

SWITCHING COSTS IN THE PORTUGUESE TELECOMMUNICATIONS SECTOR: RESULTS FROM A CUSTOMER SURVEY

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ABSTRACT: Switching costs increase the rigidity of consumers demand and lessen competition between firms, effects that are particularly relevant in the telecommunications market. Therefore, besides characterizing the most important mobility restrictive factors for consumers in the telecom markets, we conducted a survey to obtain data on consumption decisions by telecommunications customers in Portugal. The survey results suggest that, on average, switching costs represent more than 40% of the monthly expenditure of each customer with these services, and that fixed voice services are the ones where customers seem to face higher difficulties in switching, while broadband services and triple-play offers are the ones where switching is effortless. Considering the tasks necessary to complete the switching process, we find the disclosure of a new phone number to be the most difficult one. Customers also showed high concern with respect to the possibility of losing quality of service. The comparison of offers is another relevant task for customers. Compatibility costs are also imposing high restrictions to customer mobility. Finally, we discuss the remedies which policy makers can adopt to address the most relevant switching costs identified.

SUMMARY: Introduction. 1. A typology of mobility restrictive factors. 2. Impact of switching costs on competition. 3. Empirical evidence on switching costs. 4. Switching costs value and switching process. 4.1. Sample description. 4.2. Switching costs. 4.3. Switching process difficulties. 5. Conclusion and policy discussion.

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INTRODUCTION

Switching costs are particularly relevant in the context of telecommunications markets as these are generally characterized by the presence of operators which own large customer bases and often adopt strategies to avoid customers' switching and the consequent reduction of their market share. These strategies frequently inhibit the development of a more effective competition and may even pre-empt entry by new operators.

In fact, according to a recent EU Directive on universal service and users' rights relating to electronic communications networks and services:

“In order to take full advantage of the competitive environment, consumers should be able to make informed choices and to change providers when it is in their interests. It is essential to ensure that they can do so without being hindered by legal, technical or practical obstacles, including contractual conditions, procedures, charges and so on.” (European Commission, 2009).

In the particular case of the Portuguese telecommunications market, and as a result of the late full market liberalization and the stability of the operators' market shares, switching costs constitute a key issue. Indeed, churn rates in Portugal, as in many other countries, are very low with only 8% of consumers switching their fixed voice services provider per year, 4% for the mobile voice services and 9.5% for broadband services.

This paper characterizes the consumer's mobility in the telecommunications market, starting with a discussion about the most important mobility restrictive factors for consumers, presenting some specific examples and evaluating their impact on prices, market shares and entry.

Moreover, a survey was conducted to obtain data on consumption decisions by Portuguese telecommunications customers. According to the results of the survey, switching costs are equal to 11.4 euros for broadband services, 13.2 euros for fixed voice services and 13.6 euros for mobile voice services. Regarding the triple-play offers, comprising fixed voice, broadband and pay-TV services, switching costs amount to more than 23 euros. Taking into account the average monthly expenditure with each of these services, fixed voice services are the ones where customers seem to face higher difficulties in the switching process, with switching costs representing 62% of the monthly expenditure, while broadband services and triple-play offers are the ones where switching costs seem to be less important, with a weight of 41% of the monthly expenditure. These results are consistent with the average difficulty level of the switching process stated by customers for each type of service.

Considering the different tasks necessary to complete a switching process, voice services customers classify the disclosure of a new phone number with the highest grade in terms of the effort demanded. This justifies why number portability is valued between 7% and 10% of the average monthly expenditure with each service. Customers also showed high concern with respect to the possibility of losing quality of service (QoS) after switching. The comparison of alternative offers is another relevant task for customers. Compatibility costs are also imposing high restrictions on customer mobility, particularly for the mobile voice services case. These are therefore the tasks on which policy makers should focus with priority if they want to improve consumers mobility.

The remainder of the article is organized as follows. A typology of switching costs is described in Section 2 and, in Section 3, we discuss its impact on competition. In Section 4, a summary of the empirical literature on switching costs is presented. In Section 5, the survey results concerning the switching costs and the switching process effort are explained. Finally, in Section 6, we conclude with a discussion about the remedies that can be adopted by policy makers to reduce the most relevant switching costs identified.

1. A TYPOLOGY OF MOBILITY RESTRICTIVE FACTORS

The telecommunications sector, as other service sectors such as banking, insurance and electricity supply, is often characterized by the presence of factors that restrict consumers' mobility. These factors include costs related with the search and comparison of offers (search costs) and costs related with the process of switching suppliers (switching costs).

Search costs include the set of costs faced by a consumer when trying to identify and understand alternative offers' characteristics. They result from a lack of information transparency and from the consumers' difficulties when comparing the terms and conditions of different offers.

For instance, the difficulties on the comparison of prices may result from price heterogeneity. For voice communications services, prices differ according to the period of the day (peak and off-peak prices) and the distance (local, national and international calls). Prices also vary with the call receivers' network, i.e. if the receiver of a call belongs to the same network as the caller (on-net call) the price is usually lower than if he belongs to a different network (off-net call). On the other hand, there is a wide range of types of tariffs, namely, linear tariffs, flat rates, two-part tariffs, or even multiple-part tariffs which increase the difficulty of comparing prices.

Besides the different types of tariffs, broadband services are also characterized by the absence of homogeneity concerning quality. In this case, the existence of different download and upload speeds and traffic limits makes the comparison of alternative offers extremely complex.

Finally, and still concerning search costs, the recent convergence process while allowing for the emergence and growing penetration of multiple-play offers, namely double-play, triple-play and even quadruple-play, has led to an increase in the offers' heterogeneity and complexity, reinforcing the comparison difficulties faced by consumers.

Switching costs, on the other hand, are borne by a consumer whenever he chooses to switch from his previous service provider to a new one. These differ from search costs since switching costs are only incurred when a consumer is already buying services from a given provider, while search costs arise not only when the consumer decides to switch provider, but also when he enters the market for the first time or when he "looks around" without switching.

Switching costs can be categorized into: (i) *transaction costs*, (ii) *contractual costs*, (iii) *psychological costs*, (iv) *uncertainty costs*, (v) *learning costs*, (vi) *compatibility costs*, and (vii) *switching costs associated with bundled offers*.¹

Transaction costs have both a pecuniary and a non-pecuniary nature, with the latter resulting from the need to carry out several time consuming tasks, namely the celebration and the cancellation of a contract of telecom services.

Moreover, the services' disconnection by the old provider and the services' installation and activation by the new provider also require waiting times that may be significant from a consumer perspective.

In addition to the previous tasks, there are other transaction costs related to the disclosure of a new fixed or mobile number, or even of a new e-mail address. These costs may be substantial, especially for non-residential customers who have to contact all their clients and suppliers and to change their marketing and promotional material.

Contractual costs are generally introduced by service providers in order to create switching barriers. These costs take the form of restrictive contractual clauses with respect to the unilateral ending of a contract by a consumer. Consumers are often obliged to subscribe services for minimum periods of time, e.g. from 12 to 24 months, as a compensation from having benefited

¹ See OFT, 2003 for a general description of these categories.

from lower prices on handsets or other equipment. Some promotional campaigns with rebates also require minimum subscription periods.

On the other hand, loyalty programs, by creating incentives for repeated acquisitions, also constitute a contractual cost. These programs usually reward consumption with points which may later be used by consumers when buying new equipment.

Psychological costs are one of the most difficult categories of switching costs to identify. In fact, when a consumer engages in a long-medium-term contractual relationship he develops a close “emotional” link towards his provider which may constitute a barrier when deciding to switch to an alternative one.

Uncertainty costs emerge when services are not fully standardized. Often, consumers only become aware of the services’ quality after purchasing and trying them, i.e. these services are what it is generally called “experience goods”. For instance, only after subscribing and making use of a given mobile network a consumer is able to realize the quality and coverage of its services. Under these conditions, switching to a new provider can lead to distrust by the consumer related to an eventual decrease in QoS.

Learning costs are another switching cost category which arises whenever a consumer contracts a service from a new provider and has to learn how to use it. For instance, when switching from a mobile network operator to another the consumer has to learn the new access numbers to voice-mail and to other customer support services. Also, switching to a new broadband provider may force the consumer to face a new access portal with different features and/or a different presentation.

Compatibility costs are one of the switching costs most frequently faced by consumers of telecommunications services. These costs are imposed by providers and make it difficult for consumers to keep the same equipment when they switch suppliers.

This type of cost is frequently faced by consumers of mobile voice services, with SIM-locking being the best example. Indeed, if a mobile voice services consumer wants to switch to an alternative provider and keep the same handset, he usually has to pay a fee to the original supplier in order to unlock it. Another example of compatibility costs has to do with the incompatibility of set-top boxes of different pay-TV operators.

Finally, there are also *switching costs associated with bundled offers* whenever a consumer has incentives to buy all the services from a unique provider, instead of “shopping around”.

Under these circumstances, whenever a consumer intends to switch the provider for a given service of the bundle, he cannot keep the previous bundle terms and conditions. Therefore, he has to renegotiate his contract which may result in a deterioration of the conditions he was benefiting from.

Telecom services are also characterized by the presence of network effects. A service exhibits network effects if the consumption by different customers is complementary, i.e., if each customer consumption payoff, and his incentives to consume, increase as more others consume the service. This is particularly present in case of mobile voice services, where the network effects result from the large price differences between on-net and off-net calls. In fact, when the customer's most frequent contacts (e.g. family and friends) have the same operator as him, this may constitute a barrier to switching, considering the bigger costs arising from the associated increase in the volume of off-net calls. However, and despite the importance of network effects in the industry, this issue is out of the scope of the paper, as our focus is on direct switching and search costs.²

2. IMPACT OF SWITCHING COSTS ON COMPETITION

These mobility restrictive factors increase the probability of a consumer keeping the same telecom provider, even in contexts where other providers are offering the same service at a lower price. According to Klemperer (1987a), switching costs make individual demand more rigid since consumers become less sensible to changes in prices, therefore reducing competition intensity.

Switching costs are therefore a source of market power to telecommunications service providers. In fact, two services which may be identical with respect to their characteristics, terms and conditions previously to their purchase become afterwards differentiated. Hence, the presence of switching costs has an impact on *prices*, on *market shares*, on *market entry decisions* and on *innovation*. This impact must be evaluated from a dynamic perspective, taking into account the presence of a mature or a growing market and the possibility of price discrimination between old and new consumers, as argued below.

² See Farrell & Klemperer, 2007 for a distinction between switching costs and network effects.

Impact on prices and market shares

Concerning the impact on prices when price discrimination between old and new customers is not possible, there are two opposite effects, as identified by Klemperer (1995).

On one hand, firms have an incentive to take advantage of the presence of switching costs to charge higher prices to “harvest” the rewards from their locked-in customer base. As old customers are generally locked-in, they only switch to an alternative provider if the price charged by their current provider is higher than its rival’s price added by the switching cost value.

On the other hand, and taking into account that in markets where switching costs are present the customer base has a higher value for firms as they are later able to charge higher prices, there may be an intensification of competition because firms have incentives to price low to “invest” in new customers.

Accordingly, in the definition of its price strategy, the firm must balance the “harvest” and the “investment” incentives, being determinant for this evaluation the proportion of locked-in customers on the number of total customers. The higher the proportion of locked-in customers, the stronger is the first of the two incentives, and as a consequence, the lower is the competitive level in a given market.

It is therefore natural that a firm’s market share plays an important role in the definition of its prices. As Farrel & Shapiro (1988) and Klemperer (1995) argue, firms with higher market shares tend to extract profits from their locked-in customer base since these profits are higher than those they could obtain by capturing new customers through lower prices. As a consequence of these different incentives, firms frequently adopt a strategy denominated by “bargain then rip-off”. This strategy, identified by Klemperer (1995), implies that a firm initially charges a lower price, with the aim of building a customer base, adopting higher prices at a later stage when customers are already locked-in.

According to this strategy, in mature markets, the incentive for a firm to extract profits from its customer base is more intense as the proportion of locked-in customers is higher. In growing markets, on the other hand, the intensity of competition is stronger the lower the number of locked-in customers. In this case, firms tend to adopt lock-in strategies by charging lower prices.

In the telecommunications sector it is possible to distinguish both mature and growing markets. The mobile voice services market is near its maturity as penetration rates in most European countries are already above 100%.

In this market it is expected that the “harvest” effect prevails, i.e., it is more profitable for a firm to explore its locked-in customer base, than to invest in attracting new customers. On the other extreme, for broadband services the penetration is growing faster and the proportion of locked-in customers is still small. Therefore, the incentive to invest in the building of a customer base should be stronger, and lower prices are expected.

When price discrimination between old and new customers is possible, there is no need for a firm to balance these two incentives. In fact, as pointed out by Chen (1997), under these circumstances it is possible to offer lower prices to new customers, and at the same time to charge higher prices to locked-in customers. As a result of this discrimination, the definition of prices becomes independent of a firm’s market share, and the “bargain then rip-off” strategy applies directly.

One example of the application of a “bargain then rip-off” strategy in the mobile voice services market is the subsidization of handsets by providers, with the objective of encouraging the purchase of the service and recouping those losses later by pricing above cost on traffic.

We can then conclude that the presence of switching costs does not necessarily translate into a higher price level. In a scenario where price discrimination is not possible the combination of a price below cost when the market is developing, with a price above cost when the market is already mature may result on an inter-temporal average price higher or lower than the one that would have resulted in the absence of switching costs. When price discrimination is possible the average price can also be higher or lower than in a scenario without switching costs depending on the proportion of locked-in customers on the number of total customers.

According to Farrell & Klemperer (2007), the incentive to “harvest” the customer base tends to be stronger than the incentive to invest in new customers. Therefore, the average price should be higher than if there were no switching costs. Doganoglu (2010) and Cabral (2008) however show that, when switching costs are low, its presence in a market may give origin to lower average prices than in the absence of switching costs, since the “harvesting” effect is of second order under these conditions.

Impact on entry

One of the most relevant aspects of switching costs is their effect on entry, as stressed out by Farrel & Klemperer (2007). When switching costs are high,

entry into a market with a high proportion of locked-in customers may become difficult. In these circumstances, an entrant has to charge a price substantially lower than the incumbent's price in order to attract a customer base. This however demands from the entrant an investment level which it may not have the conditions to engage in. When switching costs are low, market entry may also be difficult since incumbents are likely to fiercely fight entry in order to retain their customers and avoid switching.

However, and as suggested by Beggs & Klemperer (1992), when switching costs are neither too high nor too low, entry into the market can be facilitated by their presence, albeit on a limited scale. Indeed, when switching costs determine the setting of higher prices, markets become more profitable, and thus more attractive. On the other hand, and following Klemperer's (1987b) and Farrell & Shapiro's (1988) arguments, when incumbents are unable to price discriminate they may be more tempted to accommodate entry, focusing their commercial efforts on the extraction of profit from their customer base.

In this case, entrants choose to adopt a "judo strategy", which consists on entering on a small scale, leaving the incumbent free to explore its customer base.³ The alternative strategy of incentivizing customer switching by paying for the switching costs would be too costly since the incumbent could react aggressively.

Impact on innovation

Switching costs create a powerful incentive to innovation by guaranteeing higher investment returns. If there is no lock-in effect, a firm that invests in R&D, upgrading or creating a new service, may face a loss of customers to its rivals which meanwhile may copy its innovations and sell them at lower prices.

3. EMPIRICAL EVIDENCE ON SWITCHING COSTS

There are a few empirical studies that try to estimate switching costs and its impact on consumers' decisions. In the following, we will present some of this literature applied to the telecommunications sector.

Concerning the fixed voice services market, the literature so far has focused on the switching costs in the North American market.

Knittel (1997) analyses the changes in the prices of long-distance calls in US after the AT&T divestment in 1984, based on a panel data of the

³ Note that for entry on a small scale to be profitable the cost structure must not be very heavy.

three main operators. The author shows that switching and search costs were a source of market power for the operators that emerged from the AT&T divestment, determining the price rigidity observed after 1984. Additionally, Knittel (1997) identifies the negative effects on welfare due to higher prices charged by these operators.

The results of Epling (2002), based on a sample of the long-distance calls market of California after 1996, indicate that consumers less willing to switch are those that more frequently pay higher prices for this service. According to her behavioural model, the prices, the language operator service, and the inherent switching costs are the factors that have a higher influence on the switching decision, being possible to observe a high heterogeneity on consumers' behaviour.

Regarding the mobile voice services market, there are studies for a wide variety of countries, like Israel, Korea, Portugal, United Kingdom and Spain.

Shy (2002) develops a quick and easy method to estimate switching costs and applies it to several industries, namely to the mobile voice services sector in Israel. This author concludes that the expense of purchasing a new mobile phone is the most important factor, and shows that switching costs are approximately equal to the average price of a mobile phone.

On the other hand, Kim (2006) uses aggregate data on the mobile voice industry in Korea to estimate a structural dynamic model of switching decisions between tariff plans and firms. According to this author, consumers diverge substantially with respect to their preferences and the switching costs they face. This author argues that lower switching costs encourage consumers to switch relatively earlier. Moreover, changes in the variety of optional plans and characteristics also play an important role in the consumers switching decision.

Also on the Korean mobile voice market, Lee *et al.* (2006) estimate the existence of high switching costs, which implies that consumers are locked-in with their services providers. Furthermore, the findings point to the fact that incumbents have a first-mover advantage which results from brand loyalty and from having conquered, at the initial stage of the market, profitable consumers.

A study by Grzybowski & Pereira (2011), based on a panel of Portuguese consumer level data, shows that the price elasticity of demand for subscription of mobile voice services is high and switching costs are large. If these costs were eliminated, consumer surplus would increase in 44.7%. Grzybowski

& Pereira (2011) conclude by identifying, as determinant elements of the market structure, switching costs and brand preferences.

Grzybowski (2008), using a multinomial and mixed logit model on British consumer panel data, shows that consumers of mobile voice services in UK face significant switching costs which vary according to the service providers. Moreover, this author shows that the probability of a consumer switching its service provider depends on consumer characteristics as age and the ways he spends his free time.

A study by Maicas *et al.* (2009a) on the network effects and switching costs in the Spanish mobile voice market shows that these two forces play an important role on consumers' decisions regarding the selection of a mobile operator. According to this article, the probability of a consumer selecting a given mobile voice service provider increases with the number of his social network contacts already subscribing services from that provider.

Krafft & Salies (2006) focus on the French broadband industry and conclude that switching costs act as a barrier to mobility, bringing about a dominance of the technology supplied by the largest operator. Krafft & Salies (2006) also conclude that the price differential in this industry is insufficient to induce consumers to switch, but also too high to make entry profitable.

4. SWITCHING COSTS VALUE AND SWITCHING PROCESS

4.1. Sample description

In order to determine the relevance of the different search and switching costs, we conducted, in 2009, an online survey that allowed us to obtain data on consumption decisions by telecommunications customers in Portugal, distinguishing between customers of individual services and bundles. The sample of 1000 respondents represents the average residential customer of telecommunications services in Portugal, with ages between 18 and 64, according to the parameters of gender, region and age.⁴

Of these 1000 respondents, 86% subscribe to fixed voice services, 57% of which in a bundled offer and 43% individually. Regarding mobile voice services, there is a 96% subscription rate, but only 2% of which in a bundled offer. Finally, and concerning broadband services, the subscription rate is

⁴ The margin error for an interval of 95% is ± 3.1 pp.

also 96%, but from these, 57% subscribe it in a bundled offer and only 43% subscribe it individually.

The bundled offer subscribed by the highest number of respondents is a triple-play offer which includes fixed voice, broadband and pay-TV services with a subscription rate of 64% of the number of respondents with bundled offers. As the remaining bundles are subscribed by a small proportion of the respondents, we will only focus on this triple-play offer.

4.2. Switching costs

In the survey customers were firstly asked about the monthly savings they would require from a new service provider to switch from their current provider, under two scenarios, one where number portability was not available, and the other where it was.

Table 1 presents the statistics on these amounts and also on the average monthly spending for each of the four services considered.

TABLE 1: Switching costs

	Fixed voice	Mobile voice	Broadband	Triple-play
Average monthly spending, €	19.79	23.29	26.39	57.85
Switching costs, € (without nr portability)	13.15	13.58	11.44	23.34
Switching costs, € (with nr portability)	10.51	10.25	–	19.42
Switching costs % (without nr portability)	62%	57%	41%	41%
Switching costs % (with nr portability)	51%	44%	–	34%

If we take the savings demanded by customers to switch provider as an indicator of the switching costs, we can conclude that these are extremely high. In fact, when customers cannot keep their phone number, for fixed and mobile voice services the switching costs amount to more than 13 euros, for broadband services switching costs are above 11 euros, and for triple-

play offers switching costs increase to more than 23 euros. When number portability is possible, these costs decrease to around 10 euros for fixed and mobile voice, and to near 20 euros for the triple-play offer.

As average monthly spending differs significantly across services, the percentage of switching costs on the average monthly spending is a more meaningful measure and it is more useful for comparison purposes. With this respect, fixed voice services present the highest relative switching cost (62%), followed by mobile voice services (57%). Broadband services and triple-play offers present lower switching costs as a proportion of the average monthly spending (41%). Again, if we consider these variables when number portability is possible, we observe that switching costs decrease between 7 and 13 percentage points.

Note that the difference between the two scenarios, where only the possibility of keeping the phone number is changed, allows us to determine the value of number portability for customers of fixed and mobile voice services, and of triple-play offers. Comparing the three different offers where number portability is relevant, we find that number portability is more important for fixed and mobile voice services customers, representing 11% and 13% of the average monthly spending, respectively. For the customers of the triple-play offer, number portability is less important due to the fact that the fixed voice service is only one component of this package, which includes additionally broadband and pay-TV services.

Despite the importance of number portability, many consumers reveal that they opted to change their phone number when they switched service providers. The main reasons for not keeping the same number vary from not knowing that this was possible (for the fixed voice services consumers) to not considering it important (for the mobile voice services and triple-play offers). The complexity of the portability process and the pecuniary costs associated to it are other reasons referred by consumers for changing the phone number.

4.3. Switching process difficulties

In order to determine the areas where policy makers' intervention is more urgent, customers were asked to score, according to a 10-grade scale, the level of effort demanded by several tasks and factors that constitute the switching process. These can be classified according to the categories of restrictive mobility factors identified in Section 2, as follows:

(i) searching for offers	}	Search costs
(ii) comparing relevant offers		
(iii) cancelling the old contract	}	Transaction costs
(iv) celebrating a new contract		
(v) new phone number disclosure		
(vi) learning how to use the new service	}	Learning costs
(vii) risk and uncertainty in terms of QoS associated to the switch		
	}	Uncertainty costs

Customers were also asked to grade the level of effort demanded in their last switching process or, for those who did not switch provider, which could potentially be demanded. The comparison of the average grade for each of the tasks and factors with the total difficulty level of the complete switching process allows us to determine in which areas it is more critical to intervene.

Table 2 presents the average effort level revealed by telecom customers for each of the tasks and factors that constitute the switching process, distinguishing between each individual service (fixed voice, mobile voice and broadband services) and the triple-play offer.

TABLE 2: Effort in switching tasks

	Fixed voice	Mobile voice	Broadband	3-Play
Searching for offers	5.0	4.7	4.8	4.6
Comparing relevant offers	5.1	4.9	4.8	4.9
Cancelling the old contract	4.8	3.4	4.8	4.8
Making a new contract	4.3	3.9	4.2	4.0
Learning how to use the new service	3.6	3.4	3.8	3.8
Installing the new service	4.9	–	4.2	4.5
New phone number disclosure	7.4	7.2	–	6.5
Risk and uncertainty regarding QoS	7.0	6.3	7.0	6.8
Total difficulty	5.0	4.9	4.8	4.8

Concerning fixed voice services, the task that on average is classified by customers with the highest grade in terms of the effort demanded is the disclosure of a new phone number. This is followed by the fear of a decrease in the QoS. Searching and comparing relevant offers are also above the total difficulty level. Learning how to use the new service seems to be the task that customers consider to be effortless.

The mobile voice services customers reveal a similar pattern, i.e. the disclosure of a new phone number is the most effort demanding task and the fear of a decrease in the QoS is very high. Again, the comparison of relevant offers is above the total difficulty level. Cancelling the old contract and learning how to use the new service are the tasks where, on average, customers reveal a lower effort.

Regarding broadband services, customers showed a high concern with the possible loss of quality. The search for and the comparison of alternative offers, and cancelling the old contract are the tasks which present the same level of difficulty as the complete switching process, while learning how to use the new service is the effortless task.

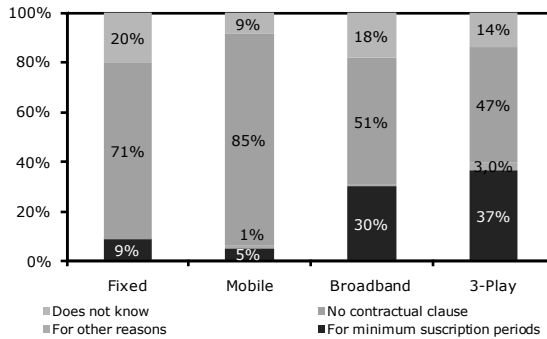
Finally, and similarly to the fixed and mobile voice service customers, the task of switching a triple-play provider that is perceived by customers as the most difficult one is the disclosure of the new phone number. Additionally, customers show, on average, a higher fear with respect to the loss of QoS. Comparing the relevant offers and cancelling the old contract are the other tasks which are also above the total difficulty level. Learning how to use the new service is the lowest effort demanding task.

Comparing the four services, we do not observe large differences in terms of the total difficulty level experienced by customers to complete a switching process. Even so, it is possible to state that the fixed voice services are the ones where customers seem to face higher difficulties, while broadband and triple-play services are the ones where switching is less difficult. This is in accordance with our results for the switching cost value presented in section 5.2.

Regarding contractual costs, we observe that minimum subscription periods and penalties are particularly relevant to broadband and triple-play customers. Indeed, according to Figure 1, a third of the customers of these services are subject to long-term contracts. Even so, the majority of telecommunications customers reveal that they are not subject to contractual clauses. Note that some customers can eventually be subject to this type

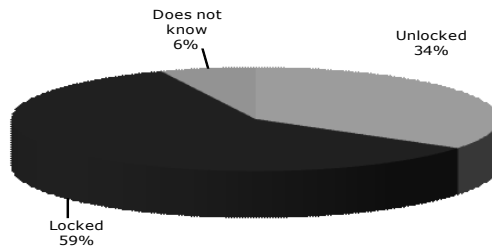
of penalties. However, they are not aware of this. In this case, the contract clauses do not constitute a switching cost.

FIGURE 1: Customers subject to contractual penalties



Finally, and concerning compatibility costs, we determine in our survey that, in Portugal, a large majority of mobile voice customers have their mobile handsets locked-in to a given network (see Figure 2).

FIGURE 2: Mobile Voice Customers subject to SIM-locking



5. CONCLUSION AND POLICY DISCUSSION

This study characterizes the telecom markets in terms of the most important mobility restrictive factors for consumers, namely search costs and switching costs, distinguishing between its different categories (transaction costs, contractual costs, psychological costs, uncertainty costs, learning costs, compatibility costs and switching costs associated with bundle offers).

We find that switching costs are very high in the telecommunications sector. They vary between 11.4 and 13.6 euros for individual services and are above 23 euros for triple-play offers. These correspond to more than 40% of the average monthly expenditure with each of these services. Furthermore, fixed voice services are the ones where customers seem to face higher difficulties in switching, while broadband services and triple-play offers are the ones where switching is less difficult.

Regarding the difficulty level of the switching process, we observe a similar pattern, i.e. fixed voice services are the ones where customers seem to face higher difficulties, while broadband and triple-play services are the ones where switching is less difficult.

Considering the tasks necessary to complete the switching process, we find that the disclosure of a new phone number is scored with the highest grade in terms of the effort demanded for customers of fixed and mobile voice, as well as for triple-play customers. In fact, customers attribute a value to number portability between 7% and 10% of the average monthly expenditure with each service. Customers also show high concern with respect to the possibility of losing QoS. The search and comparison of offers are other relevant tasks for customers. Compatibility costs are also imposing high restrictions to mobile voice customers' mobility.

Several remedies aimed at reducing switching costs can be adopted. In the particular case of the tasks and factors that are identified by customers as being more restrictive, the following remedies have been recently discussed or applied in different countries.

As concerns remedies focused on search costs, two examples are worth mentioning: price comparison tools and quality comparison tools. *Price comparison tools* are usually made available online, and require the introduction of a usage profile by customers. Then, these tools compare the different offers available in the market and select the one which fits better the introduced profile, i.e. the one that allows the customer to minimize his monthly expenditure. The efficiency of these tools can be maximized if they include all the relevant prices and offers' characteristics. For instance, for voice services they should include, not only per minute prices, but also installation and activation fees. In the case of broadband, the download and upload speeds as well as contention ratios are essential to evaluate the best offer.

Similarly to price comparison tools, *quality comparison tools* facilitate the evaluation by customers of different operators' performance regarding a set

of quality indicators. This set of indicators should respect some basic rules, namely they should be straightforward, the most updated possible and in a reasonable number. For voice services, quality comparison tools could comprise some of the following indicators: percentage of number portability requests addressed on time, percentage of customers' complains dealt with on time, and percentage of customers' calls to information and support services answered on time. Comparative information regarding the geographic coverage of mobile voice services could also be made available to customers.

The success of price and quality comparison tools is highly dependent of the way they are designed. If customers find them complex to use they will not be able to obtain the correct output. To increase the reliability of customers on these tools, they should be subject to an accreditation process by policy makers that would guarantee the quality, transparency, accessibility, comprehensibility and availability to all.

Regarding transaction costs, and more specifically intervening on the new phone number disclosure, the *process of number portability* can be improved in several aspects. In fact, the relevance of number portability depends on its cost and on the time taken by service providers to carry out the process. The success of this remedy also depends on how it is perceived by customers. Thus, policy makers should enforce number portability rules to prevent operators from delaying its implementation with the objective of discouraging customer switching. Furthermore, increasing the awareness of this tool is essential for its generalized adoption by customers.

The uncertainty about quality can be partially alleviated by the *publication of QoS studies and regulations*. These studies and regulations not only allow customers to make more informed decisions, but also make service providers liable for eventual service faults. The utility of QoS studies can be improved if they include rankings for several indicators as well as a global ranking system which facilitate the customer selection. Regarding quality regulations, they should indicate quality indicators to be measured and published online by service providers. The development of *informative campaigns* can also be an efficient measure to improve customer awareness. In particular, providing to customers, through multiple channels (e.g. online, in sales points or in customer associations), an informative guide aimed to assist them in their service selection and daily usage can contribute to diminish the uncertainty costs.

Finally, and acting on the compatibility costs, the *removal of SIM-locking* would be the most obvious remedy. However, according to a study

commissioned by the British Regulator, this measure has several pros and cons. The benefits of forbidding SIM-locking identified in the study were: (i) it would be easier and faster to switch between providers; (ii) customers could split mobile voice services between two or more providers using one handset with two (or more) SIM cards which would enable them to select a network according to a call type and the time of day; (iii) more options for call coverage and signal quality, as customers could switch between networks by using multiple SIM cards; (iv) competitive pressure on handset prices; (v) greater customer choice; (vi) greater transparency of pricing since handsets and tariffs could be compared separately by customers; (vii) lower entry barriers; and (viii) protection from undue restrictions in relation to handset subsidies. This study also identified disadvantages from removing SIM-locking. In particular, many operators compete partly on the basis of specialized handsets and services that those handsets can offer. If the handsets were sold unlocked there would be less incentives for providers to compete in such way. This could potentially have adverse consequences on innovation as operators may not develop services if they are not sure that they are able to retain customers.

Given this pros and cons, the removal of SIM-locking may be seen as an extreme measure, as it is always possible for customers to buy the same unlocked handsets at higher prices. Even so, the locking period and the fee charged to unlock the handset should be related to the benefits customers have enjoyed when buying the equipment at lower prices. Moreover, charging a fee for unlocking a handset even after the end of the minimum subscription period does not seem to be in line with the imposition of this period. Thus, banning the charge of a fee after the end of the minimum subscription period is a justifiable measure to remove this compatibility cost. Finally, the unlock fee should take into account not only the price of the equipment without any subsidy, but also the time left to the end of the minimum subscription period.

We argued that switching costs affect competition by making demand more rigid since consumers become less sensible to changes in prices. They may then result in higher prices and in entry barriers for new operators. Therefore, it is critical for policy makers, sectoral regulators, competition authorities and/or governments, to design and implement remedies which enhance customers' switching behaviour, particularly those that act over the more restrictive switching costs identified.

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