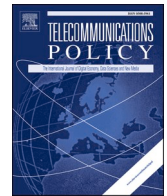




ELSEVIER

Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

## Telecommunications Policy

journal homepage: <http://www.elsevier.com/locate/telpol>

# Churn and loyalty behavior of Turkish digital natives: Empirical insights and managerial implications

M.Mithat Uner<sup>a</sup>, Faruk Guven<sup>b,\*</sup>, S.Tamer Cavusgil<sup>c</sup>

<sup>a</sup> *Atilim University, Turkey*

<sup>b</sup> *Abdullah Gul University, Turkey*

<sup>c</sup> *Georgia State University, USA*

## ARTICLE INFO

### Keywords:

Digital natives  
Loyalty  
Consumer behavior  
Churn  
Mobile services

## ABSTRACT

A generation of consumers have now grown up in the digital age, intimately connected to a host of digital tools. This generation, which we call Digital Natives, has become a prime target for mobile operators due to their size, spending power, and use intensity. In addition, they tend to be influential trend setters when it comes to the adoption of new digital solutions. In the dynamic emerging economy of Turkey, they are of even greater interest to mobile operators as they surpass their peers in many advanced economies in terms of use intensity. Despite its importance, our knowledge of the loyalty and churn behavior of this customer segment is very limited. We respond to this research gap by drawing insights from a comprehensive survey of digital natives in the Turkish context. The empirical data originates from a survey of 2000 Turkish university students. We employ Binomial Logistic Regression analysis which provides interesting managerial and public policy insights. Our findings demonstrate that such customer service factors as call quality, billing and brand image affect both the loyalty and churn intentions of Turkish Digital Natives. Surprisingly, youth loyalty club programs, duration of subscription, and prior churn experience are found to be not significant. These results lead to practical implications for mobile providers and telecom regulators operating in Turkey and elsewhere.

## 1. Introduction

The mobile industry drives innovation and economic growth all over the world, thanks to the application industry, e-commerce, mobile device and content producers, and operators. Some 4.5% of global GDP (about \$3.6 trillion) was accounted by mobile services in 2017 (GSMA, 2018). Turkey is no stranger to this trend with its young and dynamic population and a remarkable 96 percent mobile penetration rate.

Yet, the mobile sector is complex (Garcia-Marinosa & Suarez, 2019; Lunn, 2013) and also facing formidable challenges (Ahn, Han, & Lee, 2006). These include: heightened competition between over-the-top (OTTs) content providers and telecom operators (Wellmann, 2019), slow-growing mature markets (Czajkowski & Sobolewski, 2016), reduced retail prices, switching behavior of customers for better deals (Garcia-Marinosa & Suarez, 2019), huge coverage costs and investment obligations, as well as high spectrum and network equipment fees. These competitive threats have compelled mobile operators into integration and consolidation. In order to survive and grow, mobile operators have begun to segment their customers and retain high-potential segments with different

\* Corresponding author.

E-mail addresses: [mithat.uner@atilim.edu.tr](mailto:mithat.uner@atilim.edu.tr) (M.Mithat Uner), [faruk.guven@agu.edu.tr](mailto:faruk.guven@agu.edu.tr) (F. Guven).

<https://doi.org/10.1016/j.telpol.2019.101901>

Received 25 June 2018; Received in revised form 1 November 2019; Accepted 4 November 2019

Available online 23 January 2020

0308-5961/© 2019 Elsevier Ltd. All rights reserved.

marketing strategies as churn has become a risky challenge (Ahn et al., 2006). Customers leave their current mobile operators for better deals or negotiate with them to get better rates; and otherwise threatening them with termination of their subscription.

Despite these grim sector trends, with a median age of 32 years, and 40 percent of its population under 25<sup>1</sup> at the end of 2018, the Turkish mobile market offers exceptional growth opportunities for mobile operators. Meanwhile, the traditional mobile subscriber has transformed from just a connected customer to a digital consumer (GSMA, 2018). These new digital consumers have smartphones and use the mobile Internet very actively. Among digital consumers, younger consumers are the most digitally literate, having grown up in the world of digital games, music and chat.

In this paper we focus on this youth segment in Turkey, which we call the *Turkish Digital Natives* (TDNs). TDNs have benefited from the internet and technology throughout their lives. While the Turkish mobile operators have developed aggressive youth loyalty programs to attract these TDNs, little is known about their consumption preferences and patterns. It is not fully clear which factors drive switching (Garcia-Marinosa & Suarez, 2019). To advance our understanding, in-depth empirical studies are required (Lunn & Lyons, 2018). Even though the literature on brand loyalty for millennials is growing (Giovanis & Athanopoulos, 2017; Gurau, 2012), it is still scant in its examination of consumption of digital natives in the telecommunications industry. Thus, the present study attempts to shed light on the consumption behavior of digital natives in the Turkish telecommunications sector – millennials as a sizeable and profitable customer segment (Lazarevic, 2012). In particular, we explore loyalty and switching behavior of these consumers.

The 'digital natives' concept was first introduced by Prensky (2001) to refer to youth who grew up with technology. Early experiences of these consumers involve considerable time and interaction with digital tools – computers, videogames, digital music players, video cameras, cell phones, and all other toys and tools of the digital age. Essentially, digital natives are millennials who are likely to be equipped with smartphones and have long had access to a variety of mobile applications. Meffert and Mohr (2017) refer to this segment as "always on digital customers." Digital natives are constantly online and interact with their friends through social media. In the present paper, we focus on this important customer segment and their consumption behaviors. This generation grew up with the commercialization and widespread diffusion of information and communication technologies in Turkey. As such, it is indicative of their peers in other rapidly transforming emerging markets.

Specifically, our aim in this paper is to systematically analyze the drivers of the churn and loyalty phenomena as they apply to digital natives. We examine the Turkish context, and consider not only the customers of any one operator but of all mobile operators doing business in the Turkish marketplace at the time of the study.<sup>2</sup> This paper makes several contributions to the literature which is relatively thin and contradictory (Lunn & Lyons, 2018). First, this study examines a dynamic and sizeable youth segment in an emerging market. Second, switching and loyalty intentions of these digital natives are investigated by a new empirical evidence and updated service characteristics specific to telecoms industry. Third, the results of this study help provide a better understanding of the churn behavior in mobile sector in means of competition and regulation.

With this background, the remainder of this paper is organized as follows. First, we review the pertinent literature, and then examine the Turkish mobile market, its history and key regulatory developments. We then formulate our research hypotheses. Next, we describe the methodology and discuss the results of study. Finally, we offer some implications for practitioners and public policy makers.

## 2. Literature review

### 2.1. Concepts of churn and loyalty

There is no agreed-upon definition of churn in the literature. We define churn broadly as customer attrition, switching, turnover, customer loss or defection. Churn refers to the loss of customers switching from one operator to another (Gladly, Baesens, & Croux, 2009). In the context of this study, we operationalize it simply as the act of voluntarily switching from one mobile operator to another.

Regarding the phenomenon of loyalty, Kim and Yoon (2004) described loyalty as willingness to recommend a company to other people, which can be considered a robust form of trust. This practical way of measuring loyalty is used by some mobile operators, and is called *Net Promoter Score*. Communication of this score by mobile operators is updated regularly and published publicly.

### 2.2. Churn challenge and benefits of customer loyalty

Churn is a formidable challenge for operators as it erodes market share and profitability (Keaveney, 1995). Therefore, customer churn has attracted considerable attention (Ascarza, Netzer, & Hardie, 2018; Gerpott, Rams, & Schindler, 2001; Gladly et al., 2009; Keramati & Ardabili, 2011). Managers recognize that the cost of acquiring new customers is much higher than retaining existing ones. Lowering churn rates is a more profitable strategy than attempting to gain market share or reducing costs since new customers are generally unprofitable for some time after acquisition. Moreover, long-term customers are less costly to the company, and much more likely to buy new services and spread a favourable word of mouth than transient or fleeting customers (Garin-Munoz, Perez-Amaral, Gijon, & López, 2016; Zeithaml, Berry, & Parasuraman, 1996). As a result, customer loyalty is central to company growth, performance, and survival (Kim, Park, & Jeong, 2004).

<sup>1</sup> Which amounts to some 33 million young consumers.

<sup>2</sup> In the literature, some studies focus on one single company and behaviors of its users.

### 2.3. Churn management

Churn management refers to the practice of retaining the profitable customers of a company. It involves segmenting customer groups and calculating respective churn probabilities and implementing strategies to prevent churn (Hung, Yen, & Wang, 2006).

Despite the massive efforts of companies to prevent churn, customers still switch (Kumar, Bhagwat, & Zhang, 2015). Consequently, many companies have been developing sophisticated churn prediction tools to stretch customer life time (Ascarza et al., 2018). Some churn prediction models have been offered for the telecommunications sector (Hung et al., 2006). Several churn prediction techniques were developed to assess why and when churn would occur. Buckinx and Poel (2005) attempted to determine when relationships of non-contractual customers are terminated. Verbeke, Martens, Mues, and Baensens (2011) advise that appropriate segmentation of customers would let operators use their limited resources efficiently to detect customers who are most likely to churn. An extensive overview and discussion of the literature on churn prediction models can be found in the work of Verbeke et al. (2011).

### 2.4. Switching cost in the telecommunications sector

Barriers or costs that make switching difficult are referred to as switching cost (Maicas, Polo, & Sese, 2009). Customers can be perceived as loyal as they do not churn but in reality, they could not churn because of the existing switching costs (Kim & Yoon, 2004). In the telecommunications sector, mobile operators tend to make switching costly for the customer in an attempt to preserve their business. For example, some mobile operators introduced cancellation charges to avoid loss of customers to rival firms (Buehler, Dewenter, & Haucap, 2006).

Telecommunication contracts are serious sources of switching costs. Nevertheless, customers often do not like to be bound by inflexible contracts. According to recent research by Confraria, Ribeiro, and Vasconcelos (2017), consumers were found willing to pay 1.3 Euro more per month in addition to their monthly bills to reduce the contract period from 12 months to 6 months. Consequently, in recent years rival mobile operators have started to cover the termination charge for the switching customer, so that targeted customers might not have to make a trade-off between a termination charge and the benefits of a new mobile operator. Mobile operators tend to employ creative marketing tools to enhance switching costs such as loyalty programs. Verhoef (2003) found that loyalty programs with economic incentives could generate greater customer loyalty. In practice, especially the youth segment in Turkey enjoys rich loyalty programs offered by mobile operators.

From the regulatory point of view, in the past, absence of mobile number portability (MNP) was vital switching cost for customers who were facing utility loss such as missed calls, informing users (Buehler et al., 2006). Finally, regulators introduced MNP regulation to reduce switching costs and increase competition in the industry.

### 2.5. Social effects on customer churn

Since consumers do not act in isolation when making marketplace choices (Haenlein, 2013), the adoption of new products or abandoning existing brands are affected by social networks (Nitzan & Libai, 2011). Therefore, preference towards a mobile operator or switching to another are very much influenced by social ties. Nitzan and Libai (2013) claim that few studies focused on the role of social factors within the context of churn. In Turkey, university students may minimize their communications costs by joining family-plan which provides them considerable benefits. This joint consumption might have implications at churn decision of students. Basaran, Cetinkaya, and Bagdadioglu (2014) found that social network ties are very important to operator choice decisions of subscribers in the Turkish mobile market. Birke and Swann (2006) confirm that individual choice of mobile operators is heavily affected by choices of other family members in the same household. A subscriber, who intensively calls family members and friends, is likely to choose the same operator of that social network (Corrocher & Zirulia, 2009).

### 2.6. Determinants of loyalty and churn

Given the importance of customer churn and loyalty, scholars have explored the determinants of these two phenomena. Kisioglu and Topcu (2011) constructed a churn model based on a Bayesian Belief Network with data provided by one of the mobile operators in Turkey. They conclude that minutes of calls, billing amount, tariff type and frequency of calls all impact customer churn. A study by Keramati and Ardabili (2011) conducted in the Iranian telecommunications sector indicates that customer dissatisfaction, the amount of service usage, and certain demographic factors significantly impact consumer switching. Keaveney (1995) identified eight factors that impact customer churn. These are: pricing, inconvenience, core services failures, service encounter failures, response to failed services, presence of alternatives, ethical issues, and involuntary switching.

Other studies underscore that customer satisfaction has a vital impact on customer churn (Ahn et al., 2006; Gronholdt, Martensen, & Kristensen, 2000; Kim & Yoon, 2004). Recent studies also show that improving customer satisfaction significantly contributes to customer loyalty and helps to minimize customer churn (Gerpott et al., 2001). As a result, highly satisfied customers tend to lift customer loyalty (Kim et al., 2004).

A critical factor in determining customer satisfaction is service quality experience of customers. Satisfaction is necessary for customer loyalty but not sufficient to prevent churning since satisfied customers may also switch (Aydin & Ozer, 2005). Garin-Munoz et al. (2016) find that probability of complaints for poor service experience is higher among younger and educated individuals. However, consumers who are disappointed with poor service may not always voice their concerns and register a complaint (Garin-Munoz et al., 2016); this highlights the importance of churn prediction and prevention mechanisms. Interestingly, the recent

literature (Gerpott & Ahmadi, 2015; Kumar et al., 2015) advises companies not to stop struggling even after churn of customers. In other words, managers can reacquire those customers who previously left the firm – known as the phenomenon of ‘customer win-back’.

## 2.7. Characteristics of digital natives

Digital natives may also be referred as Millennials, Generation Y, Generation Z, Net Generation, Echo Boomers and Generation Next (Kumar & Lim, 2008; Viswanathan & Jain, 2013). This cohort makes their decisions with extensive research as they represent a highly knowledgeable, technically literate, and technologically savvy generation (Chuah, Marimuthu, & Ramayah, 2014). They have never experienced a world without digital interactive technology.

Digital natives constitute a very lucrative segment because of their current and potential spending power (Lazarevic, 2012). Their buying power will increase as they grow older, implying their importance to mobile firms (Viswanathan & Jain, 2013). Marketers appeal aggressively to this segment and gain their loyalty since they are expected to be customers for an extended period (Gurau, 2012).

Some research suggests that digital natives tend to be less loyal to brands as they are more sophisticated and well-informed, and less susceptible to marketing tactics in comparison to older consumers (Lazarevic, 2012). However, other studies have found that younger consumers are brand loyal (Gurau, 2012). Indeed, the behavior of digital natives is not fully understood and has become a challenging group to target (Valentine & Powers, 2013). Extant research fails to delineate ways in which brand loyalty among this group can be strengthened (Lazarevic, 2012). Furthermore, studies on brand loyalty of digital natives for digital devices (smartphones, tablets etc.) are also rare (Giovanis & Athanasopoulou, 2017).

When it comes to knowledge of Turkish digital natives’ loyalty characteristics, what we know is extremely sparse. The youth research is generally focused on the sociological dimensions of teenagers and suggest that young generations have become much more liberal and are intense users of the internet and social media (Konda, 2018).

## 2.8. Research objectives

Our inquiry strives to reveal the reasons behind switching behaviors of college-aged digital natives in Turkey. Since college-age consumers make up a significant portion of the population, marketers aim to target this segment more effectively (Noble, Haytko, & Phillips, 2009). In addition, Noble et al. (2009) suggest that this segment exhibits significant diversity within itself, suggesting that more granular subgroups of within this sector deserves to be examined.

More specifically, the present research aims to explore those factors that influence loyalty and churn behavior of Turkish digital natives. This is important since research on digital natives tends to focus largely on demographic profiles rather than providing a deeper understanding of their consumption behaviors (Noble et al., 2009). Indeed, research on the churn and loyalty behavior of this segment is scant. The behavior of digital natives is often discussed but not fully understood (Valentine & Powers, 2013). Finally, it is also critical to shed light on this market segment since some studies have suggested that digital natives tend to be less brand loyal compared to older consumers (Noble et al., 2009; Viswanathan & Jain, 2013).

## 3. Overview of the Turkish mobile market and hypothesis development

Globally some five billion unique mobile subscribers make the mobile industry critically important in the consumer technology market (GSMA, 2018). In spite of this huge scale, telecom operators are facing severe challenges. Much of the value created in the telecom chain is produced by over-the-top (OTT) companies such as Facebook, Google and Microsoft. OTTs have threatened the traditional services of operators such that young people hardly use their mobiles for voice calls today (McKinsey, 2018). Moreover, continuous spectrum fees driven by technological development and very high infrastructure deployment costs have made operators suffer significant and persistent profit decline. Therefore, mobile players throughout the world tend to consolidate their assets and business operations. The recent merger case of T-Mobile US and Sprint, and the EE takeover by BT are concrete examples of this industry trend.

### 3.1. A brief examination of the Turkish mobile market

As an emerging market, the Turkish economy has exhibited remarkable growth over the past three decades as it liberalized and

**Table 1**

Market shares of key operators in the Turkish mobile market.

	1994	2000	2001	2002	2003	2005	2007	2017	Subscriber Base (2017)
Turkcell	78.0%	69.0%	67.0%	67.3%	67.9%	63.0%	64.0%	44.0%	<b>33.4 Million</b>
Telsim <sup>a</sup>	22.0%	31.0%	29.2%	25.4%	19.6%	20.5%	20.0%	31.0%	<b>23.6 Million</b>
Aria	–	–	2.7%	5.1%	–	–	–	–	
Aycell	–	–	1.1%	2.1%	–	–	–	–	
Avea	–	–	–	–	12.5%	16.5%	16.0%	25.0%	<b>18.7 Million</b>

<sup>a</sup> Telsim was acquired by Vodafone at the end of 2005, and changed the brand name as Vodafone. Aria and Aycell merged into Avea.

transformed its industries. In Turkey, mobile services have been offered since 1994. Mobile operators generated \$26.4 billion of revenue (3% of GDP) in 2016 and invested some \$4.3 billion in infrastructure in the same year.

As shown in Table 1, until the market liberalization in the early 2000's, only two mobile operators (Turkcell and Telsim) provided mobile services. Much of the international markets also experienced a similar duopoly era at the beginning. Over time, however, high consumer prices and low pace of network deployment led regulators to increase number of players and market structure formed into oligopoly. In 2001, the third and fourth operators entered the Turkish market. However, they failed to achieve a foothold in the mobile market and they had to merge into a new entity in 2003.

As can also be gleaned from Table 1, the Turkish mobile market exhibited a pattern of significant first-mover advantages (Atiyas & Dogan, 2007). Because of their experience and scale, first-mover mobile operators tend to experience less churn and higher retention rates, while late entrants tend to serve less attractive segments of the market (Jakopin & Klein, 2012). Furthermore, huge customer base of the incumbent mobile operator has strong impact over the entire telecom market since the network size serves as a quality signal (Karacuka, Catik, & Haucap, 2013). In the Turkish market, this network quality issue has been strongly associated with the incumbent operator for years. The lead operator reinforced an image of superior quality image through promotion and company publications.

By 2017, there were some 76 million mobile subscribers in Turkey. With a penetration rate of 96 percent, Turkey is still lower than the EU average (105 percent), suggesting that there is room for further growth.

Turkish mobile customers tend to prefer post-paid tariffs (pay monthly) over prepaid (pay-as-you-go plan) ones. The current share of post-paid is 58 percent,<sup>3</sup> but migration from pre-paid to post-paid subscriptions continues. Operators are also fond of post-paid plans,<sup>4</sup> as their ARPU (Average Revenue Per User) is higher than pre-paid plans, in addition to some lock-in terms of the contracts. Meanwhile, whether the customer has post-paid or pre-paid plan, switching among the operators persists.

Regarding customer satisfaction trends in the Turkish telecom sector, the Turkish telecom regulator BTK reports the complaints of consumers quarterly via its public reports. Complaints tend to relate to invoice amounts, connection problems, and suspension of service per sub-sector whether it is mobile, fixed voice, fixed internet, cable or satellite services. Interestingly, almost the same type of complaints registered in 2012 continue to persist in 2019. The most criticized issue has not changed – invoice related problems. Bill shock, bills more than expected, seems to be the main universal complaint in the telecommunications sector (Lunn & Lyons, 2018).

Since the MNP regulation was introduced in the late 2008, more than 130 million mobile numbers have been ported as of September 2019. Switching is free of charge and should be completed in maximum 6 days. Regulatory authorities follow churn rates and maintain guidelines and rules for smooth switching in the telecommunications sector, such as shorter portability period and fair consumer fees.

While switching operators via MNP is beneficial for the consumers and for healthy competition, churn has created serious business risk for telecom operators because of two factors. First, long term customers tend to be much more profitable. Second, customer retention is cheaper than acquiring new customers (Verbeke et al., 2011). In order to attract customers from competition, some rival operators in Turkey visit the customer at its premises to complete the legal MNP procedure quickly and pay the cancellation charge on behalf of the customer.

Customer churn rates are calculated by the BTK by dividing the number of switched customers to the total customer base for a selected time interval. Ahn et al. (2006) found an annual churn rate of 20–40 percent in mobile sector in their studies. The Turkish mobile sector also falls within this range,<sup>5</sup> as shown in Table 2. Kisioglu and Topcu (2011) confirmed that, in the wireless sector, churn rate was around 2.2 percent per month. Kim et al. (2004) remarked that in Korea, monthly average customer churn rate was around 3.3 percent in early 2000's, as new technologies and MNP triggered an increase in the churn rate. Importantly, the revenue implication of high churn rates is critical for operators. As revenues are in billions TL, churn loss is measured in the hundreds of millions TL.

Around the world, a wide array of fixed-mobile bundles is offered to consumers, thanks to mergers between fixed and mobile operators. Yet, such bundles cannot be offered in the Turkish telecommunications market due to terms of telecommunications regulations (Uner, Guven & Cavusgil, 2014). In other words, operators offer either mobile services or fixed services. Therefore, telecom operators are structured as two separate companies, one for fixed services and the other for mobile service offerings. Therefore, bundling considered as switching cost in Srinuan, Srinuan, and Bohlin (2014), cannot be implemented in Turkish mobile market because of regulatory limitations.

### 3.2. Digital natives in Turkey

Knowledge of the technology habits of Turkish teens is extremely limited. A recent global research conducted by Deloitte (2016) that also covers Turkey, suggests that smartphone dependency or 'addiction' in Turkey is the highest among all investigated emerging markets, including Brazil, China, India, and Russia. According to Deloitte, the 18-24-year-old segment in Turkey aggressively downloads considerable number of mobile applications and spends much more time on those applications than other segments. Moreover, Turkish users consume much more video and share more photos in social media than their counterparts in advanced economies. This is naturally one of the attractive features of the Turkish market. Another study<sup>6</sup> by the Turkish Ministry of Trade also

<sup>3</sup> As of 2019,1st Quarter (The post-paid ratio was 31% at the end of 2010).

<sup>4</sup> ARPU level of post-paid customers are around two times more than of pre-paid ones.

<sup>5</sup>  $12 \text{ months} \times 2.5\% = 30\%$ .

<sup>6</sup> The study was conducted in 26 Turkish urban areas; with a sample of 1,650, aged 18–69, September 2017.

**Table 2**  
Monthly churn rates of mobile operators (BTK).

	Average of last 12 months (Apr16-Mar17)	Average of 2018
Avea	2.5%	2.2%
Turkcell	2.1%	2.1%
Vodafone	2.5%	2.3%

confirms that smartphone ownership has reached 84 percent in Turkey. The same study indicates that the repurchase cycle of smartphones is 3.2 years. Roughly one-in-ten consumers renews their device every year, and two-in-ten do so every two years. All these tend to indicate that the mobile industry continues to significantly alter the business and social landscape of Turkish technology ecosystem.

A separate Deloitte global survey on millennials (which included Turkish millennial respondents as well) argues that the trust by millennials towards companies has been declining for some time (Deloitte, 2018).

Turkey is home to a young and well-educated population, as half the population is under the age of 32, making up some 40 million individuals (Konda, 2018). Furthermore, 7.5 million university students in some 200 universities make millennials a unique, dynamic and influential consumer segment (CHE, 2019).

Young digital natives, the focus of this research, follow technology closely and adopt quickly to new trends. They have the highest rate of smartphone ownership in Turkey (Deloitte, 2016). According to recent research by Konda (2018), smartphone ownership of Turkish young consumers (aged 15–29) is 100%, and this ratio is only 94% in the U. S. among ages 18–29. Mobile operators also aggressively target this segment (18–25 years old) with dedicated marketing campaigns and loyalty programs.

Kumar and Lim (2008) indicate that college students are a sub-group of digital natives. Therefore, we aimed to represent the population of digital natives among university students who are more likely to be engaged with technology.

As stated earlier, the average mobile penetration in the EU is about 105 percent and this saturation level in the mobile market compels mobile operators to acquire new customers through churn campaigns. In contrast, in the growing Turkish market, penetration is around 96 percent and mobile operators have also turned their attention to the large youth segment, in addition to pursuing aggressive churn management.

### 3.3. Research hypotheses

Customer satisfaction is a vital characteristic of churning and there are many previous studies that suggest a strong relationship between customer satisfaction level and churn (Ahn et al., 2006). Customer satisfaction is identified as unobservable/perceptual customer metrics by Gupta and Zeithaml (2006). Customer satisfaction has various sub-dimensions in the mobile sector, such as network (voice and data) quality, billing, variety of services, tariff level and brand image. Call quality was identified as network quality in the study of Gerpott et al. (2001), which focused only on voice. However, recent developments in mobile technologies, such as 3G and 4G, have made mobile internet a strong substitute to fixed internet service.<sup>7</sup> In fact, many consumers have cancelled their fixed internet in favour of mobile-only internet, since speed and data allowances are becoming very favourable. Subscribers are interested in connectivity, which means minimum connection errors. Research firms in the industry measure call, text, and data performances separately (Rootmetrics, 2017). Therefore, we also consider the quality of mobile internet service as a new variable (in addition to call quality) in the present investigation; speed is also a critical driver of customer satisfaction.

Internet quality is vital for young consumers while they watch videos and make internet-based calls via Facetime, Whatsapp etc. As a result, speed and data allowances have become the main determinants of tariffs and marketing campaigns of operators in the marketplace.

Recently, service variety has also been considered a competitive advantage, such that mobile operators have started to offer their own OTT messaging applications, free magazines in mobile application format, music and TV services, and other digitals services such as cloud. From the perspective of mobile operators, a wide array of services reduces the cost of customer acquisition while increasing revenue streams. Perceived value for money (tariff level), trust (brand image), correct billing, as well as the ability of the operator to offer a variety of services have all been included as customer satisfaction factors.

Given the importance of digital natives to marketers and scholars, the examination of churn and loyalty behaviors of digital natives in the telecommunications sector is critical.

Based on the existing literature and mobile industry dynamics, we advance the following hypotheses. First, with respect to customer satisfaction, we propose that satisfaction factors have a positive impact on loyalty and negative impact on churning. Thus:

**H1a.** Customer satisfaction factors<sup>8</sup> are negatively associated with customer churn probability.

**H1b.** Customer satisfaction factors are positively associated with customer loyalty.

According to Kumar and Lim (2008), the age group of 15–24 outnumber all other users in terms of minutes, texting and data used. Therefore, service usage parameters, such as monthly allowance of data, calls and text, and monthly bills can affect the decisions of

<sup>7</sup> According to BTK (2017), mobile data download speed is around 7 Mbps which is a strong competitor to ADSL services, very common in Turkey.

<sup>8</sup> Full list of customer satisfaction factors is listed at Table 3.

digital natives. We hypothesize that high level of service usage is expected to enhance ties with operator so this factor seems to be positively associated with loyalty and negatively associated with the customer churn probability.

**H2a.** Level of usage is negatively associated with customer churn probability.

**H2b.** Level of usage is positively associated with customer loyalty.

As mentioned earlier, the youth market is a very dynamic segment in Turkey. Mobile operators manage various youth loyalty club<sup>9</sup> activities that offer some incentives designed specifically for this segment, including extra free-mobile data, money transfer, entertainment and shopping rebates, even career advice and online trainings. This loyalty club effect can create switching cost (Ahn et al., 2006) or can attract other operators' customers if it is effective and consumers are aware. Gupta and Zeithaml (2006) express that loyalty programs are very vital marketing instruments for retention. Thus, we hypothesize:

**H3a.** Membership in loyalty programs is negatively associated with customer churn probability.

**H3b.** Membership in loyalty programs is positively associated with customer loyalty.

Another switching cost could be family plans, social ties, which are popular in Turkey, where many young university students are semi-dependent on their families. When a TDN is a part of family plan, it could affect their ability to switch operators. Confraria et al. (2017) describe this type of behavior club network effects. In line with these studies, we hypothesize:

**H4.** Being part of a family plan is negatively associated with customer churn probability.

Longer subscription periods can make consumers recommend their operators, while prior churn experience could also affect consumer churn (Kim & Yoon, 2004). Thus:

**H5.** Prior churn experience is positively associated with customer churn probability.

**H6.** Duration of subscription is positively associated with customer loyalty.

## 4. Research methodology

### 4.1. Data collection

We carried out our data collection in Ankara, the capital city of Turkey with a population of over five million people. We targeted a randomly chosen sample of undergraduate students in several public universities as they are representative of digital natives. They range in age from 18 to 25. Ankara hosts approximately 300,000 university students, from about seven million overall in the country<sup>10</sup>. Some 2000 survey forms were distributed randomly to university students in January 2017, and some 1200 were completed by February 2017. After accounting for missing data, we collected some 1114 completed responses, representing a response rate of about 60 percent.

### 4.2. Data and method of analysis

Consumers make decisions among some finite choices. Qualitative or discrete choice model assumes that an individual chooses an alternative which provides highest utility and the model predicts the probability of choice based on observed factors.

Our empirical analysis investigates those factors that potentially impact both dependent variables – customer churn and loyalty – based on the extant literature and our own research. Some churn and loyalty indicators are measured dichotomously; choices of respondents are 'either-or' such as to attend or not to attend. Given the nature of discrete rather than metric or continuous measures, the convention is to employ discrete choice models. Discrete choice analysis is widely used to model individual decisions and assumes that an individual is likely to choose an alternative over others while maximizing her utility (Basaran et al., 2014; Czajkowski & Sobolewski, 2016; Karacuka et al., 2013; Kim & Yoon, 2004). When the dependent variable is dichotomous, binomial (or binary) logistic regression method is preferred (Howitt and Cramer, 2011) as it does not require normal distribution such as the probit model. The predictor variables can be any type of variable, not limited to the discrete ones. In our research, there are two choices of an individual for decision making for a dependent variable (recommend or not recommend, churn or not).

To predict customer behavior for churning and loyalty, we applied an econometric model based on discrete choice theory. The methodology of the model in this study is akin to that of Kim and Yoon (2004), with some enhanced variables. The Binomial Logistic Regression method is used in order to measure the probabilities of churn and loyalty behavior of subscribers. The Binomial method is based on discrete choice theory, which provides probability of consumers to choose among two options (prefer or not prefer) as a function of the observed attributes of the subscriber. If a customer prefers churning, then we record this preference as '1' in the econometric model, otherwise as '0'. The same logic works for second dependent variable, loyalty. The model predicts whether independent variables have an influence on customer preferences, and, if so, to what extent.

Table 3 details the measures for the two dependent variables – churn and loyalty– and relevant independent variables of the model.

<sup>9</sup> Operators have dedicated marketing teams, brands, web pages and mobile applications for youth segment. In Turkey, population between 15 and 25 ages surpassed 14 million at the end of 2018.

<sup>10</sup> 129 out of 206 universities are public universities, where higher education is free.

The empirical investigation explores the relationship between the predictor or explanatory variables and the probability of churn and loyalty. Explanatory factors are grouped into demographics, customer satisfaction, and other relevant variables.

Behavioral intentions can be perceived as an early warning system for signaling the risk of churn; operators can then put in place the necessary mitigating actions on a timely basis. Even though behavioral intentions do not exactly capture actual consumer behavior, they are reasonable indicators that signal whether customers are likely to churn or not (Zeithaml et al., 1996). Jones and Sasser (1995) confirm that measuring the future purchase intentions of customers does not necessarily guarantee actual behavior, nevertheless, they provide fairly accurate predictions of behavior.

## 5. Findings and discussion

### 5.1. Descriptive findings

Some select empirical findings are presented in Table 4. The average monthly income of TDNs is around 627 TL.<sup>11</sup> The sample includes roughly an equal number of female and male participants. As expected, Turkish Digital Natives use mobile services (925 min and 3.6 GB) more heavily than the average Turkish mobile consumer.<sup>12</sup> On average, TDNs have been subscribers of their current operator for approximately three years, and they have switched operators at least once in the past. The average monthly bill of TDNs amounts to 40.9 TL, which is higher than the estimated average bill amount of 36.3 TL for the sector as a whole. This suggests that TDNs spend more on telecommunications than the average Turkish consumer.

The average monthly expenditure of 578 individuals in post-paid plans was 53.05 TL, while the remaining 536 pre-paid subscribers spent only about 27.87 TL a month. In general, the amount of post-paid bills is higher than of pre-paid in the mobile sector. It is worthwhile to note that post-paid subscribers can enjoy some discounts during their contractual term and, as a consequence, any early cancellation of the subscription could result in a fee. Average monthly bill also varies among the operators: Avea 39.03 TL; Turkcell 49.49 TL and Vodafone 36.70 TL.

TDN respondents ranked their preferred operators in the following order. Avea ranked first (43 percent), followed by Vodafone (37 percent) and Turkcell (25 percent). This is in sharp contrast to the sector as a whole, where the respective figures are 25, 31, and 44 percent. Each TDN in our sample owned a smart phone and a mobile internet subscription.

### 5.2. Estimation results and discussion

Indeed, the study led to some interesting insights regarding the factors that affect churn decisions and loyalty intentions of TDNs. We first conducted a binary logistic regression in order to predict the factors that affect loyalty and churn intention of TDNs. We then conducted several tests of robustness to assess the model fit and the overall model is statistically significant. For two different dependent variables (loyalty and churn), Tables 5 and 6 list significant independent variables and their respective contributions to the model with insignificant ones. To interpret the results, odds ratios higher than one indicate positive association between independent and dependent variable. We elaborate on key insights next.

First, regarding the customer satisfaction factors, as expected, unsatisfied customers are more likely to churn relative to very satisfied ones. Meanwhile, satisfied customers are more likely to recommend their operators relative to very unsatisfied individuals. Overall, our statistical analysis suggests that most of the customer satisfaction factors affect both the churning and loyalty behavior of TDNs, as indicated in Tables 5 and 6. In particular, three customer service factors – Call Quality (CS1), Brand Image (CS4), Billing (CS7) – affect both churn and loyalty. Unsatisfaction at tariff Level (CS3) triggers churning while satisfaction at Internet Quality (CS2) and Variety of Services (CS5) increases the recommendation. Therefore, we can partially accept the H1a and H1b.

Second, among texts, calls and data, only data usage suggests a meaningful effect both on churn and loyalty. Promoting data usage decreases the probability of churning while increases likelihood of loyalty. Consequently, H2a and H2b are partially accepted. Communicating through OTT applications and watching videos on the smart phones have made data the main decisive factor for tariff in means of pricing, while texting and calling have become commodity and no more a criterion for choosing a tariff. Greater use of data increases the ties between customer and operator and customer trust, therefore customers are less likely to churn while they increase their data usage.

Third, youth loyalty club programs have no effect on churning and loyalty in our model, therefore we conclude that neither H3a nor H3b can be accepted. Operators allocate significant amount of marketing funds for youth loyalty programs. Yet, most surprisingly, youth loyalty club programs have no effect on churning and loyalty in our model, even though loyalty programs for youth are considered a switching cost (Klemperer, 1987). It seems from the descriptive statistics that some customers do not fully benefit from these programs and similar offerings of operators for youth clubs have made this variable statistically insignificant.

Fourth, the family plans, characterized by at least two members and cheaper rates, are popular among Turkish mobile subscribers. Our empirical results demonstrate that individuals who are members of family plan are twice more likely to churn than the members of individual plans. Therefore, H4 is rejected. One plausible explanation is that at least one member of the family plan is likely to be aware of the opportunities and different options in the marketplace and, as a result, they would minimize the total monthly costs.

Fifth, in contrast to the findings of Gustafsson, Johnson, and Roos (2005), prior churn experience has no effect on the churn and

<sup>11</sup> 1 \$ equaled to 3.7 TL (as of January 2017). Net minimum wage in 2017 was 1404 TL.

<sup>12</sup> Turkey average as 436 min and 2.2 GB (end of 2016, source: BTK).

**Table 3**  
Variables and their Operationalization.

Dependent Variables	
Dummy for Churning	=1: Subscriber intends to churn; =0: Otherwise (Survey question: Would you switch your current mobile operator in the next 6 months?)
Dummy for Loyalty	=1: Subscriber intends to recommend; =0: Otherwise (Survey question: Would you recommend your current mobile operator to others?)
Customer Satisfaction (CS) Variables	
Call Quality (CS1), Internet Speed Quality (CS2), Tariff Level (CS3), Brand Image (CS4), Variety of Services (CS5), Customer Services (CS6), Billing (CS7)	=5: Very satisfied =4: Satisfied =3: Not satisfied nor unsatisfied =2: Unsatisfied =1: Very unsatisfied
Demographic Variables	
Age	As integer number
Gender	=1: Female, =0: Male
Year at university	=1: First year; =2: Second year, ...
Monthly Income	As a range (inc. scholarship, family contribution etc.)
Tariff (Plan) Characteristics of Customer	
Current Operator	=1: Operator1; =2: Operator2; =3: Operator3
Monthly Allowance of Calling Minutes	As integer number
Monthly Allowance of Messaging (SMS)	As integer number
Monthly Allowance of Data (Internet)	in GB as integer number
Type of Bill	=1: Pre-paid, =0: Post-paid
Amount of Monthly Bill	As integer number
Bill Paid by Whom	=1: By my family, =0: by myself
Type of Plan	=1: My plan is individual, =0: if it is part of family plan
Churn and Loyalty factors	
Duration of Subscription	As number of months
Prior Churn Experience	=1: Not churned, =0: churned
If Churned, number of Churns	As integer number
Benefiting from Youth Loyalty Club Services	=1: Not benefiting, =0: benefiting
Following All Operators' New Campaigns	=1: Following, =0: not following

**Table 4**  
Descriptive statistics.

	Minimum	Maximum	Mean	Std. Deviation
Age	18	25	20.9	1.8
Year at University	1	8	2.7	1.4
Monthly Income (TL)	100	1000	626.6	273.3
Monthly Allowance of Calling Minutes	0	10,000	924.6	904.9
Monthly Allowance of Messaging (SMS)	0	10,000	1729.2	1751.9
Monthly Allowance of Data (Internet) in GB	0	50	3.6	2.9
Duration of Subscription (in months)	0	240	36.5	32.6
Number of Churn	0	10	1.4	1.3
Amount of Monthly Bill (TL)	10	500	40.9	35.6
Benefiting from Youth Loyalty Club Services	688 respondents enjoy the benefits while 426 do not			
Following All Operators' New Campaigns	921 respondents follow the new campaigns while 193 do not			
Bill Paid by Whom	Of 469 respondents are paid by families, where 645 pay by themselves			
Type of Bill	578 respondents with post-paid where 536 with pre-paid			
Likely to churn	Respondents intending to churn: 261, not to churn: 853			
Likely to recommend	Respondents intending to recommend: 804, not to recommend: 310			

loyalty. Therefore, H5 is rejected.

Lastly, duration of subscription is not statistically significant. One plausible explanation may be the degree of switching cost; consumers can be lured away where switching costs are low (Rosenbaum-Elliott, Percy, & Pervan, 2015). Thus H6 is rejected.

With respect to particular operators, operator identity affects both churn and loyalty preferences of their subscribers. Compared to

**Table 5**  
Estimation results for churn intention (odds ratios and standard errors in parentheses).

Customer Satisfaction Variables (CS1, CS2, CS3, CS4, CS5, CS6, CS7)	Churn
CS1: Call Quality (Ref: very satisfied)	
Very unsatisfied	4.019*** (0.297)
Unsatisfied	2.066** (0.326)
Not satisfied nor unsatisfied	0.910 (0.391)
Satisfied	0.718* (0.176)
CS2: Internet Quality (Ref: very satisfied)	
Very unsatisfied	1.564 (0.303)
Unsatisfied	0.902 (0.464)
Not satisfied nor unsatisfied	1.136 (0.460)
Satisfied	0.988 (0.177)
CS3: Tariff Level (Ref: very satisfied)	
Very unsatisfied	2.196** (0.341)
Unsatisfied	1.580** (0.216)
Not satisfied nor unsatisfied	0.604 (0.494)
Satisfied	0.829 (0.193)
CS4: Brand Image (Ref: very satisfied)	
Very unsatisfied	3.209*** (0.261)
Unsatisfied	2.086* (0.381)
Not satisfied nor unsatisfied	1.199 (0.423)
Satisfied	1.117 (0.180)
CS5: Variety of Services (Ref: very satisfied)	
Very unsatisfied	2.161 (0.317)
Unsatisfied	1.167 (0.381)
Not satisfied nor unsatisfied	1.192 (0.295)
Satisfied	1.073 (0.190)
CS6: Customer Services (Ref: very satisfied)	
Very unsatisfied	2.068 (0.254)
Unsatisfied	0.991 (0.326)
Not satisfied nor unsatisfied	1.189 (0.347)
Satisfied	0.910 (0.193)
CS7: Billing (Ref: very satisfied)	
Very unsatisfied	2.028** (0.328)
Unsatisfied	1.932*** (0.242)
Not satisfied nor unsatisfied	1.412 (0.402)
Satisfied	0.989 (0.189)
Variables on demographics and experiences of users	
Age	1.025 (0.063)
Gender	1.058 (0.173)
Year at university	1.028 (0.079)
Monthly income	1.000 (0.000)
Operator (Ref: Avea)	
Turkcell	0.650** (0.212)
Vodafone	0.766* (0.198)
Calling Minutes	1.000 (0.000)
SMS	1.000 (0.000)
Data	0.910** (0.038)
Type of Bill (Ref: post-paid)	
Pre-paid	1.084 (0.187)
Amount of monthly bill	1.002 (0.003)
Bill paid by whom (Ref: by myself)	
By my family	0.882 (0.176)
Type of Plan (Ref: individual plan)	
Family plan	1.949** (0.316)
Duration of Subscription	0.995 (0.003)
Prior Churn Experience (Ref: churned)	
Not churned	1.313 (0.266)
Number of Churns	1.063 (0.091)
Benefitting from youth loyalty clubs (Ref: benefiting)	
Not benefiting	1.128 (0.175)
Following all operators' new campaigns (Ref: not following)	
Following	1.953*** (0.235)
Observations	1114
Nagelkerke R <sup>2</sup>	0.227
Log Likelihood	1031.211

\*Significant at 10%.

\*\*Significant at 5%.

\*\*\*Significant at 1%.

**Table 6**  
Estimation results for recommendation intention (odds ratios and standard errors in parentheses).

Customer Satisfaction Variables (CS1, CS2, CS3, CS4, CS5, CS6, CS7)	Loyalty
CS1: Call Quality (Ref: very unsatisfied)	
Unsatisfied	0.674 (0.461)
Not satisfied nor unsatisfied	3.389*** (0.330)
Satisfied	4.038*** (0.330)
Very satisfied	4.516*** (0.504)
CS2: Internet Quality (Ref: very unsatisfied)	
Unsatisfied	0.895 (0.579)
Not satisfied nor unsatisfied	1.892 (0.501)
Satisfied	3.140*** (0.319)
Very satisfied	3.329*** (0.314)
CS3: Tariff Level (Ref: very unsatisfied)	
Unsatisfied	0.567 (0.408)
Not satisfied nor unsatisfied	0.732 (0.455)
Satisfied	1.303 (0.255)
Very satisfied	1.228 (0.244)
CS4: Brand Image (Ref: very unsatisfied)	
Unsatisfied	1.921 (0.489)
Not satisfied nor unsatisfied	3.981*** (0.308)
Satisfied	4.249*** (0.297)
Very satisfied	4.987*** (0.494)
CS5: Variety of Services (Ref: very unsatisfied)	
Unsatisfied	1.350 (0.430)
Not satisfied nor unsatisfied	3.428 (0.327)
Satisfied	3.888*** (0.405)
Very satisfied	3.806*** (0.327)
CS6: Customer Services (Ref: very unsatisfied)	
Unsatisfied	0.950 (0.371)
Not satisfied nor unsatisfied	1.395 (0.427)
Satisfied	1.085 (0.271)
Very satisfied	1.082 (0.293)
CS7: Billing (Ref: very unsatisfied)	
Unsatisfied	0.647 (0.372)
Not satisfied nor unsatisfied	1.521 (0.445)
Satisfied	2.439*** (0.248)
Very satisfied	2.430*** (0.255)
Variables on demographics and experiences of users	
Age	1.081 (0.068)
Gender	0.875 (0.178)
Year at university	0.880 (0.084)
Monthly income	1.000 (0.000)
Operator (Ref: Avea)	
Turkcell	2.683*** (0.224)
Vodafone	1.772*** (0.187)
Calling Minutes	1.000 (0.000)
SMS	1.000 (0.000)
Data	1.077* (0.038)
Type of Bill (Ref: post-paid)	
Pre-paid	1.084 (0.187)
Amount of monthly bill	1.002 (0.003)
Bill paid by whom (Ref: by myself)	
By my family	0.882 (0.176)
Type of Plan (Ref: individual plan)	
Family plan	1.043 (0.390)
Duration of Subscription	1.001 (0.003)
Prior Churn Experience (Ref: churned)	
Not churned	0.914 (0.279)
Number of Churns	0.969 (0.101)
Benefitting from youth loyalty clubs (Ref: benefiting)	
Not benefiting	0.880 (0.179)
Following all operators' new campaigns (Ref: not following)	
Following	0.964 (0.224)
Observations	1114
Nagelkerke R <sup>2</sup>	0.381
Log Likelihood	975.143

\*Significant at 10%.

\*\*Significant at 5%.

\*\*\*Significant at 1%.

Avea (which is used taken as the reference), subscribers of Turkcell and Vodafone are much more likely to recommend their operators. Regarding churn, again subscribers of Turkcell and Vodafone are less likely to switch their operators, compared to Avea.<sup>13</sup> It is important to note that Turkcell subscribers are also less likely to switch and are much more likely to recommend their operators, compared to Vodafone subscribers.

This finding shows that the competition structure of population in the mobile sector is also reflected to the sample. In Turkey, market shares of operators and relevant quality perception of telecom operators are correlated which means that the market leader has the most-developed infrastructure and highest perception of quality. As suggested by *Atiyas and Dogan (2007)*, first-mover advantages of the incumbent have been difficult to reverse; challenging the dominance of the market leader has not been so easy. In addition to market shares of operators, profits also support this claim. The net cumulative profit of Turkcell was 7.2 billion TL, of Vodafone - 0.5 billion TL and finally of Avea -5.4 billion TL for the 2013–17 period (*BTK, 2017*).<sup>14</sup> For a long time, only the market leader seemed to generate profits. Therefore, retaining customers and preventing churn has been vital strategy for the followers.

Respondents who follow promotional campaigns report stronger switching intentions. Relative to those who are not following, these customers are twice as much likely to churn. This speaks to the effectiveness of promotional campaigns that stimulate awareness and switching behaviors.

There is no significant relationship with post-paid and pre-paid contracts in our findings even though post-paid tariffs have much more burden for churning because of contractual terms.

In summary, of the 24 independent variables, eight influence churning, while another seven demonstrate a significant impact on recommendations (loyalty). It should be noted that most customer satisfaction factors, data allowance, and choice of operator do affect both loyalty and churn intention of individuals in identical ways.

Regarding the variables which were not addressed by the hypotheses, we find that socio-economic and socio-demographic information such as age, gender, level of education and monthly income are not good predictors of switching and loyalty behavior (*Garcia-Marinosa & Suarez, 2019*).

## 6. Conclusion

Telecommunications products continue to be complex as rapid technological changes diminish the learning effect of such repeat purchases (*Lunn & Lyons, 2018*). Today, mobile operators include Whatsapp, Instagram, YouTube bundles in their tariffs which make the buy-decisions much complicated. In this dynamic context, the present study provides valuable empirical insights on those factors that shape the churn and loyalty decisions among Turkish digital natives in telecommunications sector, whose spending power is significantly higher than the average population. The Turkish context is interesting since digital natives in this rapidly transforming economy represent a very active user group and also serve as opinion leaders in the telecom market. Turkish digital natives, compared to other customer segments, tend to be much more knowledgeable, socially connected, and educated.

The empirical results provide robust findings and suggest that churn and loyalty intentions of Turkish digital natives are affected by customer service metrics, data usage, identity of mobile operators, type of plan, and campaign awareness. Importantly, previous churn experience and membership in loyalty programs do not appear to significantly impact dependent variables churn and loyalty.

Clearly, mobile operators in Turkey and elsewhere will continue to explore ways in which they can pursue and retain digital natives. This is because this group of customers represent a sizeable and highly lucrative segment in the global market. Empirical findings confirm that demographics or youth loyalty club programs alone cannot explain loyalty and switching patterns of digital natives. One needs to consider a rich portfolio of customer service metrics to adequately account for loyalty and churn behavior of digital natives.

While the current study has uncovered key drivers of customer churn and loyalty patterns among Turkish digital natives, further research is necessary – both in other country contexts, and with additional variables and measures. In addition to examining the youth segment in other country contexts, future researchers can enrich both the predictor and dependent variable sets in an attempt to shed light on loyal versus transient customer segments. They can also explore ways in which various mitigating strategies can convert 'likely to switch' or fleeting customers on a timely basis. Most critically, strategies for delineation and retention of most loyal customers ought to be investigated by future research. It is hoped that the findings provided by the current study will inspire other scholars to pursue such promising avenues of research in this fascinating industry sector.

### 6.1. Public policy recommendations

For both dependent variables, churn and loyalty, our findings suggest that customer satisfaction factors maintain a prominent effect on marketplace decisions of digital natives. Quality of call and data, complaints about billing and customer service metrics are controllable factors that can be influenced by telecommunications regulators by means of formal or informal policies. Regulators can monitor the service quality experiences of consumers much more closely and compel mobile operators to take the necessary actions to ensure improved service experience. In addition, since quality issues in the mobile sector are often closely tied to vast amount of private sector investment, regulators can further promote infrastructure sharing among the operators. Furthermore, first-mover advantages continue to be relevant in the Turkish mobile sector and affects market shares, and perceived quality and profitability of

<sup>13</sup> Please recall from [Table 1](#) that Turkcell is the market leader, Vodafone follows Turkcell and Avea ranks the last in the mobile market.

<sup>14</sup> These figures are not adjusted to fluctuating currencies and time value of money.

mobile operators. In addition to regulating telephone number portability, regulators can enforce new remedies before and during the 5G spectrum tender to stimulate competition and improve the profitability of mobile operators which have been directly affected by huge spectrum awarding fees.

Mobile operators tend to award the newcomers while the existing customers generally do not enjoy benefits of newcomers. Sometimes the existing customers are actually overcharged. Some portion of customers switch their operators and go back to the original one after several months in order to receive much more benefit as a newcomer. Yet, the descriptive statistics in our survey advise that only 23 percent of respondents have intentions to churn. The majority of TDNs are not willing to churn. Regulators can examine this customer inertia whether MNP process is too long and difficult, or occurrences of bill shocks after switching, or there are too many complex tariffs which make comparison difficult.

## 6.2. Managerial implications

From a managerial standpoint, the results offer rich implications for mobile operators. Mobile operators can use the results of this study to enhance their understanding of churn and loyalty behavior of digital natives. Most interestingly, while the Turkish mobile operators aggressively target and cater to the youth market with elaborate youth loyalty programs, effectiveness of such programs is highly suspect. Our empirical findings suggest that youth club programs seem to have no statistically significant impact on churn and loyalty intentions of digital natives. Mobile operator strategists need to differentiate their programs by other means, and analyze the value chain and offer better choices to this segment. Tailored loyalty programs can increase the relationship between TDN and brand, and become a vital switching cost that prevents churning.

Mobile operators should also deliver high quality services, as customer satisfaction variables are the most powerful factors leading to churning.

Mobile operators ought to intensify their efforts to preserve valuable customers, while targeting promising new customers, and implementing churn management and customer loyalty programs. As an example, mobile operators ought to conduct periodic customer surveys and be in constant touch with the expectations of digital natives. As we have demonstrated in this research, it is feasible to empirically profile likely churners, and offer appropriate deals to mitigate customer erosion (Frisiani, Jubas, Lajous, & Nattermann, 2017). Early determination of potential churners would also enable mobile operators to reach to likely churners on a timelier basis and put in place preventive strategies (Verbeke, Dejaeger, Martens, Hur, & Baesens, 2012). Since promotional campaigns appear to have a significant impact on churning, marketers targeting digital natives ought to focus on creative informational campaigns rather than expending limited resources too much on loyalty programs. In order to build stronger relationship with digital natives, promoting youth-focused programs rather than family plans may prove more effective since family plans appear to trigger churning.

## Acknowledgement

The authors are grateful to Telecom Policy Editors, and the anonymous reviewers who have provided valuable feedback and constructive comments for enhancing the contribution of this paper.

## References

- Ahn, J. H., Han, S. P., & Lee, Y. S. (2006). Customer churn analysis: Churn determinants and mediation effects of partial defection in the Korean mobile telecommunications service industry. *Telecommunications Policy*, 30(10), 552–568.
- Ascarza, E., Netzer, O., & Hardie, B. G. (2018). Some customers would rather leave without saying goodbye. *Marketing Science*, 37(1), 54–77.
- Atiyas, I., & Dogan, P. (2007). When good intentions are not enough: Sequential entry and competition in the Turkish mobile industry. *Telecommunications Policy*, 31(8), 502–523.
- Aydin, S., & Ozer, G. (2005). The analysis of antecedents of customer loyalty in the Turkish mobile telecommunication market. *European Journal of Marketing*, 39(7/8), 910–925.
- Basaran, A. A., Cetinkaya, M., & Bagdadioglu, N. (2014). Operator choice in the mobile telecommunications market: Evidence from Turkish urban population. *Telecommunications Policy*, 38(1), 1–13.
- Birke, D., & Swann, G. M. P. (2006). Network effects and the choice of mobile phone operator. *Journal of Evolutionary Economics*, 16(1–2), 65–84.
- BTK. (2017). Quarterly market report. Available: <http://www.btk.gov.tr>.
- Buckinx, W., & Poel, D. V. D. (2005). Customer base analysis: Partial defection of behaviorally-loyal clients in a non-contractual FMCG retail setting. *European Journal of Operational Research*, 164, 252–268.
- Buehler, S., Dewenter, R., & Haucap, J. (2006). Mobile number portability in Europe. *Telecommunications Policy*, 30(7), 385–399.
- CHE, Council of Higher Education. (2019). Statistics of higher education. Available: <https://istatistik.yok.gov.tr/>.
- Chuah, H. W., Marimuthu, M., & Ramayah, T. (2014). The effect of perceived value on the loyalty of generation Y mobile internet subscribers: A proposed conceptual framework. *Procedia-Soc. Behav. Sci.*, 130, 532–541.
- Confraria, J., Ribeiro, T., & Vasconcelos, H. (2017). Analysis of consumer preferences for mobile telecom plans using a discrete choice experiment. *Telecommunications Policy*, 41, 157–169.
- Corrocher, N., & Zirulia, L. (2009). Me and you and everyone we know: An empirical analysis of local network effects in mobile communications. *Telecommunications Policy*, 33, 68–79.
- Czajkowski, M., & Sobolewski, M. (2016). How much do switching costs and local network effects contribute to consumer lock-in in mobile telephony? *Telecommunications Policy*, 40(9), 855–869.
- Deloitte. (2016). Global mobile consumer survey. Available: <https://www2.deloitte.com/tr/tr/pages/technology-media-and-telecommunications/articles/global-mobile-consumer-survey.html>.
- Deloitte. (2018). Generation Y survey. Available: <https://www2.deloitte.com/tr/tr/pages/about-deloitte/articles/millennialsurvey-2018.html>.
- Frisiani, G., Jubas, J., Lajous, T., & Nattermann, P. (2017). *A future for mobile operators: The keys to successful reinvention*. McKinsey. Available: <https://www.mckinsey.com/industries/telecommunications/our-insights/a-future-for-mobile-operators-the-keys-to-successful-reinvention>.

- Garcia-Marinosa, B., & Suarez, D. (2019). Switching mobile operators: Evidence about consumers' behavior from a longitudinal survey. *Telecommunications Policy*, 43(5), 426–433.
- Garin-Munoz, T., Perez-Amaral, T., Gijon, C., & López, R. (2016). Consumer complaint behaviour in telecommunications: The case of mobile phone users in Spain. *Telecommunications Policy*, 40(8), 804–820.
- Gerpott, T. J., & Ahmadi, N. (2015). Regaining drifting mobile communication customers: Predicting the odds of success of winback efforts with competing risks regression. *Expert Systems with Applications*, 42(21), 7917–7928.
- Gerpott, T. J., Rams, W., & Schindler, A. (2001). Customer retention, loyalty, and satisfaction in the German mobile cellular telecommunications market. *Telecommunications Policy*, 25(4), 249–269.
- Giovanis, A., & Athanasopoulou, P. (2017). Gen Y-ers' brand loyalty drivers in emerging devices. *Marketing Intelligence & Planning*, 35(6), 805–821.
- Glady, N., Baesens, B., & Croux, C. (2009). Modeling churn using customer lifetime value. *European Journal of Operational Research*, 197(1), 402–411.
- Gronholdt, L., Martensen, A., & Kristensen, K. (2000). The relationship between customer satisfaction and loyalty: Cross-industry differences. *Total Quality Management*, 11(4–6), 509–514.
- GSMA. (2018). The mobile economy 2018. Available: <https://www.gsma.com/mobileeconomy/>.
- Gupta, S., & Zeithaml, V. (2006). Customer metrics and their impact on financial performance. *Marketing Science*, 25(6), 718–739.
- Gurau, C. (2012). A life-stage analysis of consumer loyalty profile: Comparing generation X and millennial consumers. *Journal of Consumer Marketing*, 29(2), 103–113.
- Gustafsson, A., Johnson, M. D., & Roos, I. (2005). The effects of customer satisfaction, relationship commitment dimensions, and triggers on customer retention. *Journal of Marketing*, 69(4), 210–218.
- Haenlein, M. (2013). Social interactions in customer churn decisions: The impact of relationship directionality. *International Journal of Research in Marketing*, 30(3), 236–248.
- Howitt, D., & Cramer, D. (2011). *An introduction to statistics in psychology* (5th ed.). Pearson.
- Hung, S. Y., Yen, D. C., & Wang, H. Y. (2006). Applying data mining to telecom churn management. *Expert Systems with Applications*, 31(3), 515–524.
- Jakopin, N. M., & Klein, A. (2012). First-mover and incumbency advantages in mobile telecommunications. *Journal of Business Research*, 65(3), 362–370.
- Jones, T. O., & Sasser, W. E. (1995). Why satisfied customers defect. *Harvard Business Review*, 73(6), 88.
- Karacuka, M., Catik, A. N., & Haucap, J. (2013). Customer choice and local network effects in mobile telecommunications in Turkey. *Telecommunications Policy*, 37(4), 334–344.
- Keaveney, S. M. (1995). Customer switching behavior in service industries: An exploratory study. *Journal of Marketing*, 59(2), 71–82.
- Keremati, A., & Ardabili, S. M. (2011). Churn analysis for an Iranian mobile operator. *Telecommunications Policy*, 35(4), 344–356.
- Kim, M. K., Park, M. C., & Jeong, D. H. (2004). The effects of customer satisfaction and switching barrier on customer loyalty in Korean mobile telecommunication services. *Telecommunications Policy*, 28(2), 145–159.
- Kim, H. S., & Yoon, C. H. (2004). Determinants of subscriber churn and customer loyalty in the Korean mobile telephony market. *Telecommunications Policy*, 28(9), 751–765.
- Kisioglu, P., & Topcu, Y. I. (2011). Applying Bayesian Belief network approach to customer churn analysis: A case study on the telecom industry of Turkey. *Expert Systems With Applications*, 38(6), 7151–7157.
- Klemperer, P. (1987). Markets with consumer switching costs. *The Quarterly Journal of Economics*, 102(2), 375–394.
- Konda. (2018). What has changed in youth in 10 Years?. Available: <https://interaktif.konda.com.tr/en/Youth2018/>.
- Kumar, V., Bhagwat, Y., & Zhang, X. (2015). Regaining “lost” customers: The predictive power of first-lifetime behavior, the reason for defection, and the nature of the win-back offer. *Journal of Marketing*, 79(4), 34–55.
- Kumar, A., & Lim, H. (2008). Age differences in mobile service perceptions: Comparison of generation Y and baby boomers. *Journal of Services Marketing*, 22(7), 568–577.
- Lazarevic, V. (2012). Encouraging brand loyalty in fickle generation Y consumers. *Young Consumers*, 13(1), 45–61.
- Lunn, P. D. (2013). Telecommunications consumers: A behavioral economic analysis. *Journal of Consumer Affairs*, 47(1), 167–189.
- Lunn, P. D., & Lyons, S. (2018). Consumer switching intentions for telecoms services: Evidence from Ireland. *Heliyon*, 4(5), e00618.
- Maicas, J. P., Polo, Y., & Sese, F. J. (2009). The role of (personal) network effects and switching costs in determining mobile users' choice. *Journal of Information Technology*, 24(2), 160–171.
- McKinsey. (2018). Gene therapy for telecom operators: An interview with Jon Fredrik Baksaas. Available: <https://www.mckinsey.com/industries/telecommunications/our-insights/gene-therapy-for-telecom-operators-an-interview-with-jon-fredrik-baksaas>.
- Meffert, J., & Mohr, N. (2017). *Overwhelming OTT: Telcos' growth strategy in a digital world*. McKinsey. Available: <http://www.mckinsey.com/industries/telecommunications/our-insights/overwhelming-ott-telcos-growth-strategy-in-a-digital-world>.
- Nitzan, I., & Libai, B. (2011). Social effects on customer retention. *Journal of Marketing*, 75(6), 24–38.
- Nitzan, I., & Libai, B. (2013). If you go, I will follow... Social effects on the decision to terminate a service. *GfK Marketing Intelligence Review*, 5(2), 40–45.
- Noble, S. M., Haytko, D. L., & Phillips, J. (2009). What drives college-age Generation Y consumers? *Journal of Business Research*, 62(6), 617–628.
- Prentsky, M. (2001). Digital natives, digital immigrants. *On the Horizon*, 9(5), 1–6.
- Rootmetrics. (2017). Metro area rootscore report. Available: <http://www.rootmetrics.com/en-US/rootscore/map>.
- Rosenbaum-Elliott, R., Percy, L., & Pervan, S. (2015). *Strategic brand management* (3rd ed.). USA: Oxford University Press.
- Srinuan, P., Srinuan, C., & Bohlin, E. (2014). An empirical analysis of multiple services and choices of consumer in the Swedish telecommunications market. *Telecommunications Policy*, 38(5), 449–459.
- Turkish Ministry of Trade and Customs. (2017). The examination of consumer. Available: <https://www.dunya.com/ekonomi/turkiyede-3-yilda-bir-telefon-degistiriliyor-haberi-380102>.
- Uner, M. M., Guven, F., & Cavusgil, S. T. (2015). Bundling of telecom offerings: An Empirical Investigation in the Turkish market. *Telecommunications Policy*, 39(1), 53–64.
- Valentine, D. B., & Powers, T. L. (2013). Generation Y values and lifestyle segments. *Journal of Consumer Marketing*, 30(7), 597–606.
- Verbeke, W., Dejaeger, K., Martens, D., Hur, J., & Baesens, B. (2012). New insights into churn prediction in the telecommunication sector: A profit driven data mining approach. *European Journal of Operational Research*, 218(1), 211–229.
- Verbeke, W., Martens, D., Mues, C., & Baesens, B. (2011). Building comprehensible customer churn prediction models with advanced rule induction techniques. *Expert Systems with Applications*, 38(3), 2354–2364.
- Verhoef, P. C. (2003). Understanding the effect of customer relationship management efforts on customer retention and customer share development. *Journal of Marketing*, 67(4), 30–45.
- Viswanathan, V., & Jain, V. (2013). A dual-system approach to understanding “generation Y” decision making. *Journal of Consumer Marketing*, 30(6), 484–492.
- Wellmann, N. (2019). Are OTT messaging and mobile telecommunication an interrelated market? An empirical analysis. *Telecommunications Policy* (in press) <https://www.sciencedirect.com/science/article/abs/pii/S0308596117303804>.
- Zeithaml, V. A., Berry, L. L., & Parasuraman, A. (1996). The behavioral consequences of service quality. *Journal of Marketing*, 60(2), 31–46.