

Evolution of Mobile Number Portability

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Abstract

Growth in telecommunications population directly impacts the economy. So far no single theory emerged to explain competition in mobile telecommunications and to analyze possible outcomes of implementation of Mobile Number Portability. But there are advances of theory in some tightly related areas which provide the necessary framework to analyze the problem through. So far only few theoretical papers concerned the problem of MNP implementation directly. This paper examines how the mobile number portability has evolved and the implementation stages in India.

1. Introduction

All these papers develop from the framework of network competition, as provided by Armstrong, 1998, and Laffont et al., 1998. Authors assume positive and significant switching costs of consumers and two-part tariff pricing by both firms. They found that on a mature market MNP leads to completely different welfare outcomes, depending on relative sizes of switching costs, “transportation cost” and consumer valuations. They also analyzed introduction of MNP on a growing market by extending the originally two-period game with additional period [1].

2. Evolution of MNP

Armstrong (1998) was among the first to develop model of network competition with the two-way access pricing between the firms. In his model consumers did not consider choosing number of minutes to consume, but only decided on number of calls. This is the only paper that assumes uniform pricing by the players [1].

Laffont, Rey and Tirole (1998a) and Laffont, Rey and Tirole (1998b) make generalization and refinement of the existing literature on network competition. The models in these two papers now are basic for most researchers of Economics of MNP. This paper refines the notion of ‘balanced calling pattern’ and ‘reciprocal access pricing’ [2].

The empirical paper by NERA/Smith (1998) was the result of extensive data – collection process and market research and analysis. The authors classified the benefits from MNP into 3 types. Type 1 benefits are the benefits which accrue to subscribers who maintain their mobile numbers when changing operator. Type 2 benefits – the benefits from increased competitive pressure, such as efficiency improvement and price reduction. Type 3 benefits are – those from avoiding of high misdialing rates, making changes to information stored in customer equipment [3].

3. Suggested Models

Valetti (1999) and Campo-Rembado and Sundararajan (2002) draw attention to quality issues in competition between mobile operators. Two-stage model of the latter paper shows that because of constraints on spectrum availability and infrastructure operators with higher market share usually provide higher quality of services. Considering MNP no work was dedicated to Mobile-to-Mobile interconnection, and also though much preparatory work was done, no model to predict impact of MNP on market competition was developed [4].

Capuano (2002) develops a model of substitution effect between old and new customers for an operator that charges lower prices for new customers while keeping prices for old customers unchanged. This paper drops assumption that firm can’t charge different prices for “old” and “new” customers and thus reflects the reality of the industry better [5]. Shi, Chiang and Rhee (2002) found that when networks incur interconnection costs, MNP may lead to higher market concentration. Their paper was motivated by increased concentration on the Hong Kong mobile telecommunications market. They argue that if there are large on-network discounts on a market, reduced switching costs, after MNP implementation, could make on-network discounts of the larger firm more attractive for consumers of the small firm and result in higher switching of the later [6].

4. Effect of MNP Implementation

Buehler and Haucap (2004) also investigated the effect on MNP implementation on consumers' welfare. Novelty of this research was consideration of the effect of MNP on level of information available to consumers. They argue that under MNP number prefix has no indicative power.

Callers are not able to distinguish between on-network and off-network phone numbers and may end up paying higher average bills. They also argue that MNP implementation will benefit entrant firm and will hurt incumbent. Buehler and Haucap (2004) concentrate on the analysis of fixed-to-mobile calls ignoring more difficult mobile-to-mobile case, which involves changes of market shares [7]. Aoki and Small (2005) is the most frequently cited paper that directly investigates the effect of MNP implementation. This work gave the interpretation to MNP as a reduction in switching costs accompanied by increase in fixed and marginal costs of the firms. Their analytical investigation is focused on the MNP caused welfare change of consumers and producers [8].

5. Technology Solution

The paper by Asoke K. Talukder (2006) proposes a technology solution for SMS data portability in MNP scenario. GSM (global system for mobile communications) has proposed various technology models for supporting voice calls in an MNP scenario. GSM has also suggested technology models to support non-call-related signalling functions like SMS (short message service) point-to-point in MNP scenario. However, data services and application over SMS (SMS-data) is outside the scope of GSM, and no technology is available as of date to support portability of SMS-data services in an MNP scenario [9].

Tahani Iqbal (2007) has investigated the suitability of introducing the MNP in India and other emerging South Asian microstates such as the Maldives. The paper has considered how phone subscribers at the Bottom of the Pyramid (BOP) and the impact of the low-cost, low-ARPU pricing model implemented in South Asia will affect porting rates [10].

6. Cost Benefit analysis

Zhou Hui (2009) discussed in his paper that the welfare effect of introducing number portability is uncertain in a growing market. Number portability may reduce the social welfare if it is introduced when the market scale is increasing substantially, while it may increase the social welfare when the growing speed is not so high. Therefore, in keeping with the experiences of most countries around the world,

number portability should be introduced when the scale of the telecommunication market has developed to the mature stage [11].

Young Sic Jeong and Chang Min Park (2009) discussed network function and information flow to process the calls between Wibro and mobile phone, Wibro and wired phone which is resulted from number portability of Wibro VoIP by using NPSS. This paper also defines new number portability system, network function, information interface packet and system function according to the requirement of number portability [12].

Christopher Smithers (2010) has done the cost benefit analysis. He has divided the benefits of MNP in four different categories. He told that the costs of implementing number portability have reduced over the years – through a combination of cheaper databases and software being made available [13].

Atiya Faiz Khan (2010-11) has discussed the Challenges and solutions to implement number portability, the best solution is to implement the centralized system, maintain a common number porting database, and use the All Call Query (ACQ) call routing scheme to route the calls to a ported number. A trusted 3rd party, which typically reports to the telecom regulatory authority, can maintain the centralized number porting database. The number portability gives freedom to subscriber to choose best service provider. Also service provider has to be competitive to attract the customer. This will encourage competition among the service providers, and in turn will reduce the tariff. From subscribers point of view it reduces cost, time and money. From service providers point of view specific network maintenance activities need to be done to ensure proper operation of the number portability [14].

7. Implementation Stages of Mobile Number Portability in India

The much awaited MNP (Mobile Number Portability) finally launched on 20th Jan 2011 in India, empowering mobile phone consumers to change service provider conveniently. Mobile Number Portability (MNP) allows the mobile subscribers to retain the existing mobile phone number when the subscriber switches from one access service provider (Operator) to another irrespective of mobile technology or from one technology to another of the same or any other access service provider, in a licensed service area. The project was started long back in India. The first mile stone came when the Telecom Regulatory Authority of India (TRAI) issued draft Regulations to facilitate Mobile Number Portability (MNP) implementation in India and submitted recommendations to DoT on 8th

March 2006. The draft regulations lay down the business process for implementing mobile number portability. The Department of Telecom (DoT) had accepted TRAI's recommendations on 10th December 2007. DoT had also accepted the suggestion of TRAI that a Steering Committee be formed under the aegis of TRAI, to deliberate upon various issues involved in the implementation of MNP in the country. Accordingly, the TRAI constituted a Steering Committee consisting of representatives from TEC, Service Providers and their Associations. Based on the report of the Steering Committee and decision of the Authority, a draft Request for Proposal (RFP) was prepared and submitted to DoT for initiating the process for MNPO (Mobile Number Portability Operator). Subsequently, the DoT issued guidelines for MNP service license on 1st August 2008. The DoT guidelines envisaged geographical division of the country into the two Number Portability Zones (Zone 1 ± North West & Zone 2 ± South East), each consisting of 11 licensed service area. DoT issued the tender Document on 25th November 2008 for MNPO. Based on the selection parameters set in the guidelines for MNP service license, one MNP service licensee in each zone was selected. M/s Syniverse Technologies(I) Pvt.Ltd was granted license for operating in Zone-1 (North-West India) and M/sMNP Interconnection Telecom Solutions (I) Pvt. Ltd (Telcordia) was granted.

For users, therefore, it may seem logical that the capability for porting fixed network numbers has been extended to mobile numbers. From a user's perspective, mobile number portability creates an ability to switch mobile network without the possible cost and inconvenience of a change of their telephone number. This is because, in the absence of number portability, a change of number when switching networks requires most users to notify people who contact them of the new number. In the case of business users, especially those who rely on a mobile phone as a primary method of communication, the effort and cost involved in notifying contacts of a new number may be quite substantial. From a regulator's perspective, mobile number portability is intended to produce certain effects on the mobile market. Fundamentally, it should prevent network operators from gaining market power by charging an extra price margin that corresponds to the cost of switching networks.

8. Conclusion

Though number of empirical papers grows quickly still there is enormous space for investigation. Up to my knowledge no research was done on the technical problems aroused after MNP implementation. And no empirical research was conducted so far on how

MNP changes the effect of other factors that affect evolution of market shares of competitors. So, there is some space for novelty and this thesis is aiming at this.

When the Cell phone culture started heating up in India roughly about a decade ago, the extent to which service providers went on to woo customers was incredible. The customers were literally pushed down to the lower most part of the pyramid.

Most people had to retain the mobile number they had because that had become their identity. In doing so, they were torn between the multitude of service plans that were all intended only to confuse the customer more and making him end up paying for stuff that he'll never ever use (because it was coupled & charged with a service that he direly needs). Like it or not, they'd to 'maintain' that mobile number.

Then came the 'dual sim-card' option in many phones – making the already foggy scenario even more sludgy. People ended up paying for 2 unfathomable service plans!! Now the wheel has ultimately taken the complete turn now and the customer is the King yet again with MNP.

On 20 Jan 2011, a new era dawned on the Indian Telecom industry with the launch of Mobile Number Portability (MNP). The option to retain a phone number with the freedom to change the Service Provider puts the customer at his rightful place - on top of the pyramid again.

9. References

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