

Are laggards anti-competitive: the case of European mobile telephone operators

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Abstract: The competitive policy implications of Western European telecommunication operators' reluctance to invest in third generation mobile systems are addressed. Incumbent mobile phone operators are generally well protected from competitive entry, and are therefore reluctant to introducing aggressive pricing plans or new innovative pricing schemes based on new technology. The analysis and conclusions are supported by a consumer study consisting of over 1700 interviews with Swiss mobile phone users. The principal conclusion is that operators still have a considerable potential to grow revenues in the current second generation technology (GSM). This can be achieved by stimulating the use of voice communication and voices activated services such as call back and voice mail, and thereby limit financial willingness to experiment in flexible pricing and new products in the foreseeable future. Such a laggard competitive climate is unlikely to be beneficial for consumers; but it is difficult to identify as anticompetitive under existing competitive legislation. The study concludes with a suggestion of how existing policy could be altered and thereby address many of these issues.

Keywords:

Pricing, Competitive Policy, Consumer behavior; Telecommunications; Innovative Pricing

Biographical Notes:

Andreas Jonason is a postdoctoral researcher at the Royal Institute of Technology (KTH) in Stockholm. His research has previously focused on setting up the innovative pricing process associated with product pricing and charging. He is also active in research and consulting in the areas of finance, price elasticity and consumer behavior. Bo Holma is a market researcher at Ericsson AB and a lecturer at various European Universities. His primary research focus is on the empirical mechanisms of consumer spending in the mobile telecommunications sector.

1 Introduction

The general framework for competitive policy is founded on the concept of market influence in markets primarily defined by technical standards. This is expected to result in efficiency and consumer benefits. However, it can also result in negative competition between vertically integrated product bundles, when firms block the potential productive efforts with exclusionary power derived from the bundling, in contrast to product-by-product quality based fair competition. Such bundling is unlikely to be beneficial to consumers; but is difficult to identify as anti-competitive by solely technical market share.

The Western European market for mobile telecommunications offers examples of such exclusionary opportunities. Although often approached as a growth market, by regulatory authorities, considerable elements of the market are showing saturated penetration numbers, with more than 70 percent of the population subscribing to one or several (as in Italy) operator's mobile services. The potential for revenues in such markets have changed from increasing the number of new consumers to stimulating growth in consumption (of mobile services).

This growth in services can primarily be achieved in three ways:

1. Compete for existing mobile customers in order to make them switch operator, through aggressive price reductions or other marketing schemes.
2. Launch new services with a new technology such as 3G (WCDMA)
3. Increase the consumption of existing mobile services supported by the current 2G (GSM) technology. Examples of such services are voice, SMS, and call back services.

'Churning', as it is referred, by the recruitment of new customers from competitors, is generally considered to be a relatively expensive method of growing the customer base. Considerable tariff reductions are likely to attract subscribers from the competition but can harm the profitability of the existing customer base. Price reductions also escalate the risk of a price war.

The new 3G technologies were expected by many (ITU, 1999) to represent a fundamental addition to future revenues of mobile communications. Although revised from their optimistic late nineties and early 2000 predictions, the new services enabled by 3G technologies still show considerable potential for profitability. Jonason and Holma (2003) verify such claims but point to evidence that operators will need to abandon a traffic-based pricing policy for charging their consumers and, instead, experiment in a manner comparable to an innovation race. Moreover, review of pricing and product combinations are required in order to be successful in their charging. Such practices place the process of pricing at the centre of innovative behavior. Product and price endogenously interact to form unexpected and competitively aggressive combinations, not seen previously in the market. This process has been termed Innovative Pricing (IP) (Jonason, 2001). The potential gain in revenue, from such innovative per product based pricing schemes in 3G, is empirically illustrated to be as high as 30-40 percent (Jonason and Holma, 2003). Such studies make

a strong case both for the new 3G technologies and for the economic rationale of experimenting with how products are priced in the new technology.

There is, however, little evidence of such Innovative Pricing behavior in the Western European market. Existing pricing schemes often remain, and most operators have done little to reduce their dependency on network traffic as the primary base of revenue. This is despite the empirical evidence that 3G in combination with IP can bring about a considerable addition to operators' bottom lines.

Consequently, the underlying motives for such shortcomings in innovation are discussed and whether this, in fact, is a violation of competitive legislation. The analysis and conclusions are of interest to European NRAs (National Regulation Agencies) and also to practitioners and academics involved in the area of telecommunications and IT pricing.

We begin by exploring the relevant background elements of telecommunications. Second, we review the theoretical framework of telecommunications policy and identify some of its strengths and weaknesses. Third, we present the method of the empirical study, and the general findings. Finally, we offer an analysis of the theoretical implications of the empirical study together with a conclusion.

2 Slow or rapid market growth

Mobile telecommunications service provisioning has become an increasingly sophisticated, internationally liberalized and, hence, a commercially lucrative activity; burgeoning into a multi billion-dollar business, the expansion of which is by no means complete.

Mobile telecommunications have historically been viewed as a potential high growth market, in rapid development. Such an environment has a tendency to *tip* in favor of a technology or a standard; and is therefore sensitive to external pressure and legislation instigated by regulatory industries. Competition is one *for* the market, whereas slower changing industries, such as petro-chemical is more stable where competition is often considered to be *in* the market (OFT, 2002).

The approach by National Regulatory Authorities (NRAs) to high growth industries has historically been more cautious, since any competitive involvement is expected to have major negative downstream impact. The general view is, that high growth industries can muster a chaotic phase where the high growth of the sector compensates and makes anticompetitive behavior minor when one considers the gain in consumer benefits. However, NRA should be judicious before claiming credit for the positive development in telecommunications. Wireless services have experienced great expansion in almost all domestic markets. Growth rates in Nigeria China and Bulgaria have been extraordinary too (India could serve as an exception) and are not necessarily due to enlightened government regulations but rather, more likely, results of a large market demand for ubiquitous communications.

Over time, the mobile telecommunications market growth has become more diversified. This is can be illustrated by parts of the market that have reached a considerable and saturated penetration of

subscribers (see Figures 1 and 2). The situation is commonly found in all western European countries. 2G (GSM) voice services are to a greater extent growing in consumption but not of consumers.

<Take Figures 1 and 2 >

Tariffs in mobile networks invariably comprise a connection charge that is the price the calling party (in Europe) pays to call another user in the same network (generally subscribing to the same operator). If one wants to call outside one's own mobile network the charge of network interconnection is added to the price of the call.

Network interconnection fees or termination charges are a charge from an operator to parties to reach their subscribers. In the sense of network interconnectivity there is competition for subscribers, but there is little competition for reaching subscribers of a network. Moribund penetration numbers thus raises concern for the efficiency of competition. One characteristic of mobile services is that there is competition for mobile subscribers, but little competition for mobile subscribers once they are subscribing to a particular mobile network. One could describe in this instance the operator as a monopolist in reaching its own customers. The interconnection charges are negotiated between operators on a case-by-case basis and are not communicated to customers. The increased cost incurred on the user for making an external interconnected call often makes up a substantial share of the total (a share of 80% is common) (PTS, 2003). Interconnection is widely accepted as one of the most important issues for regulators to handle (Intven, 2000) but there is rarely guidance on how and when such measures should be imposed.

One problem is that there is invariably no incentive for incumbent operators to lower interconnection charges, since they work both ways between the interconnected operators. Entry of new operators also has little effect on these charges since the ability to influence the tariffs is based on the value of reaching subscribers (which is low for new entrants that have a small customer base). This complicates regulation and also means that entry in the market, by virtual operators (those that use the network of an incumbent under another brand name), does not lower prices. As argued by Sidak and Spulber (1998) on the then relevant fixed side pricing: that prices are maintained at a high level since it can be costly (and leads to negative margins) to undercut the interconnection charges.

One could argue that the European market for voice mobile services has moved from a competitive market condition, although the market is still growing. Appropriate regulatory monitoring in such a market is likely to be more closely related to slower growing industries and markets for consumption, such as fixed telephony, petroleum products and soft tissues rather than that of rapidly expanding industries. It is a sensitive and complex issue when such a transition between growth and saturation occurs, and telecommunications is no exception.

The regulatory problem for this sector is complicated due to the industry being on the verge of launching a completely new technology (3G). This new platform encompasses a whole new range of mobile services such as music streaming and real time video. The competition in the market for 3G type services is clearly one of high growth (or for the market) where NRA interaction could cause the domestic market to tilt in an unwanted direction, and severely harm entrepreneurial incentives; causing consumers to lose confidence in the technology.

The new generation of technology offers a new range of services; however, it also supports technical convergence to the old existing services (such as voice) where such 2G type services will be delivered more efficiently. The price and willingness to change the manner in which services are charged will not depend on new entrants' Innovative Pricing ideas but on the technical interconnection limitations between the billing systems of different operators. Most important, however, is the cross subsidy between the two technologies. History has shown how new services, such as SMS in 2G, have made a positive contribution to other chargeable elements of the operator's service portfolio (ITU, 1999). Network effects and cross subsidies are expected to be substantial between the old and the new technology: not only in terms of a financial revenue contribution, but also in how the customers are being charged.

3 Innovative Pricing in competitive theory

It is common that economic models approach the problem of pricing as one of a maximization process over an exogenous product in relationship to a more or less well defined demand function. The pricing agent often has a good understanding of what he wants to sell and how he intends to charge for it.

Innovative Pricing (IP) applies a different perspective. The assumption is that goods will not be well defined as a consequence of incomplete and fragmented information. Actors will thus first need to discover which products are products, the way to distribute the products and efficient methods of producing them (Hayek, 1978). It also introduces an element of uncertainty (Knight, 1921), which opens up the set of opportunities to include dynamic innovation and theories of entrepreneurship. The innovative competence, or receiver competence (Eliasson 1996) is agent specific and changes over time, which makes the pricing problem of charging for one's products unique to each agent and path dependent (of previous pricing decisions). Decisions will be made continuously as products and markets change. Not changing one's pricing despite market and product changes can thus also be seen as a pricing decision, which can turn out to be innovative. Schumpeter (1947) underscores that entrepreneurial activity does not necessarily have to be spectacular or of historic importance. The economic performance of the entrepreneurial process will need to be a commercial success to enable the invention to survive and thrive as an innovation. The ability to come up with something new is an important feature of competence capital, since the product experiments of the actors will have to be carried out without anyone having complete or calculable knowledge of all combinatorial possibilities and their consequences.

Thus, in their attempts to be profitable, the actors have to coordinate (i.e. price) something they only partially understand. This does not necessarily come in conflict with mainstream economic theory, however (Jonason, 2001). Once the subjective definitions are in place it will be possible to apply appropriate standard pricing theory.

Competition policy in telecommunications has consistently held to three major themes: monopolization, interconnection and mergers. Pricing has aroused a quite modest amount of attention¹. In the EU, anti competitive conduct can generally be described as any attempt to gain and/or exercise market power by a dominant firm or a collection of firms. The only exceptions are in some cases where the anti competitive benefits are more than the offset in efficiency or where the anti competitive effects are insignificant (Article 81). Therefore, all anti competitive conduct is associated with the exercise of market power. This pattern can also be found across the Atlantic. A dominant part of the history of competitive policy in the United States, where history is critical for case law interpretation of the basic antitrust statutes, is concentrated to the regulation of one company: AT&T. The Department of Justice (DOJ), the Federal Communications Commission (FCC), with input from state regulatory commissions and state attorneys general, formulate competitive policy for telecommunications. The major government antitrust actions addressed, have essentially focused on regulating the leveraging of market power through foreclosure and tying activities.

Both EU and US legislation has thus focused considerable attention to the leveraging of market power, in relation to different tying and bundling activities. The definition of the market itself (i.e. how the market is defined) and the decision of what constitutes power in this market has therefore been a fundament in identifying and understanding competitive behavior. This approach has received some criticism however. Pleatsikas and Teece (2001), for instance, emphasize that enforcement agencies need to go beyond a mechanistic approach to market definition followed by determination based on market share. Evans and Schmalensee (2001) go further and argue that there are profound shortcomings in the traditional static market share antitrust paradigm. In such an inquiry there are no hard facts that lend themselves to precise definitions of markets in high technological contexts, and the authors therefore call for a revision.

The defining framework can be done along several fronts, depending on the problem at hand. One important element in how a product is defined is product variation. This can be completed with models of varying complexity. A popular evolutionary process is to define multidimensional and complex products, such as telecommunications, by their technical properties and use (Saviotti and Metcalfe, 1984). This perspective, however, is less suitable for our theoretical problem. Additional features of a product can often be offered 'free' at the margin. If it costs nothing to bundle the two products, it could be questioned whether this bundling is more than one product, or just a rational product enhancement. If such an

¹ ITU (2002), for instance, continues to report a higher average off peak than on peak minute pricing tariff for parts of Europe (for 1992 and 1993), although practically and theoretically impossible. If more attention had been paid to these figures it is likely that the error would have been found during the 10 years that the figures have been communicated.

additional feature is a separate product, how can the market share and the market power in this market be decided without considering a bundle of products? This line of argument opens up an important area of regulation. An alternative to a technical base for regulatory product definition could be to include the additional dimension of how products are charged/financed in the market. The determining parameter would then be the competitors' control over this base for charging, i.e. their ability to control how products are charged. This approach is comparable to the inclusion of exclusionary power suggested in OFT (2002) along with pricing power for the analysis of competition issues in dynamically competitive industries. In an innovation driven environment, with competition primarily based on the introduction of new innovative products and pricing schemes and only secondary on the price level of the products.

The logic is that, although large, the set of pricing opportunities is restricted by the institutional practices of pricing (Jonason, 2002) and enforced by the imitation of successful pricing schemes. This has the practical implication that the manner by which firms charge their customers can establish itself as an agreed standard for pricing (€ per minute for a phone call, for instance). Agreed standards for pricing can reduce the potential wastage (less complex billing for example) of competing pricing schemes and can make it easier to reap economies of scale inputs. Dominant firms will be able to set a standard for pricing that suits their needs better than those firms who follow with less influence. A high level of network can affect those products that lock in to an inferior technology; and this can easily occur as firms find it more certain to invest in technology in which they already have invested (Economides, 2003). This logic can also be applied to how prices are being set. Just as in technology, the cooperative adoption of standards of how a product is charged tends to move competition from being *for* the market to being *in* the market. Regulatory authorities can then use the degree of 'pricing consensus' as an indicator of appropriate competitive theory (for or in the market).

This enables quite a broad analysis of the competitive circumstances. Particularly (as in our telecommunications case) where the competition of innovation between producers can be established over a wide front. Product (and market) definitions would then become less dependent of their underlying technologies, and would give a different perspective, which could form one dimension of a wider system of regulation that has traditionally fallen beyond the disciplinary parameters of telecommunications policy.

Theoretically this dynamic perspective offers an explanation for the logic behind planned local (inefficient) pricing schemes. For instance, when monopolists in dynamic industries price products well below profit maximization in the short run. The subjective externalities of a change in pricing scheme and the uncertainty created may be a strong argument to delay a change in a pricing scheme that is efficient in one product area but have uncertain cannibalization effects in another. An example of this is product giveaways where the price of a technical product is set to zero or even a negative value (subsidized).

Such bundling measures are well documented under the theoretical concepts of tie in sales (e.g. Burnstein, 1960) and block bundling (e.g. Stiegler, 1968). The IP perspective gives us an additional element, however. If the pricing of products is dynamic, i.e. changes over time, an apparent delay in such a subjective effective change in pricing, could under such assumptions be comparable to exercising exclusionary power². Such behavior will allow a firm or a group of firms to achieve, maintain or extend a dominant position and could thus change the identity of the winner of the innovative race in a way that is adverse to consumers and where the incentive to innovate both in price and product is significantly reduced.

Such exclusionary practices can be difficult to demonstrate empirically with the use of quantitative published data (Pleatsikas and Teece, 2001). Instead it is more likely to use a qualitative study to understand the behavior of customers in such an open context.

4 Research Design

An end user study was designed to evaluate the revenue potential in stimulating traffic in the GSM networks of mobile operators in Europe. The findings were then compared to other possible growth segments, such as customer churning, subscriber growth and 3G (as described in Jonason and Holma, 2003).

The material was gathered through a telephone survey carried out with a representative sample of consumers in Switzerland during an average workday in 2002 (16th May). The two types of respondents were: users and non-users of mobile telephony. A random stratified sample was used, with age, gender and residential area as the major stratification criteria. The sample size was 1758 respondents.

The study was designed to track consumers' mobile telephony consumption during 24 hours. As mobile telephony consumption vary significantly between weekdays and weekends a decision was taken to only track weekday traffic in order to receive comparable sample data. The sample was regarded large enough to ignore the risk of irregularities on an individual level. The 24-hour usage tracking served the purpose of identifying how much, when and why different consumer groups are using their mobile phones. This was followed up with qualitative questions on barriers for increased usage.

All sample data was later validated by comparing the sample data with market data from the Average Revenue Per User (ARPU) and Minutes of Use (MoU) reported by the Swiss operators in addition to traffic (Erlang) statistics collected directly from selected network switches. The analysis was the illustrated by means of a traffic segmentation model.

² The United States v E.I. du Pont de Nemours Co, 351 77 (1956), the US Supreme court defined monopoly power as 'the power to control prices or exclude competitors' (OFT, 2002)

5 Results and Discussion

The empirical consumer study shows considerable unexploited revenue potential through the promotion of services that stimulate voice usage. These services can be offered free of charge, and their respective costs recovered through the charging of this additional voice traffic, for which the customers are used to paying (institutionalized pricing) (Jonason, 2002). The ability to charge for such voice stimulating services is thus completely dependent on the price level of voice services and to what extent the service stimulates the usage of the chargeable voice service.

<SEGMENTATION MODEL IN HERE Figure X>

As illustrated in Figure X there are considerable numbers of mobile telephony customers that are inactive in their usage. Forty-two percent of the users in the sample use their mobile phones on average less than once per day. This group by its size still represents 19 percent of the operators' revenues. The barrier for learning can be comparatively high, and it may take some time before such users learn how to stream data, send multimedia images or download music from their mobile phones; or even buy those phones that enable such functionalities. A logical first step in such a migration towards 3G usages is likely to go via the changed behavior of using the phone more frequently (in many cases to simply turn on the mobile phone). If it was possible to increase the usage of this group to make or receive an average of one call per day would, with the present tariffs, lead to a 10 percent increase in ARPU. Such behavior needs to be in place before Innovative Pricing schemes of new applications in 3G starts to have a mass-market appeal.

Additionally, the empirical data also supports an explanation of why operators are unwilling to experiment with new pricing schemes and abandon voice traffic as the primary charging base. The uncertainty (Knight, 1921) associated with introducing new pricing schemes is simply too high compared to reaping the more certain revenues, available by exploiting the exclusionary power available to incumbent operators. With an inferior pricing scheme, pricing technology, can easily occur as firms and NRAs find it is more desirable to invest in the technology in which they have already invested. Operators are, following this argument, likely to continue to block Innovative Pricing attempts and thus the commercial success of 3G services. A possible conclusion to this negative scenario would be to consider the competitive situation of how prices are being set (i.e. on which element in the product the price is set above cost). For the presented case this could imply imposing regulatory measures on how termination prices are set in 2G. One possible measure could be to restrict interconnection charges from being higher than access charges of the terminating operator.

As argued, regulation can have a number of drawbacks. It is likely best suited for slow changing industries that exhibit well defined products. With stable product definitions, rules can be devised and specific pricing regulations can be set. It has been argued that regulation is not well suited in industries of rapid technological change and frequently changing and subjective product definitions. The problem for NRA is to evaluate the industry move from the first instance to the second. Monitoring of filed technical patents to bring about improvements in technology may be insufficient for such a decision. Instead it is proposed that the level of price experimentation or turbulence is used as a defining factor coupled with the technical definitions structures of traditional market power assessment.

Base upon these empirical results, this wider perspective has a number of implications. The incumbent operators, by maintaining their pricing schemes, prevent competitors from contending as effectively as they could if this laggard approach had not been maintained, and would, thus, stifle innovation in an Schumpeterian world. Anticompetitive acts, which make future innovation more difficult and lower the reward for innovation or make innovation more uncertain, attack the heart of competition. If we combine this strong statement with the theoretical acceptance that pricing (how an agent decides to charge for a product) is an act of innovation, makes the prevention of innovative pricing schemes anticompetitive.

6 Conclusion

The absence of dynamism in pricing in a volatile economy can be a sign of predation. The foundation for identifying anti competitive behavior is the presence and exploitation of exclusionary power. In an Schumpeterian world this entails the ability to make innovation more uncertain, difficult or lower its rewards. A central conclusion from this study is that the reward for incumbents to stimulate the usage of traffic generating 2G services, such as voice, are higher in the short term than those potentially available by introducing Innovative Pricing schemes to stimulate the usage of 3G type services. As a consequence, present pricing schemes are likely to remain. This will have an exclusionary effect on the potential competition and thus reduce consumer benefits from the new technology.

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Figures:

Figure 1

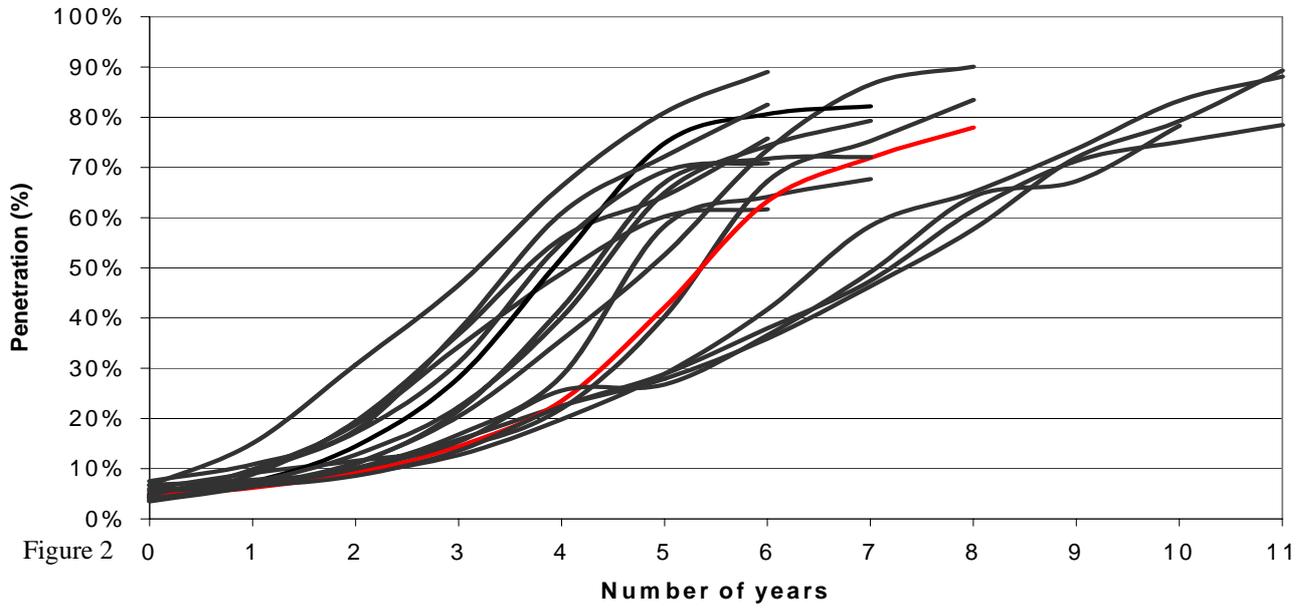


Figure 2

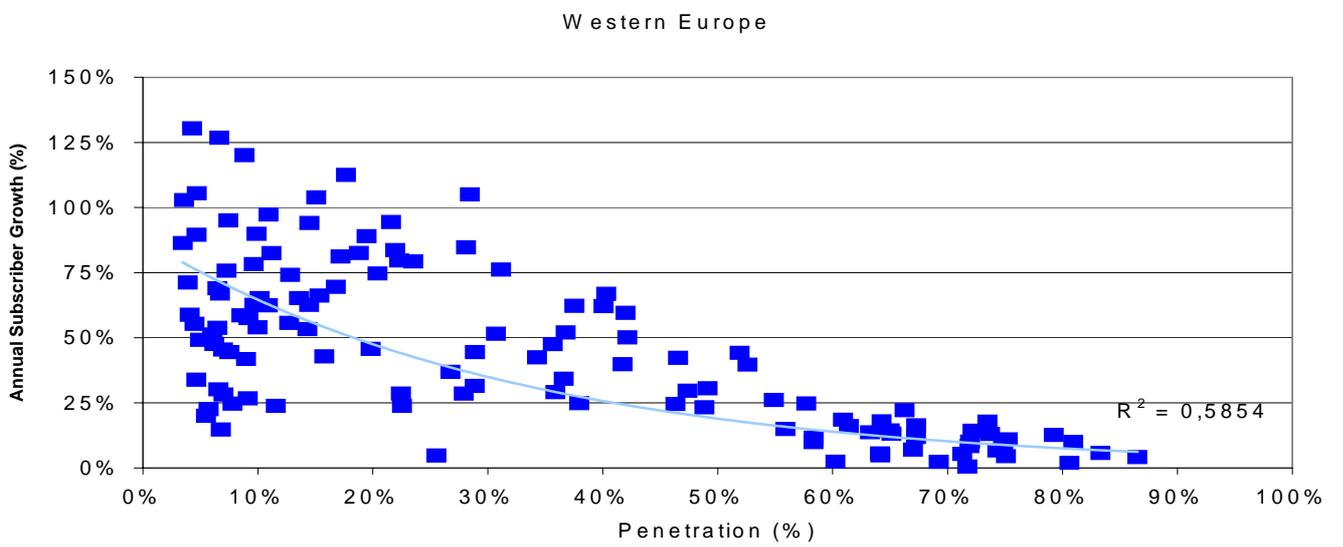
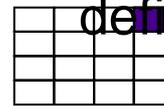


Figure 3

Traffic Segmentation Model

> 5	7%	3%	3%	4%
3 - 5	6%	3%	2%	4%
1 - 2	10%	4%	3%	2%
0	42%	2%	2%	3%
	0	1 - 2	3 - 5	> 5

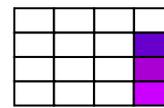
Segment definitions:



Frequent Users, 4%



Frequent Voice Users, 13%



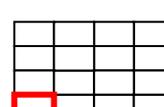
Frequent SMS Users, 9%



Moderate Users, 16%



Low Users, 16%



Temporarily Inactive Users, 42%