, due to the limited number of research, in addition to the mentioned keyword searches, the cross-referencing technique was also used in this study, as similarly practiced by several researchers (e.g. Kucukaltan et al., 2016), in order to investigate more practices of these two exemplary business models. After all these processes, the studies obtained from these searches constituted the main part of the literature of this research.

Based on these stages, when the extant literature is reviewed, it becomes evident that for companies like Uber, there is no commonly agreed term since they are categorised as transportation networking companies, app-based platforms, or ride-sharing companies. Generally speaking, the services provided by Uber and similar companies refer to as on-demand transportation services by researchers. As a concept, on-demand service platforms are defined as the platforms that connect workers, who act independently, with customers who need time-sensitive service (Benjaafar and Hu, 2020). In the literature, a wide range of scholars (e.g. Smith, 2016; Mitchell and Strader, 2018; Cornelissen and Cholakova, 2019; Benjaafar and Hu, 2020) labelled Uber as an on-demand platform for transportation services and, therefore, in this research, the term and the concept of technology-based on-demand transportation services are mainly adopted for the identification of these business models, among other compound definitions.

In the literature, different aspects and contents are discussed by previous researchers. For instance, the concept of business model is discussed in Walji and Walji's (2016) study where Uber's business model was depicted in three conceptual aspects, namely value proposition, value captured, and value delivered. Likewise, value creation, delivery, and capture mechanisms were also mainly emphasised by Täuscher and Laudien (2018) and, in terms of conceptually and empirically defining the taxonomy of various business models, they applied a mixed-method approach consisting of developing integrative framework, content analysis, and binary coding for 100 marketplaces where Uber was highlighted as a web-based commercial transportation marketplace. In a more specific approach, Fleming (2017) linked the human capital theory to the economic insecurity, work skill, and the personal debt by underlining the dark side of the human capital theory. Among all discussions in his study, Uber was referred as an on-demand business model and Uberisation was remarked as the contemporary employment of the human capital theory. Thus, these three studies summarised the links between theoretical backgrounds and Uber practices within business model boundaries.

In parallel, Smith (2016) stated that examining emerging business models in the sharing economy, as Uber-like business models, is noteworthy since global economy is nowadays struggling with a slow growth. This being the case, the ride-sharing term was predominantly brought to the fore while defining these networking companies, especially in the sharing economy context. For instance, Bălan (2016) conducted an exploratory study for investigating the ride-sharing and car-sharing options available to the Romanian users with their potentials and challenges. Cohen and Kietzmann (2014) adopted the agency theory to explore optimal relationship between service providers and the local governments for achieving sustainability mobility in the context of three specific sharing economy business models: car-sharing, ride-sharing, and bike-sharing. Ercoskun and Ocalir (2018) initially introduced the ridehailing service and, then, carried out a documentary analysis on the protests against Uber in Istanbul and tackled the problem from various aspects, such as the reasons, strategies, and results. Likewise, in another city case for Uber, London was placed at the centre of Mohamed et al.'s (2019) research where empirical evidences on the effects, challenges, and opportunities were discussed based on the interviews with 31 different stakeholder groups. Their findings indicated that UberPOOL is popular among students, especially in long-distance trips, and there is still a need for developing transport policy measures and regulations for ride-sharing and ridesourcing services.

In another study where Uber is exemplified, Cao (2016) discussed regulations and legitimacy of sharing economy companies and, among these, Uber was noted as a ridesharing platform used by passengers for their transportation purposes. Regarding the political struggles within the legitimate frame, Cornelissen and Cholakova (2019) focused on the strategic and organisational activities of on-demand sharing economy companies (e.g. Uber) and examined the categorisation in terms of moral and political bases. Concerning the legal conflicts of Uber in some cities, Watanabe et al. (2017) empirically examined the institutional sources to reveal the success (co-evolutionary approach) and the failure (bipolarisation nature of logistics growth) of its global expansion and noted positive and negative legal situations in different contexts around

the world. In terms of the regulations, Li et al. (2019) analysed the impact of three types of regulations with regards to transportation network companies in the ride-hailing system (e.g. Uber). In their study, a minimum wage for drivers, a cap on the number of drivers or vehicles, and a per-trip congestion tax were assessed through a queuing theoretic equilibrium model and the New York city was analysed as the case context. As a result of these relevant studies, it is clear that previous researchers discussed, to a large extent, the legal and regulatory aspects as well as the relationships of ride-sharing companies, especially Uber, with some particular stakeholders, such as government.

In the literature, there are also some related studies carried out in a comparative manner. In this regard, Kahya (2018) adopted a mixed method approach consisting of the content analysis for determining the news about Uber in the Sputnik Turkey news channel and the sentiment analysis for examining the satisfaction rate about Uber by using several social media sites. At the end, the researcher demonstrated a social media research to compare Uber, BiTaksi, and traditional taxi services. Noulas et al. (2018) aimed at finding out the most appropriate provider in terms of pricing in real time. To this end, they first developed a mobile application to compare provider prices and, then, they conducted experiments to compare Uber and Black Cabs in London, after describing this application in London and New York. In their results, they highlighted that there are tradeoffs between prices and journey times and the Black Cab drivers are faster than Uber drivers. Whitehill et al. (2019) empirically analysed the use of transportation networking companies, such as Uber, among substance-using students at two large state universities and concluded that using such companies are common, especially after a substance use, and they may play a critical role in impeding the impaired driving for rural campuses. All in all, despite the existence of these comparative studies, the main reasons for preference and the importance of low-price offering were predominantly emphasised by previous researchers, especially while comparing Uber with a national-wide platform.

To sum up, based on the studies structurally reviewed in this research, it is apparent that the extant literature remains largely limited to investigate the Uber business model from the strategic management viewpoint. In addition to this, it is evident that there is a scant knowledge on the comparison of Uber and an alike business model, BiTaksi, relying on their prominent characteristics. Therefore, the present research sets out to fill this void from multidimensional attributes.

2. Methodology

In exploratory-based studies, the case study strategy is largely recommended as the most suitable methodology for comprehensively understanding the concepts (Ensari and Karabay, 2014). In a similar vein, Ofei-Manu et al. (2018) underlined the importance of employing a comparative case study for providing information with substantial depth and width. From this point forth, by adopting the comparative case study strategy in line with the mentioned research gaps and aim, this research hinges upon several secondary sources and the rationales of using these sources are twofold. First, when this research started, Uber services were not available to its users in Turkey, despite its widespread usage in some other countries. Second, as noted in the structured stages of the literature review, due to a handful research on BiTaksi application, the extant literature becomes insufficient to provide substantial information regarding the comparison of Uber and BiTaksi services. In this respect, Maltas (2010) underlined the importance of using secondary sources when activities tend to become inaccessible or dangerous. Accordingly, in order to compare the business models of these two platforms in a reliable and comprehensive manner, several publicly available secondary sources, such as the company websites, peer-reviewed journal articles, and the application contents were largely utilised in this research.

3. A Comparison of an International and a National On-demand Transportation Platform: Uber and BiTaksi Practices

Fundamentally, technology-based on-demand platforms provide a link between organisations and/or individuals (Mitchell and Strader, 2018) and their salient feature relies on the interrelationship between capacity and demand. In other words, capacities, which are determined by the conditions of workers, affect demands and, in turn, demands stimulate capacities (Benjaafar and Hu, 2020). Accordingly, the main point of on-demand transportation companies is regarded as finding an available driver in the proximity around the search point in the easiest and quickest way.

Given the interrelationships between capacity and demand, it is worthy of noting that these multilateral connections are getting more complex in metropolitan cities, such as Istanbul, which are surrounded by various transportation modes (e.g. bus, taxi) and congestions. Among these cities, according to 2020 data, Istanbul has the largest population in Europe (World Population Review, 2020) and this makes Istanbul an important realistic Turkish context for investigating the use of technology-based on-demand transportation business models. More specifically for the Istanbul context, considering the fact that majority of the mass transit users in Istanbul prefer the transportation system for short-range purposes (Kayıkci, 2018), technology-based on-demand business models hold a potential to be used for this purpose. In this regard, Uber, a widely-used platform at the international level, and BiTaksi, a national-wide application used in Istanbul, emerge as eminent example platforms to be considered for this research. Yet, although both Uber and BiTaksi are regarded as on-demand transportation business models, there are several similarities and differences in their practices. Thus, in the following sub-sections, these two technological platforms are compared based on several prominent attributes.

3.1. Coverage

Uber is a US-based company founded in 2009 and is currently available in over 600 cities worldwide (Ercoskun and Ocalir, 2018). The Uber business model is based upon on-demand availability anywhere and anytime (Smith, 2016). On the other hand, BiTaksi, which is a Turkey-based company founded in 2013, has currently been used by the passengers located in Istanbul and Ankara (BiTaksi, 2020a). In this respect, Uber takes the advantage of its wide coverage and, thus, it has been serving to more people and managing more trips compared to BiTaksi.

3.2. Range of Offered Services

As transportation network companies, Uber incorporates various services, such as passenger transportation (Ercoskun and Ocalir, 2018), ride-sharing with other riders heading in the same direction through UberPOOL (Mohamed et al., 2019; Uber, 2020a), package and food delivery (Kahya, 2018). More specifically, in the application of Uber (2020b), there are also various options presented within its transportation services, such as UberX (affordable and popular), Exec (premium rides in high-end cars), UberXL (for groups up to six), Lux (ultimate luxury and style), and the option of giving assistance and accessible vehicles for the individuals who are in need of special help.

Contrarily, BiTaksi holds a limited number of services and focuses mainly on passenger transportation in its business model by offering yellow (affordable) and turquoise (more expensive) options (BiTaksi, 2020a; 2020b). In these services, BiTaksi (2020c) also provides assistance for the individuals who are in need of special help. Overall, in terms of the range of services offered by these platforms, it is clear that Uber offers different options and has moved beyond the passenger transportation service.

3.3. Connection System and Relationships between the Primary Stakeholders

As previously mentioned, the main rationale of on-demand service platforms is based on connecting workers and customers. In line with this, Uber is the platform where workers (i.e.

drivers) decide on how much time and with which capacity (e.g. type and quality of work) they need to work (Benjaafar and Hu, 2020). For instance, in Croatia, since Uber offers flexible working hours, it attracts the attention of drivers and, thus, they can have a preference of working as a taxi driver and an Uber driver (Pepić, 2018). In general, once a customer requests a car through the Uber application, after completing required parts (e.g. from where to where) and acknowledging the calculated price, the nearest taxi information with several details (e.g. its active location, its plate number, name and ratings of the driver) is shared with them. Accordingly, in the Uber system, owners and/or drivers of Uber vehicles and users can be regarded as the primary stakeholder groups.

On the other hand, BiTaksi is a technology-based on demand platform where taxi drivers and customers (i.e. passengers) meet (BiTaksi, 2020b). When a customer requests a call through the application, after completing required parts (e.g. from where to where) and acknowledging the price, the nearest taxi information with several details (e.g. its active location, its plate number, name and ratings of the driver) is shared with them. Thus, despite the high operational similarity of both platforms, owners and/or drivers of traditional taxis and users can be noted as the primary stakeholder groups in the BiTaksi system.

3.4. Pricing and Payment

Fares and fees set by Uber vary in different locations. For instance, Uber X normally tends to be more expensive than Yellow Cabs in New York whereas this is generally not the case for Black Cabs in London (Noulas et al., 2018). Moreover, since Uber services are currently not available in several countries, including Turkey, it is not applicable to compare the pricing system and fares of Uber with some similar business models, such as BiTaksi. In fact, the changes in currency exchange rates influence the pricing system for such comparisons and these could be misleading. Nevertheless, in the year of 2017, Ferah (2017) provided the base fare and fare per km for both Uber and BiTaksi. According to the given information regarding both applications, the base fare in Uber (in the economic option) and in BiTaksi was 3,45 Turkish Liras and the fare per km was 2,10 Turkish Liras. Yet, when the time spent during the trip is considered, additional fees could be included to the price and, in such cases, the best option for the trip among these two applications may change, as mentioned in Ferah's (2017) experience.

In terms of the payment methods, both business models offer various payment options (e.g. credit card and cash) to their users. Regarding the cancellation fees, based on Ercoskun and Ocalir's (2018) data and the information obtained from BiTaksi's (2020b) website, it seems that the cancellation systems of these applications tend operate in a similar manner. Overall, it is clear that Uber follows the legal regulatory actions in the countries it operates and this results in a very similar pricing and payment strategies for both applications.

4. Proposed Strategies for the Applicability of Each Platform in the Turkish Context

4.1. Strategies for coverage

Although Uber has a strategy of expanding quickly to different markets, it cannot be sometimes successful for operating in some contexts, such as Turkey, and, this being the case, there can be alternative platforms to Uber. For instance, in the Turkish context, BiTaksi becomes a similar alternative model to displace Uber in Istanbul and Ankara. Yet, it is worthy of expressing that, if BiTaksi is regarded as an alternative platform to Uber in Turkey, it is in need of increasing coverage through different cities. As a consequence, since each context has idiosyncratic characteristics in its nature, it is explicit that the success or failure in coverage relies on some specific factors, such as the stakeholder relationship management in the targeted market, resources, and capabilities. From this point forth, resource-based view, dynamic capability, and stakeholder theories arise as critical references to be considered for the success of these business models.

4.2. Strategies for Range of Offered Services

Regarding the range of offered services, Uber provides various services to its users while BiTaksi operations remain relatively limited. In this regard, after increasing its coverage, BiTaksi needs to offer various services by addressing the demands and expectations of local users and different stakeholders. That is to say, BiTaksi needs to continue its current transportation operations with better and comprehensive options and to be vigilant for following external changes in the technology-based on-demand platform environment. In a nutshell, besides the fact that the range of offered services is a measure to become or remain competitive in a market, meeting users' demand, in particular, at the same time becomes pivotal while providing a wide range of services with comprehensive and up-to-date solutions.

4.3. Strategies for Connection System and Relationships between the Primary Stakeholders

On the one hand, it becomes evident that the connection system between the primary stakeholder groups in both platforms works nearly the same owing to fact that these are on-demand service platforms. On the other hand, as widely emphasised, the satisfactory stakeholder relationship is a determinative factor in user preferences. For instance, in this sense, considering the individuals who are in need of special assistance, such as people with disabilities, can be an example of addressing the expectations of specific stakeholder groups, as similarly practiced in both platforms.

More specifically, in terms of these relationships with primary stakeholder groups, apart from being a user-oriented platform, Uber slightly differentiates itself by offering flexible working hours and, therefore, the drivers are diverse whereas BiTaksi enables only taxi-drivers in its system. However, the Uber strategy cannot always be mentioned as successful since local rivals can find such aggressive strategies unfair (e.g. Turkey). On the other hand, customer reviews on social media outlets reveal that BiTaksi have still a way to go in meeting users' expectations. Accordingly, it is clear that Uber needs a serious revision in understanding each specific market at its own practices and in establishing a good stakeholder relationship as well as a cooperation with local authorities. Likewise, although BiTaksi has an advantage of having a support from local authorities, it needs to enhance the satisfaction rates by addressing the needs of its different users.

4.4. Strategies for Pricing and Payment

Pricing and payment are among the key measures to the success of such business models. In the Turkish context, these measures rely on legal basis and, according to the secondary data used in this research, it can be noted that both platforms determine their pricing systems and payment methods by considering legal regulations. From this point forth, Uber and BiTaksi adopt the strategy of following legal regulatory actions in the places they operate.

5. Conclusions and Research Directions

In recent years, digital business models have gained particular momentum due to the impacts of various external factors on the business environment, such as technological developments, structural changes, and epidemics or pandemics (e.g. COVID-19). In order to become or remain competitive in the fierce and dynamic competition, organisations have strived for keeping the pace with these changes by transforming their traditional business models to digital platforms and, as such leads to a transition or shift towards digital business models. Among these, technology-based on-demand transportation business models are of great importance in this compelling new world order since people, at the social end, are no longer tolerating waste of time and money during their trips. In this respect, given the fact that cost of travel time and the comfort in traffic are substantial in metropolitan cities, such as Istanbul, the use of technology-based on-demand transportation business models have come to the fore more. Moreover, apart from this social aspect, these business models also influence economic and environmental aspects of cities, at the micro level, and countries, at the macro level. Accordingly, the present research aimed to

investigate the practices of two eminent exemplary technology-based on-demand transportation business models. To this end, both a comparison of a widely-used platform at the international level, Uber, a national-wide application in Turkey, BiTaksi, was provided based on several prominent attributes and strategy proposals were put forward as distinct from the extant literature where technical and legal factors were largely considered.

Compared to previous studies, the present research offers several academic and practical implications in advancing the nascent knowledge about digital transportation business models. First, the structured literature review of this research revealed that there is a limited study in the area of digital transportation business models. In this regard, the presented structured information and the strategies regarding the established attributes provides novelty to the business model literature in the transportation field in terms of exploring and comparing digitally-driven on-demand business models from the strategic aspect. What is more is that all these discussions can shed light on the way of designing and improving a national-wide application to become a widely-used platform at the international level (i.e. internationalisation of national digital service platforms). Additionally, the discussed information in each attribute can also motivate managers or decision-makers in organisations to focus particularly on several parameters for becoming more competitive in the business environment. Furthermore, the discussed themes and strategies can also be used by policy-makers while regulating such practices. That is to say, the presented information and discussions in this research are not only useful for academics, but also for various stakeholders in this field.

On the other hand, there are several limitations of this research. First, due to using secondary sources, not providing empirical findings and considering only the Turkish context, the generalisability of this study remains low. Second, due to the lack of access to Uber website in Turkey, some data (e.g. base fare, minimum fare, fare per km, driver types) were not accessible and this made the comparison more difficult in general. In parallel, since applications and contents are updated regularly, strategies and practices discussed in this research should not be conceived as the latest information shared by these platforms. Finally, although keyword pairs were attentively selected to reveal the related literature, more keywords could have been used in different databases. Therefore, in future research, more comprehensive studies including different keywords and databases with some empirical analyses can be carried out so that the literature can be advanced with the help of more sources and accessible data.

References

- Bălan, C. (2016). Ride-sharing and car-sharing in Romania: What choices do potential users have?. *International Conference of the Institute for Business Administration in Bucharest*, 2016, 103-112.
- Beh, L. S., Ghobadian, A., He, Q., Gallear, D., & O'Regan, N. (2016). "Second-life retailing: A reverse supply chain perspective." *Supply Chain Management: An International Journal*, 21(2), 259-272.
- Benjaafar, S., & Hu, M. (2020). Operations management in the age of the sharing economy: what is old and what is new?. *Manufacturing & Service Operations Management*, 22(1), 93-101.
- BiTaksi (2020a). Available at: <http://www.bitaksi.com/>, accessed: 26.02.2020.
- BiTaksi (2020b). Available at: <http://www.bitaksi.com/kullanim-kosullari/>, accessed: 26.02.2020.
- BiTaksi (2020c). Available at: <http://www.bitaksi.com/gorme-ve-isitme-engellilere-de-kolay-taksi/>, accessed: 16.06.2020.
- Cao, D. (2016). Regulation through deregulation: sharing economy companies gaining legitimacy by circumventing traditional frameworks. *Hastings LJ*, 68, 1085-1110.

- Cohen, B., & Kietzmann, J. (2014). Ride on! Mobility business models for the sharing economy. *Organization & Environment*, 27(3), 279-296.
- Cornelissen, J., & Cholakova, M. (2019). Profits Uber everything? The gig economy and the morality of category work. *Strategic Organization*, 1-10, DOI: 10.1177/1476127019894506.
- Ensari, M. Ş., & Karabay, M. E. (2014). What helps to make SMEs successful in global markets?. *Procedia-Social and Behavioral Sciences*, 150, 192-201.
- Ercoskun, O. Y., & Ocalir, E. (2018). An urban tension about ridehailing: Uber experience in Istanbul. *Beiträge zu einer ökologisch und sozial verträglichen Verkehrsplanung* (1/2018), 131-146
- Ferah (2017). Available at: <https://webrazzi.com/2017/01/27/sehiri-ici-ulasim-teknolojilerinin-aldıkları-ücretler-bitaksi-careem-olev-uber-yolo/> , accessed: 27.02.2020.
- Fleming, P. (2017). The human capital hoax: Work, debt and insecurity in the era of Uberization. *Organization Studies*, 38(5), 691-709.
- Gebeyehu, M., & Takano, S. E. (2007). Diagnostic evaluation of public transportation mode choice in Addis Ababa. *Journal of Public Transportation*, 10(4), 27-50.
- Ho, C. Q., Hensher, D. A., Mulley, C., & Wong, Y. Z. (2018). Potential uptake and willingness-to-pay for Mobility as a Service (MaaS): A stated choice study. *Transportation Research Part A: Policy and Practice*, 117, 302-318.
- Kahya, Y (2018). Hizmet sektöründe yeni iş uygulamaları. *Yönetim ve Ekonomi Araştırmaları Dergisi*, 16(3), 219-238.
- Kale, M., Bhadale, S., & Lohar, S. V (2017). Advanced transport management system. *International Journal on Recent and Innovation Trends in Computing and Communication*, 5(6), 511-513.
- Kayikci, Y. (2018). Mobility-on-demand service in mass transit: HyperCommute options. *Sigma J. Eng. Nat. Sci.*, 9, 447-460.
- Kucukaltan, B., Irani, Z., & Aktas, E. (2016). A decision support model for identification and prioritization of key performance indicators in the logistics industry. *Computers in Human Behavior*, 65, 346-358.
- Lee, S. H., Lee, B. Y., & Kim, H. W. (2019). Decisional factors leading to the reuse of an on-demand ride service. *Information & Management*, 56(4), 493-506.
- Li, S., Tavafoghi, H., Poolla, K., & Varaiya, P. (2019). Regulating TNCs: Should Uber and Lyft set their own rules?. *Transportation Research Part B: Methodological*, 129, 193-225.
- Maltas, D. (2010). Introducing ICT. *5 to 7 Educator*, 2010(71), 18-22.
- Martikainen, A., Niemi, P., & Pekkanen, P. (2014). Developing a service offering for a logistical service provider—Case of local food supply chain. *International Journal of Production Economics*, 157, 318-326
- Mitchell, A., & Strader, T. J. (2018). Introduction to the special issue on “Sharing economy and on-demand service business models”. *Information Systems and e-Business Management*, 16, 243-245.
- Mohamed, M. J., Rye, T., & Fonzone, A. (2019). Operational and policy implications of ridesourcing services: A case of Uber in London, UK. *Case Studies on Transport Policy*, 7(4), 823-836.
- Noulas, A., Salnikov, V., Hristova, D., Mascolo, C., & Lambiotte, R. (2018, October). Developing and deploying a taxi price comparison mobile app in the wild: Insights and challenges. In *2018*

- IEEE 5th International Conference on Data Science and Advanced Analytics (DSAA)* (pp. 424-433). IEEE.
- Ofei-Manu, P., Didham, R. J., Byun, W. J., Phillips, R., Gamaralalage, P. J. D., & Rees, S. (2018). How collaborative governance can facilitate quality learning for sustainability in cities: A comparative case study of Bristol, Kitakyushu and Tongyeong. *International Review of Education*, 64(3), 373-392.
- Pepić, L. (2018). The sharing economy: Uber and its effect on taxi companies. *Acta Economica*, 16(28), 123-136.
- Shaheen, S., & Cohen, A. (2018). Is it time for a public transit renaissance?: navigating travel behavior, technology, and business model shifts in a brave new world. *Journal of Public Transportation*, 21(1), 67-81.
- Smith, J. W. (2016). The Uber-all economy of the future. *The Independent Review*, 20(3), 383-390.
- Täuscher, K., & Laudien, S. M. (2018). Understanding platform business models: A mixed methods study of marketplaces. *European Management Journal*, 36(3), 319-329.
- Teece, D. J. (2010). Business models, business strategy and innovation. *Long range planning*, 43(2-3), 172-194.
- Uber (2020a). Available at: <https://www.uber.com/ride/uberpool/>
- Uber (2020b). Available at: <https://www.uber.com>
- Walji, J. M., & Walji, W. (2016). Uber, a Disruptive Business Model of a Taxi Service. *International Journal of Systematic Innovation*, 4(2), 23-29.
- Walter, K. D. (2019). AI-based sensor platforms for the IoT in smart cities. In *Big Data Analytics for Cyber-Physical Systems* (pp. 145-166). Elsevier.
- Watanabe, C., Naveed, K., Neittaanmäki, P., & Fox, B. (2017). Consolidated challenge to social demand for resilient platforms-Lessons from Uber's global expansion. *Technology in society*, 48, 33-53.
- Whitehill, J. M., Wilner, M., Rataj, S., & Moreno, M. A. (2019). College students' use of transportation networking companies: An opportunity to decrease substance-impaired driving. *Journal of American college health*, 67(7), 611-614.
- World Population Review (2020). Available at: <https://worldpopulationreview.com/continents/cities-in-europe/>, accessed: 10.06.2020.
- Xu, F., McCluskey, C. C., & Cressman, R. (2013). Spatial spread of an epidemic through public transportation systems with a hub. *Mathematical biosciences*, 246(1), 164-175.

ETİK ve BİLİMSEL İLKELER SORUMLULUK BEYANI

Bu çalışmanın tüm hazırlanma süreçlerinde etik kurallara ve bilimsel atıf gösterme ilkelerine riayet edildiğini yazar beyan eder. Aksi bir durumun tespiti halinde Afyon Kocatepe Üniversitesi Sosyal Bilimler Dergisi'nin hiçbir sorumluluğu olmayıp, tüm sorumluluk makale yazarlarına aittir.