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Bundling of telecom offerings: An Empirical Investigation in the Turkish market

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ABSTRACT

Bundling has become a popular marketing strategy in the telecommunication sector as telecom service providers all over the world have been offering various bundle types in order to increase customer loyalty and revenues. Yet our knowledge of exactly which profile of consumers reacts to bundles of service providers, and whether they would like to purchase bundle without explicit discount information, is limited. These two research questions are addressed in the present article. We examine current bundle choices and future intent of consumers through an empirical investigation, in the context of the Turkish market, one of the most dynamic and sizeable telecom sectors in the world. We build upon the extant theoretical work with empirical evidence, especially in the context of the heavily regulated Turkish market. Findings of this study can assist service providers develop and implement business strategies to expand the subscriber base.

1. Introduction

The telecom industry exhibits unique characteristics within the utilities sector as the output of this sector has become varied considerably compared to that of water and energy sectors during last decade. Especially with the emergence of the Internet, a large number of new services over telecommunications networks have been developed. Paradoxically, some of these services (OTTs[1] such as WhatsApp, Facebook, Viber etc.) have been challenging legacy telecom products.

Apart from OTTs; reducing prices, increasing competition and heavy regulatory environment also challenge telecom operators. Consequently, telecom operators are in rush to sell as many as services to their customer base. For this purpose, bundling is becoming a very popular strategy for telecom operators to adopt, in order to gain new customers from competitors while retaining their current customer base (Srinuan, Srinuan, & Bohlin, 2014; Zaballos, 2013). For example, in Europe bundle ownership of households has reached to 45% (Special Barometer 396, 2013). Meanwhile, with bundling, customers enjoy a single point of contact and discounted services if available.

In telecommunications, bundling can be considered as an evolutionary process since new telecom services are developed one after another. The evolution of bundling began with-dual play (fixed voice and fixed internet), then triple-play (adding

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[1] Over-the-top content (OTT) refers to delivery of audio, video, and other media over the Internet without the involvement of a multiple-system operator in the control or distribution of the content (Wikipedia).

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TV services), and finally quadruple-play (adding mobile services). Utilization of current telecom infrastructure is enhanced by bundling where all telecom services are delivered over same copper or fiber cables.

When it comes to a formal definition of bundling, a universally accepted definition does not exist (Stremersch & Tellis, 2002). In this study, we prefer to use the following definition for telecommunications sector, as synthesized from literature and current bundle practices of operators: '*buying at least two products from one single provider in one single invoice with or without discount.*'

Regulatory restrictions imposed on Turkish telecom operators make this study especially interesting and timely: the Turkish telecommunications sector has a distinctive regulatory burden that major Turkish telecom operators (fixed incumbent operator and mobile network operators) cannot offer bundle offers. We elaborate on this below.

The telecoms have an ongoing relationship with the consumer. The relationship between the consumer and telecom operator is built on the "subscriber" concept, which, at first sight, seems a very beneficial loyalty factor for service providers as telecom services are billed to consumers on a monthly basis.[2] However as regulatory authorities enabled easy switching of service providers, consumers can churn fast with the help of attractive competitor offers. Therefore, having long-term contracts with consumers is highly critical for service providers[3] as an attempt to retain customers.

The purpose of the present investigation is to empirically explore bundling preferences of consumers in the Turkish telecommunications market through a large-scale survey. In spite of the popularity of bundling in the telecommunications sector, scholarly or even non-academic research[4] on this subject is generally absent. In the context of Turkey, a rapidly transforming emerging market, this research is intended to assess the current level of bundling habits and future intentions of residential consumers in the sector. The game field of telecom operators in Turkey is narrowed under a tough regulatory regime. The present behavior and clues for future attitudes of consumers can provide broader understanding to telecom operators while developing their bundling strategies.

Our specific objectives in the present investigation are twofold: (i) Do customers bundle or not? (Bundle choice); and (ii) If yes, which customer segments prefer the bundle? By addressing these questions, telecom operators can target appropriate customer segments that are most likely to bundle, reduce customer demand heterogeneity, and create value by product integration.

This research is, to our knowledge, the first formal study of bundling in the telecommunications sector in Turkey. The quality of sample has been enhanced by seeking respondents who are real decision makers (current or potential subscribers) — who have signed the subscription contract with service provider on behalf of their households. They have been randomly chosen from telecom sales and customer services offices during their regular visits.

The remainder of this article is organized as follows. We begin with a review of the extant literature, and then offer an overview of the Turkish telecommunication sector with its challenges for bundle offerings. We then reveal the design of study, and formulate the research questions. We conclude with a discussion of findings and implications.

2. Extant literature: What do we know?

Initial work on bundling was addressed largely in the economics literature in terms of whether the firm should bundle or sell items separately (Sharpe & Staelin, 2010). In the present investigation, we focus largely on the marketing literature. Though the topic of bundling has been discussed by scholars, there is no consensus on the definition of bundling in the literature (Stremersch & Tellis, 2002). According to Guiltinan (1987) bundling is defined as the practice of marketing at least two products in a single package for a special price. However, the package does not always include a discount. Some recent literature focused on 'service bundling' where the bundle is composed of services only — quite meaningful in the telecom sector (Andrews, Benedicktus, & Brady, 2010; Srinuan et al., 2014).

Prior research paid considerable attention to understanding why firms bundle. Bundling is used as a competitive strategy to enhance the demand for the product portfolio of a firm (Monroe, 1990). Firms tend to differentiate their products from competitors and gain competitive advantage (Lawless, 1991). Bundling can enable service providers to gain competitive advantage by preventing churn rates, having upsell opportunities and getting new subscribers, in addition to reducing marketing and operations costs (Andrews et al., 2010).

Switching operators – termed as churn — has been threatening various industry sectors. Annual churn rate of European mobile operators is between 20% and 38%, which is very destructive to operators as cost of churn is measured billions of dollars in the sector (Lemmens & Gupta, 2013). Naturally, telecom operators aim to reduce churn rate and keep their subscribers from other telecom operators' attacks (Kisioglu & Topcu, 2011). High level of competition in the telecommunications sector induces telecom operators from acquiring customers to retaining customers (Ahn, Han, & Lee, 2006). Bundling can be a critical solution for telecom operators in order to minimize customer churn since bundles would increase switching costs for consumers. Complex structure of bundle by increased number of products, increased value by complementary products, and higher cancellation fees for longer term of contracts, could make churn less attractive in telecoms. As an example, a competitor can try to offer similar type of triple-play (voice, internet, TV), however, it is not easy

[2] Prepaid consumers, especially in mobile sector, are not mentioned.
[3] Service providers are interchangeably used for telecom operators.
[4] Turkish NRA (named as BTK) does not hold any type of statistics about bundling in the sector at its quarterly market reports.

to match all characteristics of a bundle when number of products is increased (e.g., various variables such as voice minutes, quota and speed of internet, TV content etc.).

Recent literature has also interest in bundling at telecommunications sector. Bundling strategies allow operators to protect their positions and meanwhile increase customer loyalty (Srinuan et al., 2014). Grzybowski (2014) also highlights that bundling can slow down the negative effects of fixed-to-mobile substitution by decreasing the 'mobile only' and 'fixed only' consumers.

Bundling is also defined as second-degree price discrimination (Shapiro & Varian, 1998). The following concrete example summarizes the benefit of bundling in order to increase revenues if company prefers bundling. Let us assume that, as shown Table 1, two individuals have different reservation prices for two different products and the objective of the firm is to maximize revenues.

It can be observed from Table 1 that individual *X* is willing to pay more for fixed voice service than individual *Y*. Meanwhile, individual *Y* is willing to pay more for fixed broadband service than individual *X*. If the firm prices each product at its minimum demand value, then it would gain \$180 ($\$40 \times 2 + \$50 \times 2$). When the firm considers the bundling strategy, then total revenue would be now \$200 ($\$100 + \$100$) which is greater than revenue derived from not bundling. Thus it can be concluded that second-degree price discrimination bundling increases revenue by reducing the dispersion of consumer valuation at flat pricing.

Telecoms sometimes market bundles by communicating such incentives as discounts, free gifts etc. However, consumers generally perceive the bundle as discounted even though explicit information about a discount is not claimed (Heeler, Nguyen, & Buff, 2007). For marketing strategy, the issue of how to create and communicate bundle incentives that minimize cost to the company and maximize customer value is critical. Unnecessary use of incentives can jeopardize firm profitability (Andrews et al., 2010). Since consumers prefer bundles that are composed of complimentary bundles (Estelami, 1999), and they value single-bill convenience as much as benefit of a discount (Andrews et al., 2010), telecom operators could offer value bundles which have high level of product integration in a single-bill in order to maximize firm profitability.

Not all firms are able to offer bundles or discounted bundles to the market. Bundling is a strategic choice and it necessitates sufficient organizational resources such as design, customer services, marketing, inventory management, distribution systems etc. Otherwise, it could create customer dissatisfaction and loss of revenue (Lawless, 1991).

In an investigation, Agarwal, Frambach, and Stremersch (2000), analyzed the impact of bundle, and consumer and supplier characteristics on bundle choice. A key research question was built on which consumers would likely to buy bundles in the telecommunications sector. They examined effect of socio-demographic variables (income, age, educational status, household size etc.) on both bundling choice and number of products in the bundle. In this respect, Agarwal et al. (2000) found that those households that are larger, with higher income, and younger tend to buy bundle more readily. According to a vital recent research; socio-demographic variables (household size, income and type of housing, living in big cities), supplier characteristics and discount affect consumers' bundling preferences (Srinuan et al., 2014).

In the present study, we would like to assess whether socio-demographic factors (age, income, gender, education level and household size) have any impact on bundle choice. If so, telecom operators can target their own and competitors' residential customers who are likely to bundle with this market segmentation.

3. An overview of the Turkish communications market

The Turkish regulatory regime provides an interesting case to study since the top leading telecom operators (the fixed incumbent operator and three mobile network operators) are not legally permitted to offer comprehensive bundles to their

Table 1
Bundling increases revenues of firms.

	Fixed voice	Fixed broadband
Individual *X*	\$60	\$50
Individual *Y*	\$40	\$70

Adapted from Shapiro et al. (1998).

Table 2
Telecom operators and their playingfields.
Source: BTK (2013, 2014) and company websites.

Operator type	Fixed retail voice	Fixed retail Internet	Mobile voice and Internet services
The incumbent fixed operator (Türk Telekom)	✓	✗	✗
Mobile network operators (Avea, Turkcell, Vodafone)	✗	✗	✓
Alternative operators (TTNet, Superonline, VodafoneNet etc.)	✓	✓	✓
Cable TV operator (Türksat)	✓	✓	✗

customer base. Both mobile network operators and incumbent operator have concession agreements with the Turkish NRA (BTK). Concession agreements[5] limit the service capability of operators; mobile operators cannot offer fixed services and fixed incumbent operator cannot offer mobile services. Government owned cable TV operator Türksat has a similar type of agreement with BTK. Table 2 highlights the regulatory constraints of telecom operators in Turkey, pointing out the sort of communications services that can be provided by each type of service provider.

A concession agreement is a special authorization awarded by the government; it creates the license of scarce resources or non-replicable infrastructures for a length of time usage. The government gets the license fee in advance and obliges the license holder to transfer the network in a working condition to government after the license expires.

Operators without concession agreements (alternative operators) are regulated by a general licensing regime as in Europe and do not have limitations for offering mobile and fixed services under the same legal entity. Because of this regulatory constraint, operators with concession agreements had to build new companies in order to be able to offer new services. One more issue to this complex authorization regime is that the Competition Authority forced Türk Telekom to separate its retail internet business. Consequently, Türk Telekom had to set up another company as TTNet because of competitive power of vertical integration structure after privatization. As can seen from Table 2, only alternative operators can offer telecom bundles.

Table 3 identifies the major telecom groups in Turkey and their operators by service type. Apart from the Türk Telekom Group, the other two groups have one operator for both fixed retail voice and internet services. In addition to authorization limitation for bundling in the Turkish telecom legislation, the legal regime does not allow consumer information sharing among operators of a group company because of protection of personal data. This regulation takes into account the "operator" not "the group companies," so the synergy of group companies is limited with this regulation.

Despite the difficulties in regulatory environment, Turkish telecom industry had revenues of some US$ 15 billion[6] in 2013. As a dynamic emerging market, engaged in rapid economic transformation, Turkey has a young population – the median age is around 30 and 25% of population (76.6 Million) is between the ages of 1 and 14. Consistent with the young population, Internet usage for social media is exceptionally high: Facebook has some 34 million and Twitter has 10 million users in Turkey.[7]

Key milestones in the sector are summarized in Table 4.

During this 15-year-period, 2G and 3G licenses were awarded and Türk Telekom was privatized and Türksat (satellite and cable TV network) emerged as a separate, new company separate from Türk Telekom. Competition Authority also stipulated a new company for retail broadband services as a condition of the privatization process of the incumbent operator.

3G launch in 2009 and new technologies such as FTTH/B triggered the competition in both fixed and mobile retail broadband markets. Table 5 provides an overview of recent fixed and mobile broadband growth in Turkey.

As can be seen in Table 5, the share of mobile broadband[8] is also high — around 76% of all broadband subscribers. This ratio was 74% in Q4 of 2013 which suggests that, even with declining number of mobile dongles, the surge in mobile phones with internet subscriptions has offset this decline. When the mobile voice market became saturated, with the acceleration of 3G launch in 2009, mobile operators began to focus on the broadband market. Maturation of mobile voice markets has forced mobile operators to grow their business at broadband market with the allure of smart phones. Around one-third of mobile subscribers now have smart phones and this percentage is rising rapidly.

As seen also from Table 5, fixed broadband is growing only with fiber consumers. The proportion of households having xDSL (which is available across Turkey) and cable (limited to 22 cities) connections have remained stable for a few years as consumers began to adopt new technologies such as mobile internet and fiber services. Fiber investments are realized by alternative fiber operator, Superonline and incumbent operator, Türk Telekom. Superonline's fiber deployment at more economically advanced cities (13 cities) has triggered an intense fiber competition with the incumbent.

The Turkish telecom sector has high fixed-mobile substitution trends; as fixed phone subscribers decline, revenue and use of mobile services (both voice and internet) have been on the rise. Fixed voice penetration per population declined from 24.5% in 2008 to 17.68% in 2013. Fixed internet has stop to grow even there is rapid urbanization, rising per capita income, and population growth.

Fig. 1 illustrates trends in fixed and mobile voice. As can be seen, market share of fixed voice in total fixed-mobile traffic has been declining steadily. Table 6 demonstrates that fixed voice is losing ground against mobile voice in Turkey due to this fixed-to-mobile substitution. Both fixed and mobile operators have been competing with each other in the voice market for a long time and, recently in the broadband market, they have been targeting the same customer. BTK prepared an Fixed-to-Mobile Substitution (FMS) analysis, accepted the FMS at voice market and decided to deregulate retail voice fixed markets beginning with 2014.

When the internet penetration in Turkey is compared to other OECD countries, for both fixed and mobile broadband, we can conclude that there is much room for growth in Turkey with a young and large population, and some 20.5 million households. Tables 7 and 8 provide further evidence for this contention.

[5] Concession agreements are also providing some exclusive rights to the agreement holders such as 2G/3G licenses and fixed network infrastructure.
[6] 1 USD is equal to 2.12 Turkish Lira (TL)
[7] http://btk.gov.tr/sayfa.php?ID=277.
[8] Both via mobile phones and dongle.

Table 3
Major Telecom groups and their operators per service type.
Source: Company websites.

Groups name	Fixed retail voice company	Fixed retail Internet	Mobile voice and Internet services
Türk Telekom Group	Türk Telekom	TTNet	Avea
Turkcell Group	Superonline	Superonline	Turkcell
Vodafone Group	VodafoneNet	VodafoneNet	Vodafone

Table 4
Historical evolution of Turkish telecom sector.
Source: BTK (2013, 2014) and company websites.

1994	Two mobile operators, Turkcell and Telsim (now Vodafone) started to offer first GSM services
1998	Those two mobile operators were awarded with 2G licenses
2001	New third and fourth mobile operators, Aycell and İş-Tim, were awarded for 2G license for 25-year period
2004	Aycell and İş-Tim had to merge under Avea brand name because of market difficulties. Government took over Telsim because of financial problems.
2005	Vodafone acquired Telsim from Government.
2005	Incumbent operator Türk Telekom was privatized after its cable TV network and customers were transferred to government to be a separate company (now Türksat)
2006	Competition Authority forced Türk Telekom to separate its retail internet business
2009	Mobile operators started to offer 3G services

Table 5
Growth of fixed and mobile broadband subscribers (thousands).
Source: BTK Quarterly Sector Report, 2014 Q1.

Broadband type	Number of subscribers 2013 Q4	Number of subscribers 2014 Q1	Quarterly growth (2013 Q4→2014 Q1) (%)	Yearly growth (2013 Q1→2014 Q1) (%)
xDSL	6.664	6.671	.4	−.11
Fiber (FTTB/H)	1.194	1.278	7.0	72.27
Cable	486	492	1.2	−1.78
Other	116	113	−2.8	−17.88
Mobile via PC/Tablet	1.701	1.541	−9.4	−13.44
Mobile via mobile phone	22.472	24.902	10.8	16.32
Total	**32.614**	**34.998**	**7.3**	**12.0**

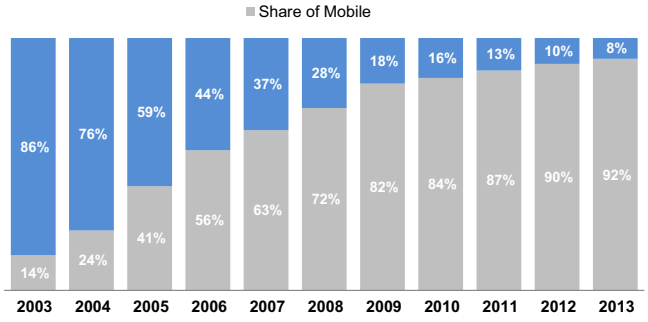


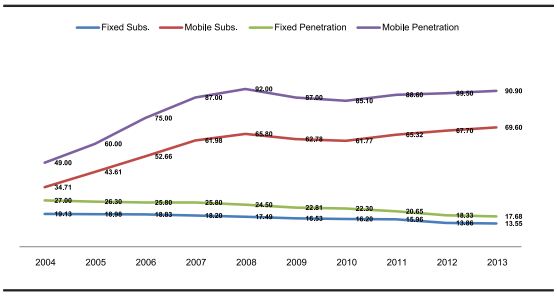
Fig. 1. Fixed-mobile voice share in Turkey (%).
Source: BTK (2013, 2014).

In the current Turkish legal environment, no specific regulatory approach for bundling has been promulgated given that bundle ownership is still not widespread. However, in markets where bundle ownership is more developed such as the European Union, specific regulatory policies have been offered for NRAs as to how to handle bundles (Pereira & Vareda, 2013), such as margin squeeze tests (Gaudin & Saavedra, 2014).

4. An overview of the Turkish broadband market and bundling services

As noted earlier, only alternative operators are able to offer telecom bundles in Turkey. Table 9 identifies key players, along with their market share, service scope, and market offerings.

Table 6
Trends in fixed voice and mobile subscribers (thousands, 2013).
Source: BTK.



As can be seen, in retail fixed broadband market, the incumbent operator's retail arm (TTNet) is the dominant player. Türk Telekom's copper network is available all around Turkey. The second big operator, Superonline, supplies internet from Türk Telekom in those regions where it does not have its own infrastructure. Türksat, which is owned by the state, does not engage in any effort to expand its customer base. Attaining a reasonable position in the fixed broadband market is not easy as it is demonstrated by the relatively low market shares of alternative operators. Operators can only differentiate themselves in the marketplace as Doğan TV Digital does; it added broadband to its core product TV business, and marketed both products under bundling.

It is important to note that TTNet has the largest product portfolio in the retail market in addition to fixed internet and fixed voice services: IPTV, educational content, mobile voice, and mobil internet services.[9] Large customer base, strong brand name[10] and wider sales channels of Türk Telekom contribute to the competitive prowess of TTNet. It is also executing a brand extension program for various products (TTNet music, TTNet education, TTNet voice, TTNet security, TTNet mobile etc.), enhancing its competitive prowess.

Turkish service providers have barely started to offer bundle packages. Table 10 identifies dual-play and triple-play bundles that are offered by leading service providers to Turkish consumers.

Some of the service providers identified in Table 10 enable customers to create their own bundles. All bundle offers include discounts, and service providers clearly highlight the discount on their websites. Some service providers prefer to highlight one single price reduction for the entire bundle package, while others post price discounts for each item of the bundle. Not all consumers can purchase complete bundle services as fiber Internet, IPTV, and Cable Internet services are offered only in limited number of cities, as the communication infrastructure is largely limited to big urban areas.

Contract terms of bundles are generally set for 2 years. If customers cancel the bundle service before the contract term ends, installation fees and discounts are charged back to them.

The bundle items offered by service providers are core telecom products (TV, Internet and voice) that complement each other. In the future, mobile services may be added to the bundle portfolio of Turkish telecom operators, as currently practiced by the European operators (Special Barometer 396, 2013).

The bundles of mobile sector and their effect on fixed service providers' bundles is not the focus of the present investigation. Nevertheless, in the consumer survey of our research, respondents were asked to compose a maximum 4-item bundle packages (which included mobile services and devices) in order to observe the market demand through comprehensive bundles. We capped the number of items in the bundle package since service providers offer no more than four items (quadruple play). When the number of items increases in the bundle, consumers may not prefer bundle as their choice process becomes complicated (Agarwal & Chatterjee, 2003).

Bundling all items under a new product name can be the marketing strategy of service providers, as suggested by Eppen, Hanson, and Martin (1991). A few of these service providers position their bundle packages with new brand names (such as "my smart home" campaign of TTNet).

5. The empirical investigation

5.1. Study sample

In the current investigation, we interviewed a random sample of 766 residential consumers — both current and potential subscribers — chosen among those visiting telecom offices for new service subscription or cancellation or other kind of customer services. Only adult consumers who were decision makers and had authorized signatory on behalf of their households were interviewed. Students were excluded.

[9] It buys mobile services from Türk Telekom's mobile company Avea.
[10] Türk Telekom is in the market for a long time and has long-term relationships with customers.

Table 7
Comparison of Internet penetration in Turkey and other OECD countries.
Source: BTK Quarterly Sector Report, 2013 Q3.

	Turkey	OECD average
Fixed broadband penetration (%)	10.9	26.0
Mobile broadband penetration (%)	33.7	62.8

Table 8
Composition of fixed Internet Penetration in Turkey and other OECD countries.
Source: BTK Quarterly Sector Report, 2013 Q3.

	xDSL (%)	Cable (%)	Fiber (%)
Turkey	8.7	.6	1.7
OECD average	14.1	8.3	4.2

Table 9
Level of competition at retail fixed broadband market.
Source: BTK Quarterly Sector Report, 2013 Q3 and company websites.

Operator and its market share	In broadband business since	Segment(s)	Product Portfolio
TTNet (75.4%)	2006[a]	Residential and corporate customers	Fixed broadband and voice, mobile broadband and voice, IPTV, various devices (PC, tablet), content services
Superonline (10.6%)	2009[b]	Residential and corporate customers	Fixed broadband and voice services, cloud
Türksat Cable TV and Internet (5.8%)	2006[c]	Residential and corporate customers	Fixed broadband and Cable TV services
Doğan TV Digital (4.3%)	2007	Residential and corporate customers	Fixed broadband and voice services, Digital TV
VodafoneNet (1.3%)	2009	Residential and corporate customers	Fixed broadband and voice services
Millenicom (1.27%)	2004	Residential and corporate customers	Fixed broadband and voice services

[a] Before TTNet, Türk Telekom was in retail broadband business.
[b] Turkcell group acquired Superonline in 2009.
[c] Türksat had 41K cable internet subscribers in 2007.

Table 10
Service providers and their bundle offers (as of December 2013).
Source: Company websites.

Service provider	Bundle includes	Speed (Mbps)	Price per month	Contract term (month)	Mother company
TTNET	Internet, Voice, IPTV	8–16	60–120 TL[a]	24	Türk Telekom
Superonline[b]	Internet, Voice, Movie Package	25	49 TL	24	Turkcell
D-Smart	Internet, Voice, Satellite TV	8–20	30–145 TL	24	NA
Türksat (Cable Internet)	Internet, Satellite TV	10	49 TL	24	Government
VodafoneNet	Internet, Voice	8–16	40–65 TL	12–24	Vodafone
Millenicom	Internet, Voice	1–100s	45–123 TL	24	NA

[a] 1 $=2 TL.
[b] Also offers dual-plays, internet and voice services are provided by fixed service providers.

The sample encompassed 14 larger cities in Turkey, accounting for 47% of total population, and covering seven major geographic regions. These cities were selected because telecom providers do bundle offers in these urban areas. At 85% of these cities, there is at least one infrastructure (either cable or alternative fiber operator) in addition to Türk Telekom. As respondents were chosen from city centers of some selected cities, result of survey can be indicative for Turkey with some bias (Basaran, Cetinkaya, & Bagdadioglu, 2014).

Table 11
Descriptive statistics about Turkey in general and the sample in particular.
Source: Turkish Statistics Institute, Research survey.

Select demographic information about Turkey	Population: 76.6M Household size: 3.69 Number of households: 20.75M Number of cities: 81
Sample size in the present study	766
Sampled cities[a]	Ankara, Antalya, Balıkesir, Bursa, Eskişehir, İstanbul, Kocaeli,Konya, Manisa, Mersin, Samsun, Tekirdağ, Kars, Aksaray
Gender composition	45% male; 55% female
Age distribution	Mean: 35.4 SD: 10.8 Range: 18–83
Household size	Mean: 3.6, SD: 1.3
Educational Status	Primary/secondary school: 14.2% High school: 30.5% University and higher: 55.2%
Monthly Salary	Up to 1000 TL[b]: 20.5% 1001–2000 TL: 37.7% 2001–3000 TL: 25.8% Over 3000 TL: 16%

[a] Turkey's largest cities were chosen (Istanbul, Ankara, Bursa, Konya, Kocaeli are among top 10 large cities).
[b] 1 USD is equal to 2.12 Turkish Lira (TL).

5.2. Sample characteristics

Respondents were randomly selected in telecom offices, and asked to respond to 10 survey questions. Table 11 provides a profile of the sample.

As bundling is a newly practiced telecom activity in Turkey, a reliable estimate of bundling penetration is not available. Theoretically, if all broadband customers of cable, fiber and alternative operators were assumed that they had one type of bundle then our best estimate of the maximum bundling ownership would be approximately 23% among Turkish households.[11] The growth potential for bundling is huge in Turkey; as theoretical reachable bundle penetration would be 23% at most, whereas the current bundle penetration is 45% in EU27 countries.

For our study sample, bundling penetration was found to be 28.6%. However, since our interviews did not include rural areas and towns, a more realistic rate of bundling penetration in Turkey is expected to be lower than this rate. Rural regions which have very limited variety of service providers and services and with lower income levels do not seem to bundle like urban regions as in EU (Special Barometer 396, 2013). For the Turkish telecom market, the average revenue per user (ARPU) values are shown below. These numbers suggest a great opportunity at dual-plays (fixed voice and internet) due to the high level of fixed Internet ARPU value.

Type of service	ARPU
Fixed voice (Türk Telekom)	22.57 TL[a]
Fixed internet	40 TL
Mobile services[b] (pre-paid)	10.75 TL
Mobile services (monthly subscriber)	36.32 TL

[a] 1 USD is equal to 2.12 Turkish Lira (TL).
[b] We took the values of mobile leader operator (the rest is more or less similar to these figures).

The aim of this research is to explore bundling preferences of residential telecom customers in Turkey, and socio-demographic characteristics. As such, it represents the first formal study of bundling behavior in this rapidly developing economy. The results can then be compared to studies elsewhere, including that of Agarwal et al. (2000).

5.3. Analysis

Given the categorical nature of the dependent variable — i.e., whether or not the consumer is likely to bundle or not — we employed a logit regression model for estimations. For independent variables, we selected key demographics: age, gender,

[11] Since the incumbent operator cannot offer fixed broadband in the retail market due to the regulatory constraints, this estimate is much lower than current fixed broadband household penetration 41%.

Table 12
Results of logit regression model.

Model: Logit regression (by Stata Program)
Dependent variable: Bundle choice
Dummy independent variables:
Gender: male: 1, female: 0
Education: Primary School: 1, Secondary School: 2, High School/University: 3;
Household size:
If household size is smaller than 4 then HHS=1, otherwise HHS=0;
Income:
Income is categorized from 1 to 4 (as in Table 11) lower to higher
Up to 1000 TL: 1
1001–2000 TL: 2
2001–3000 TL: 3
Higher than 3000 TL: 4
Age: Between 18 and 30: 0, 31 and 55: 1, >56: 2
Number of obs: 766
Wald $\chi^2(9)$: 66.92
Prob > χ^2: .0000
Pseudo R^2: .0432
Log pseudolikelihood: −419.82441
We clustered the standard errors to avoid biases due to the group structure of the survey participants, which might be correlated to the 14 cities.

household size, education and income level. The following logit regression model was constructed:

$$Y_l = \beta_0 + \beta_1 age + \beta_2 gnd + \beta_3 hhs + \beta_4 edu + \beta_5 inc + u$$

where "*age*", "*gnd*", "*hhs*", "*edu*", *and* "*inc*" are the personal characteristics of individuals participating to this survey. "*age*" is the age of individuals, "*gnd*" is the gender, "*nhs*" is the size of household, "*edu*" is the educational status of individuals, "*inc*" is the income level of households, and u is independently distributed random variable with zero mean. β_0 (constant term) and β_i terms are parameters to be estimated.

The dependent variable (bundle choice) is of the binary feature, with the values of: "1" if the consumer is likely to bundle; and "0" if not. The explanatory variables are categorical.

5.4. Findings

Table 12 summarizes key findings of the statistical analysis. Being young and education achievement are found to be positively related to bundling likelihood. These relationships are significant at the 5% level of confidence. However, perhaps surprisingly, the likelihood of bundling is not associated with household size, income and gender.

Bundle Choice	**Odds ratio**	**Robust std. err.**	***z***	***P*>|z|**	**95% Conf. interval**	
Household size	1.226056	.1659539	1.51	.132	.9403627	1.598547
Gender	.8737387	.1731673	−.68	.496	.5924898	1.288493
Secondary School	1.48899	.3772566	1.57	.116	.9062084	2.446559
High School/University	1.824649	.5133045	2.14	.033	1.051289	3.166917
Age between 31 and 55	1.138172	.2216687	.66	.506	.7770145	1.667196
Age > 56	.5124763	.174522	− 1.96	.050	.2629058	.9989584
1000 < Income < 2001	.67153	.2753196	−.97	.331	.3006647	1.499852
2000 < Income < 3001	.9642325	.3923637	−.09	.929	.4343226	2.140677
Income > 3000	1.986466	.9985965	1.37	.172	.7416212	5.32084
Constant	.2137277	.107585	−3.07	.002	.0796871	.5732362
Bundle choice	**Coefficient**	**Robust std. err.**	***z***	***P*>|z|**	**95% Conf. interval**	
Household size	.2038029	.1353558	1.51	.132	−.0614897	.4690954
Gender	−.134974	.1981912	−.68	.496	−.5234216	.2534737
Secondary School	.3980984	.253364	1.57	.116	−.098486	.8946827
High School/University	.6013879	.2813168	2.14	.033	.0500171	1.152759
Age between 31 and 55	.1294234	.1947585	.66	.506	−.2522963	.5111431
Age > 56	−.668508	.3405464	−1.96	.050	−1.335959	−.0010421
1000 < Income < 2001	−.3981966	.4099886	−.97	.331	−1.201759	.4053663
2000 < Income < 3001	−.0364228	.4069181	−.09	.929	−.8339657	.761121
Income > 3000	.6863572	.5027	1.37	.172	−.2989167	1.671631
Constant	−1.543053	.5033741	−3.07	.002	−2.529648	−.5564575

Results of the logit regression analysis suggest two socio-demographic variables – younger age and education – are positively related to likelihood of bundling. This finding is generally in line with previous research (Agarwal et al., 2000).

Table 13
Bundle ownership across Turkish and European households.
Source: Research Survey, Special Barometer 396 (2013).

	Turkey (%)[a]	EU 27 average
Households at least with one bundle	28.6	45
Details of bundle ownership		
Internet and TV	20.2	5
Internet and fixed telephony	4.3	14
Internet, fixed telephony and TV	1.4	12
Others	2.7	14
Total	**28.6**	**45**

[a] Sample in this study.

Also, Srinuan et al. (2014) in their research found that income level, discount and service provider have an impact on consumer preference for bundled services. Having discount or higher income or selecting more services from service provider increases the likelihood of bundle buying of a consumer.

Educational achievement contributes to the likelihood of buying the bundle. Our results suggest that an individual with the high school degree or higher is 1.82 times more likely to adopt bundling than one with a primary school degree. Likewise, individuals between 18 and 30 are 1.95 times more likely to own bundles than who are older than 56.

Based on the responses from our data analysis and secondary data, we are able to construct a comparative understanding bundling penetration in Turkey and the EU 27 countries. Results are presented in Table 13.

The current level of bundle ownership in Turkey is rather low, compared to the European Union. Only about 28.6% of households have bundles in Turkey, whereas in the EU some 45% of households purchase a bundle of communication services (Special Barometer 396, 2013). While, in the Turkish telecom market, service providers offer dual and triple-plays, in the EU, quadruple-plays are also offered by adding mobile voice services to the product portfolio.

In Europe, the most preferred bundle offer is the Internet and telephony, whereas in Turkey TV replaces the telephony service. The reason why this type of dual-play can be popular in Turkey, is that all of the leading service providers (TTNet, Türksat and Doğan TV Digital) seem to focus on the Internet and TV, rather than the Wholesale Line Rental service or VoIP. Plausible explanations are as follows:

TTNet: Since total price of separate products (internet from TTNet and telephony from Türk Telekom) is higher than of the dual-play from TTNet, Türk Telekom Group prefers the first option. The bundle is also risky in that the customer can migrate her voice services from TTNet to other alternative operators.

Türksat: Türksat does not offer any public voice service to its customers (it offers a voice service which is not available outside of Türksat network).

Doğan TV Digital: Principal business of Doğan TV Digital has been TV services; it recently entered the Internet business, however. Doğan TV Digital already focuses largely on TV and internet packages.

In summary, the low rate of bundle ownership currently in Turkey suggests a market opportunity for service providers for dual-plays and triple-play bundles.

We also asked our respondents whether they would like to buy a bundle (fixed phone+internet+TV) in a single-bill without giving them any explicit discount information.[12] The tariffs were entry-level basic prices from the leading service providers' web pages. More than half (54%) of the respondents opted to buy the bundle without any discount.

Response rate (%)	Preference
54	I would like to buy the bundle
23	I won't buy the bundle
23	I am indifferent

Service providers can actually face a loss from bundling operations if they offer unnecessary incentives in the absence of proper market information. Offering the bundle without a discount but with a single bill is valuable from the point of consumer (Andrews et al., 2010). From the preference responses, we can argue that most consumers are positively inclined toward purchasing bundle offers, and they could purchase bundles even when they do not imply any savings.

The study also aimed to assess the future intentions of consumers towards bundling in addition to measuring the current bundle ownership patterns. As bundling in the Turkish telecom sector is a new marketing tool, we explored purchase intentions by asking respondents to create a maximum of 4-item bundle from a set of 12 different items that represent core

[12] Separate prices of each service was provided to the individual with the total price of bundle.

Table 14
Future bundle choices of consumers.
Source: Research Survey.

	Out of sampled consumers (%)
Fixed Internet, fixed telephony,TV and mobile telephony	23.4
Fixed Internet, fixed telephony and mobile telephony	5.2
Fixed Internet and fixed telephony	4.0
Fixed telephony and mobile telephony	3.5
Fixed Internet, fixed telephony and TV	2.9
Other combinations of bundles	61.0

telecom services (fixed telephony, TV, fixed internet), mobile services (voice, internet), devices (notebook, smart phone, LED TV, play station), and non-telecom services (home insurance and home security services). Respondents were instructed that all items would be purchased via a monthly bill. Only 2% of all respondents preferred not to create a bundle. Consumer preferences for various bundle combinations are provided in Table 14.

The most preferred bundle type (23.4%) was found to be the quadruple-play which is purely composed of telecom services, excluding any kind of devices and non-telecom services. It is important to note that, even though there is no quadruple-play offering in the market, consumers added mobile telephony service to their preferences and made this bundle type the most preferred one. Currently, fixed incumbent operator cannot offer mobile services while mobile operators cannot offer fixed services. This finding suggests that consumers would like to see complementary bundles from the same service provider. Regulatory restrictions which limit the capability of service providers need to be reviewed. We also found that fixed telephony service was included in almost all bundle combinations. Devices and non-telecom services were not preferred by consumers.

In another question, we asked the respondents what would make them switch their internet service provider. Some 53.8% declared that they could switch if there was a substantially larger discount, whereas 27% stated they had no desire to change the current service provider. This suggests that consumers can be induced with a reasonable discount to switch their service provider, and that bundling can be a vehicle to accomplish this if new customers are targeted. Meanwhile, bundling can increase the cost of switching for current customers.

6. Conclusion

Bundling is considered as a form of price discrimination, as it leads to differential prices (cost) for different customers. By creating a choice for customers, it also serves as an effective marketing tool. Those consumers opting for bundling will feel empowered, others will settle for individual pricing, still enjoying the freedom to choose. In the meantime, the telecom will have better catered to specific needs of a diverse customer preferences and expectations.

As seen in the marketing practices of global telecom operators (like AT&T, Telefonica, Deutsche Telecom), bundling has captured the attention of almost all telecom service providers around the world. In Turkey, due to the regulatory burdens, telecom operators have been slow to aggressively launch bundling strategies.

In the present investigation, we explored the current and future bundle preferences of some 766 consumers across 14 larger city centers in Turkey. These individuals were principal decision makers on behalf of their households. While the current level of bundle ownership is found to be rather low in our sample, in comparison to other countries, this finding signals future opportunities for Turkish telecoms. Among our respondents we find strong expressed intentions to purchase bundled service packages. Thus the opportunity is there for service providers to carve out a competitive advantage by bundling their offerings. Since the fixed broadband has not been growing fast for that past several years, bundling can accelerate the broadband growth, decrease churn and increase new customer acquisition.

Service providers can create different bundle offerings for different segments based on marketplace demand. Exploring demographic characteristics of the consumers who are inclined to demand bundling, we found that socio-economic factors can play a vital role in profiling consumers positively disposed toward bundling. Specifically, we find that two socio-demographic characteristics of consumers – younger age, education level — are positively correlated with bundle purchasing. With this information, service providers can appropriately target customer segments, and offer customized bundles to gain competitive advantage. Marketing campaigns can focus on households which have younger individuals with higher educational level in an effort to enhance sales, prevent churn, and attract customers from competitors.

It is also interesting that telecom operators can use bundling even if an actual discount is not offered, suggesting that consumers tend to infer savings with bundled options (Heeler et al., 2007). Since consumers perceive bundles as discounted even when the bundle does not imply explicit information about any savings, service providers can avoid unnecessary discounts at their bundles.

Future research opportunities abound on the potential acceptance of bundling by telecom customers. It would be interesting to extend this research beyond first-tier cities to secondary cities and rural areas. Second, practical limitations during our interviews limited the opportunities for deeper probing and follow-up questions. Therefore, future research can explore, in depth, reasons behind bundling preferences. Third, scholars of telecom practices should also investigate bundling

strategies in the business-to-business markets. Fourth, as shown in Srinuan et al. (2014) and Agarwal et al. (2000), in addition to socio-demographical factors affecting bundling decisions, explored characteristics of the bundle itself (discounted or not, amount of discount) and of suppliers (brand, quality etc.). Thus, further research can consider these two dimensions for bundle preferences. Finally, it would be worthwhile to explore potential effects of national culture by contrasting our findings, unique to the Turkish market, with other emerging markets.

As policy recommendation, regulatory authorities are expected to adopt the European authorization regime. EU 2014 Enlargement Turkey Progress Report criticizes concession agreements that prevent operators from offering bundle services.[13] Our research also supports this regulatory change: majority of customers would like to buy the quadruple-plays from single service provider.

In conclusion, bundling can be considered win-win strategy for both service providers and consumers. Consumers can enjoy a single point of contact and single-bill opportunity, simplified decision making, and potential price savings. Service providers, in addition to revenue and profit boost, can utilize their capacity efficiently, reduce costs, increase loyalty, and avoid direct price comparisons by with competitors.

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