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Ana Amante and João Vareda

Improving consumer mobility in the mobile voice services market: a comprehensive set of remedies

Abstract

Switching costs increase the rigidity of consumers demand and lessen competition between firms, effects that are particularly relevant in the mobile voice services market. This paper characterizes the most important mobility restrictive factors for consumers in this market, presenting specific examples and discussing their impact on competition. In addition, a survey was conducted to obtain data on consumption decisions by mobile voice customers in Portugal. The survey results suggest that switching costs represent more than 13 euros or 57% of the average monthly expenditure with these services. The disclosure of a new mobile phone number is the most difficult task in the switching process. Customers also showed high concern with respect to the possibility of losing quality of service. Compatibility costs also impose high restrictions to customer mobility. Following the identification of these restrictive factors, the adoption by policy makers of remedies to address the different search and switching costs is discussed and their implementation prioritized according to mobile customers' needs.

JEL codes: D18, L51, L96

Key words: Switching costs, search costs, remedies

1. 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, 2009a)

In the particular case of the mobile voice services, switching costs constitute a key issue as these services are near their maturity with penetration rates in most European countries already above 100%. This determines that most of the consumers are presently locked-in to a given service provider. Indeed, the churn rate in this market is very low, with only 9.5% of the European Union consumers switching their mobile voice services provider per year.¹ On the contrary, the penetration rate of mobile broadband services is growing faster and the proportion of locked-in customers is still small. Hence, given the larger detrimental effect of switching costs on competition in mature markets, this paper will focus on mobile voice services.

This paper characterizes the consumer's mobility in the mobile voice services market, starting with a discussion of 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 this survey, switching costs for mobile voice services customers correspond to more than 13 euros, which is equivalent to 57% of the average monthly expenditure with these services. If number portability is available, switching costs decrease to around 10 euros, or 44% of the average monthly expenditure.

Considering the different tasks necessary to complete a switching process, customers classify the disclosure of a new phone number with the highest grade in terms of the effort demanded. Customers also showed high concern with respect to the possibility of losing quality of service (QoS). The comparison of offers is another relevant task for customers. Compatibility costs are also imposing high restrictions to customer mobility.

Finally, a comprehensive set of remedies which address the most relevant mobility restrictive factors is presented, with a prioritization of their implementation according to the revealed customer's difficulties in the switching process.

¹ See European Commission (2009b).

The remainder of the article is organized as follows. A typology of switching costs is described in Section 2 and in Section 3 it is discussed its impact on competition. In Section 4 the survey results concerning the switching costs and the switching process effort are explained. In Section 5, it is presented a list of remedies that facilitate customer's mobility, and, finally, Section 6 concludes.

2. 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 offers terms and conditions.

For instance, the difficulties on the comparison of prices may result from price heterogeneity. Regarding mobile voice services, prices differ according to the period of the day (peak and off-peak prices) and the distance (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 (a mixture of linear and flat rates), or even multiple part tariffs that increase the difficulty of comparing prices.

Switching costs 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 categorize into: (i) *transaction costs*, (ii) *contractual costs*, (iii) *psychological costs*, (iv) *uncertainty costs*, (v) *learning costs*, and (vi) *compatibility costs*.²

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 mobile voice services.

In addition to the previous tasks, there are other transaction costs related to the disclosure of a new mobile number. 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

² See OFT (2003) for a general description of these categories. Note that 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". However, and according to the results presented in section 4.1, mobile voice services are generally bought individually.

minimum periods of time, e.g. from 12 to 24 months, as a compensation from having benefited from lower prices on handsets. 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 mobile voice consumption with points which may later be used by consumers when buying new handsets.

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.

Compatibility costs are 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.

Mobile voice 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, increases as more others consume the service. In the mobile voice services case, the network effects result from the large price differences between on-net and off-net calls, so that when the customer's most frequent contacts (e.g. family and friends) have adopted 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 this industry, this issue is out of the scope of the paper, as its focus is on direct switching and search costs.³

3. IMPACT OF SWITCHING COSTS ON COMPETITION

All these mobility restrictive factors increase the probability of a consumer keeping the same mobile service 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

³ See Farrel and Klemperer (2007) for a distinction between switching costs and network effects.

since consumers become less sensible to changes in prices, therefore reducing competition intensity.

Switching costs are therefore a source of market power to mobile 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, by this way, an impact on *prices*, on *market shares*, and on *market entry decisions*. 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.

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 and 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 prefer to adopt lock-in strategies by charging lower prices.

In the mobile 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 mobile 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.

Given the maturity of the mobile voice services as compared to mobile broadband services, and the consequent larger detrimental effect of switching costs on competition, this paper is focused mainly on the former.

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 voice calls.

It can then be concluded 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 be verified if switching costs were absent. 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 and 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 and 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 and 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 and 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.⁴ The alternative strategy of incentivizing customer switching by paying for the switching costs would be too costly since the incumbent could react aggressively.

4. SWITCHING COSTS VALUE AND SWITCHING PROCESS

4.1. Sample description

In order to determine the relevance of the different search and switching costs, an online survey was conducted that allowed to obtain data on consumption decisions by Portuguese customers.⁵ The sample of 1000 respondents represents the average residential customer of telecommunications services in Portugal stratified by region, age, gender and social class.

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

In the next two sections, the results related with mobile voice customers will be presented.

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, considering that number portability was not available.

If the savings demanded by mobile customers to switch provider are taken as an indicator of the switching costs, it can be concluded that these are extremely high. In fact, according to Fig. 1, the switching costs amount to 13.58 euros. In other words, and given that the average monthly expenditure with mobile voice services is equal to 23.29 euros, switching costs are equivalent to 57% of the expenditure with these services (see Fig. 2).⁶ In case number portability is available to customers, i.e., if customers can keep their mobile number when switching provider, switching costs are reduced to 10.25 euros, or 44% of the average monthly spending (see Fig. 1 and Fig. 2).

⁴ Note that for entry on a small scale to be profitable the cost structure must not be very heavy.

⁵ The survey also aimed to characterize the situation on other telecommunications markets, like fixed voice, broadband, and bundle offers.

⁶ Shy (2002) develops a quick and easy method to estimate switching costs and shows that switching costs in mobile voice services sector in Israel are approximately equal to the average price of a mobile phone.

Fig. 1: Switching costs in euros

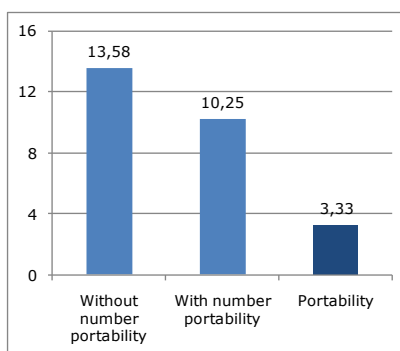
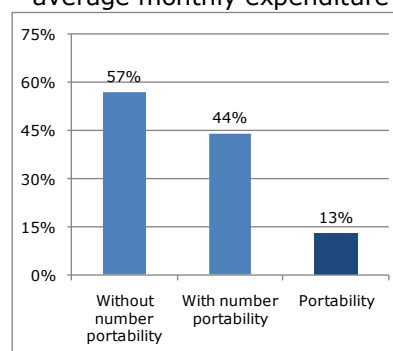


Fig. 2: Switching costs as a % of the average monthly expenditure



The difference between the two scenarios, where only the possibility of keeping the mobile number is changed, allows determining the value of number portability to customers, which in this case corresponds to 3.33 euros or 13% of the average monthly spending. This means that more than ¼ of the switching costs are due to the disclosure of a new phone number.⁷

Disaggregating switching costs per age group, it is possible to find that older mobile voice customers tend to reveal lower switching costs. In fact, according to Fig. 3, for customers aged between 45 and 64 years old switching costs represent 42% or 54% of the average monthly expenditure, depending if number portability is or is not available. On the other hand, customers aged between 18 and 24 present switching costs of 49% and 64%, respectively.⁸ The value of number portability is almost invariant with age.

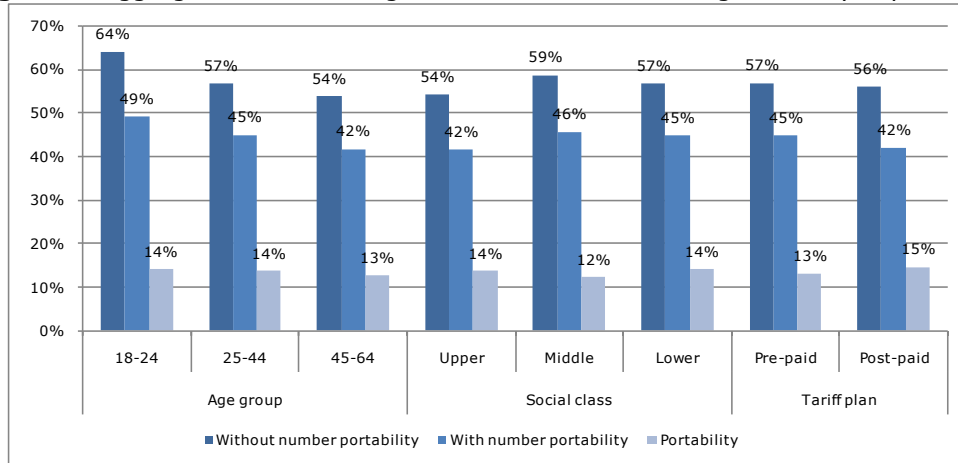
Regarding social classes, the middle-class customers are the ones with the highest switching costs (46% or 59%, depending if number portability is available or not), while the upper-class is the one with the lowest switching costs (42% and 54%, respectively). Yet, number portability has a lower value for the middle-class customers.

Finally, and concerning the type of tariff, there are no significant differences in the switching costs revealed by mobile customers in the case of absence of number portability. However, if number portability is possible post-paid customers present slightly lower switching costs (42% vs 45%). Therefore, it can be concluded that number portability has a higher value for post-paid customers than for pre-paid ones.

⁷ There are several empirical papers that analyse number portability. For instance, Maicas et al. (2009) analyze the effects of number portability in switching costs in the Spanish mobile services market verifying that consumers who keep their mobile phone number have lower switching costs. Moreover, Lee et al. (2006) conclude that the level of switching costs on the mobile voice services sector decreased substantially in Korea after the introduction of number portability. Grzybowski (2005) analyses the impact of mobile number portability on prices in the EU15 countries from 1998 to 2002 and concludes that competition tends to be more intense and prices lower in countries where mobile number portability has been introduced.

⁸ Kim (2006) estimations based on the mobile voice industry in Korea show that consumers diverge substantially with respect to their preferences and the switching costs they face. Grzybowski (2008), on the other hand, using a multinomial and mixed logit on British consumer panel data, shows that consumers of mobile services in the UK face significant switching costs which vary according to consumer characteristics like age and the ways he spends his free time.

Fig. 3: Disaggregation of switching costs as a % of the average monthly expenditure



4.3. Switching process difficulties

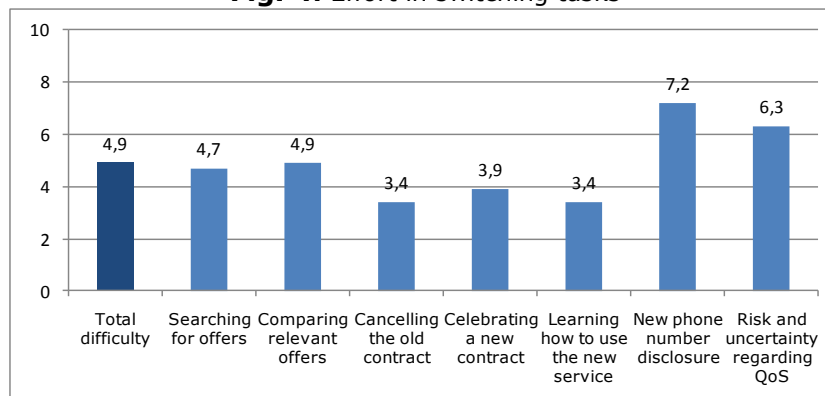
In order to determine the areas where policy makers' intervention is more urgent, customers were asked to score, according to a 10-grade scale, the level of effort demanded by several tasks and factors that constitute the switching process. These can be classified according to the categories of restrictive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

- (i) searching for offers
 - (ii) comparing relevant offers
- } **Search costs**
- (iii) cancelling the old contract
 - (iv) celebrating a new contract
 - (v) new phone number disclosure
- } **Transaction costs**
- (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 allowed determining which remedies are more critical to implement, i.e., those that address the tasks that are above the total difficulty level.

Fig. 4 presents the average effort level revealed by mobile voice customers for each of the tasks and factors that constitute the switching process. The task that on average is classified with the highest grade in terms of the effort demanded is the disclosure of a new number. This is followed by the fear of a decrease in the QoS. Comparing relevant offers is also above the total difficulty level. Cancelling the old contract and celebrating a new one and learning how to use the new service are the tasks where, on average, customers reveal a lower effort.

Fig. 4: Effort in switching tasks



Regarding contractual costs, minimum subscription periods and penalties are not particularly relevant to mobile voice customers (see Fig. 5). Indeed, around 85% of customers declared that they were not subject to any contractual clause, and only 5% revealed to be subject to contractual clauses resulting from a minimum subscription period. Note that some customers could eventually be subject to this type of penalties, however they were not aware of this. In this case, this does not constitute a switching cost.

Finally, and concerning compatibility costs, a large majority of mobile customers have their mobile handset locked-in to a given network (60%), which is an indicator of the importance of this type of switching cost in the mobile voice services market (see Fig. 6)

Fig. 5: Customers subject to contractual penalties

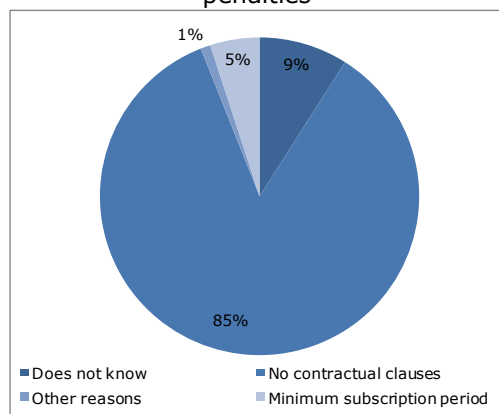
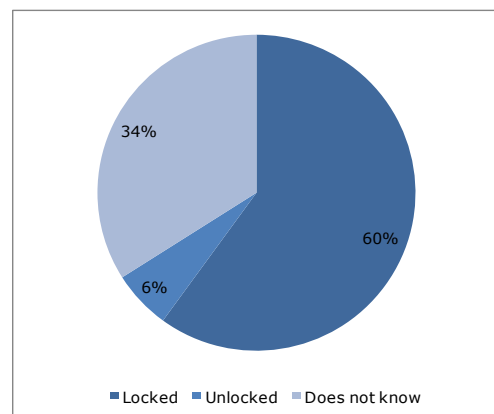


Fig. 6: Customers subject to SIM-locking



5. REMEDIES TO IMPROVE MOBILE VOICE CUSTOMER SWITCHING

Switching costs affect competition by restricting customer mobility. As a consequence, prices are generally higher and entry is more difficult. It is then critical for policy makers to design and implement remedies which enhance mobile voice customers' switching behaviour.

Since the switching process is composed by numerous tasks and influenced by several factors, policy makers may need to intervene in several areas, addressing the different types of search and switching costs.

In the following, several remedies will be discussed aimed to improve customer switching in the mobile voice services market according to the categories of mobility restrictive factors identified in Section 2, as well as some more general remedies. Given the results of the survey, policy makers

should primarily focus on the remedies that address the uncertainty, the transaction and the compatibility costs, as these were identified by customers as being the most relevant in the switching process.

5.1. Remedies focused on search costs

Price comparison tools

Price comparison tools are one of the most effective measures to address search problems. These tools, which are usually made available online, require the introduction of a traffic profile by customers. Then, they compare the different offers and select which fits best the introduced profile, i.e., the one with the lowest monthly expenditure.

The efficiency of these tools can be maximized if they include all the relevant prices. For instance, they should include, not only per minute prices, but also price per SMS and for other data services. The success of price 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. It is therefore crucial to assure its ease of use. Another key feature respects the availability of these price comparison tools. As broadband penetration rates are low among vulnerable customer groups, making these tools available only online may become a handicap. Thus, they should be also available offline, e.g., over the phone or in sales points.

Finally, and 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.

Quality comparison tools

Similarly to price comparison tools, another remedy that policy makers can implement are quality comparison tools. These tools are important to reduce search costs as well as uncertainty costs.

The development of these comparison tools would 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 mobile 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 could also be made available to customers.

Again, the accreditation of these comparison tools is important as a way to guarantee the robustness and the accuracy of the quality measures as well as the accessibility to the majority of the customers.

5.2. Remedies focused on transaction costs

Simplifying switching processes

The bureaucracy associated to the switching process increases transaction costs. Thus, lessening these costs is only possible through the reduction of the documents and actions necessary to celebrate and terminate a contract.

Celebrating or cancelling a contract online or through client support numbers can reduce transaction costs. Another possible measure is the development of an online tool which, after the introduction of a traffic profile, selects the best offer and allows the immediate switch of providers. Making the switching process uniform among service providers can also contribute to the reduction of transaction costs. In this sense, if all the documents and actions, independently of the service, are the same, customers will find it easier to change providers in subsequent switching processes.

Standardization of contracts

Transaction costs are also reduced by the standardization of contract terms and conditions, making them more legible and comprehensive. The implementation of such remedy would require policy makers to define guidelines concerning the information to be included in contracts and the format of its presentation.

Examples of information that providers could be asked to incorporate in their contracts are: the services provided; the quality levels contracted; the prices and ways to obtain updated information about all the prices and relevant fees; the length of the contract, conditions applicable to its renewal, suspension and cancellation; and the compensation and refund rules applicable in case of non-fulfilment of the quality levels contracted. The presentation of this information should follow a template where, for instance, the type and the size of the letter and the background colours are predefined.

Number portability

Number portability enables mobile customers to retain their phone number when changing from one service provider to another. This measure has been adopted by policy makers in several countries in order to reduce transaction costs and promote competition in electronic communications markets. Notwithstanding, the relevance of number portability for customers who switch depends highly on its cost and on the time taken by service providers to carry out the process.⁹ This was the reason why the European Commission, within the new regulatory framework for electronic communications, imposed the reduction of the deadlines required to complete the number portability process.

The success of this remedy also depends on how it is perceived by customers. Thus, policy makers should enforce number portability rules so that operators do not delay the conclusion of the number portability process with the objective of discouraging customer switching. Furthermore, increasing the awareness of this tool is essential for its generalized adoption.

⁹ According to Buheler and Haucap (2006) number portability has several costs, namely the direct costs associated with porting the mobile number, the incremental costs of call conveyance and the costs related with the lack of tariff transparency.

5.3. Remedies focused on contractual costs

Reasonability of the minimum subscription periods and penalties

Minimum subscription periods and the associated penalties might not always reflect the benefits in terms of prices and equipments offered to customers when subscribing the services. Policy makers' intervention is then needed to assure that minimum subscription periods and penalties are justified and proportional to the benefits conceded. For instance, policy makers should guarantee that the monetary value of the price rebate or of the free handset is in balance with the minimum subscription period or the minimum consumption level contracted.

5.4. Remedies focused on uncertainty costs

Publication of QoS studies and regulations

The publication of QoS studies and the adoption of quality regulations by policy makers can reduce uncertainty costs. These studies and regulations not only allow customers to take more informed decisions, but also make service providers liable for eventual service faults.

The usefulness 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 specify which quality indicators should be measured and published online by service providers.

5.5. Remedies focused on compatibility costs

Limitations to SIM-locking

A typical example of compatibility costs is the SIM-locking of handsets. In this case, if a customer wants to switch to an alternative mobile provider and keep the same handset, he usually has to pay a fee to the original supplier in order to unlock it.

This practice was very relevant in the initial phase of development of the market as it allowed the acquisition by customers of equipments at lower prices, increasing the service penetration. However, at the present maturation stage the advantages of SIM-locking are doubtful.

In 2002, the Office of Telecommunications (Ofcom), the British sectoral regulator, commissioned a study to evaluate the potential costs and benefits of number portability (see OFT, 2004). This study identified several benefits of forbidding SIM-locking, namely: (i) it would be easier and faster to switch between providers; (ii) customers could split mobile services between two or more providers using one handset with two (or more) SIM cards which would enable them to select a preferred 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 (by offering SIM-only products, new entrants could sign up customers more quickly after launch, producing a quicker payback on start-up costs); and (viii) protection from undue restrictions in relation to handset subsidies.

However, 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 this 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 these pros and cons, the removal of SIM-locking is 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, which supposedly already has the objective of recouping the investment made by service providers. 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.

5.6. General remedies

Mobile services customer guide

The mobile voice customer is often confronted with its ignorance and incomprehension about some offers' characteristics and technologies. For instance, it might not always be obvious for customers what are the potentialities of the UMTS technology. In this sense, many of the restrictive factors to mobility, namely search costs, uncertainty costs and learning costs, can be reduced with an increase in customer literacy on these issues. The development of informative campaigns is an efficient measure that policy makers can engage in 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 switching costs.

This guide could describe the main service characteristics, the technologies and functionalities associated to them. Moreover, it could approach questions related with the celebration and cancellation of contracts in terms of the steps and documents required, the day-by-day usage of the service (e.g. how to interpret a bill, how to make a complain, what to do when the service fails), the number portability process and all the switching tasks. This guide could also be relevant in terms of customers' protection by informing them about their rights and dues.

Codes of conduct

Many of the issues identified could better be solved through self-regulation. By this way, service providers should be given the incentives to adopt codes of conduct, developed together with policy makers and customer associations. These codes of conduct could include several of the remedies already discussed additionally to others aimed to improve customer mobility, namely: (i) supply of standardized sheets with information about the duration of the contract, all the applicable prices and quality parameters; (ii) free of charge cancellation in case of a significant change in contract

conditions; (iii) improving the transparency and accuracy of billing; (iv) publication of a best practice guide regarding customer's migration; and (v) adoption of the same dispute settlement mechanism.

6. CONCLUSION

This study characterizes mobile voice services markets in terms of the most important mobility restrictive factors for consumers, presenting some examples specific to this services and discussing its implications in terms of prices, market shares and entry.

According to the results of a survey, mobile voice services customers reveal switching costs higher than 13 euros, which is equivalent to 57% of the average monthly expenditure with these services. When number portability is available, switching costs decrease to around 10 euros, or 44% of the average monthly expenditure.

Considering the tasks necessary to complete the switching process, it was found that the disclosure of a new phone number is scored with the highest grade in terms of the effort demanded. Customers also showed high concern with respect to the possibility of losing QoS. The comparison of offers is another relevant task for customers. Compatibility costs are also imposing high restrictions to customer mobility.

Furthermore, it was identified a comprehensive set of remedies which address the most relevant restrictive factors with the objective of improving customer mobility. Price and quality comparison tools are the regulatory measures selected to overcome search costs. Simplifying customers' switching processes, the standardization of contracts, number portability and the increase of its awareness can be seen as means of addressing transaction costs. Contractual costs can be reduced through the guarantee by policy makers of the reasonability of the minimum subscription periods and penalties. The publication of QoS studies and quality regulations is the proposed remedy to deal with uncertainty costs. The reduction of compatibility costs can be achieved through the imposition of limitations to SIM-locking. The publication of a customer guide and the adoption of codes of conduct are more general instruments aimed to facilitate customer's mobility, acting over multiple types of search and switching costs.

From this large set of remedies, and according to the results of the survey, policy makers should primarily focus on the ones that address the uncertainty, the transaction and the compatibility costs, as these were identified by mobile voice customers as being the most relevant ones in the switching process.

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