Challenges in the payment mechanisms of public Wi-fi hotspots

"Competition is not among products, but among business models"

- (Fortune, 1998)

POLICY BRIEF

This policy brief attempt to highlight the challenges, and provide solutions or alternatives, related to the proposed payment mechanisms of public wi-fi hotspots. There major concerns that have been focused on to understand how wifi can have a wider public reach are : a) *affordability* for the end-user b) *security* of the payment gateway and the transactions occurring therein, c) *privacy* of the user/customer data to protect them from data-thefts, and/or misuse (Philip Chen and Zhang, 2014), d) *trust* enablement for the users, so they can adopt the services without concerns (Nilashi et al., 2015), e) *feasibility* of infrastructure deployment from both the ISPs and the vendor perspective, and f) *accessibility* from the end-user's side.

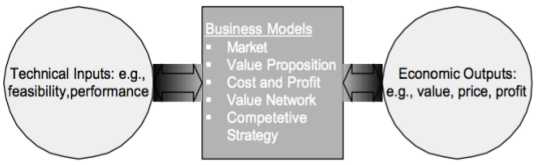
SUMMARY OF FINDINGS/ RECOMMENDATIONS

1. The key is to offer data services based on user's critical need and the type of content demanded.
2. User preferring high speed at the public hotspot could be charged and this user fee could be considered to go in making the hotspots viable. Sponsorship from companies benefiting from increase in internet use should be promoted. Revenue from advertisement should be used to make the hotspot viable.
3. Hotspot categories should be identifies based on the importance of the location from the user demand point of view.
4. More strategic locations may not need stimulus from the government, and may be left to market. The low-demand areas may need some kind of revenue sharing arrangement or subsidies in Opex.
5. The payment process should be seamless across ISPs, which requires a third party to manage the entire payment process. Arrangements similar to cellular roaming should be explored.
6. The Networking infrastructure (software and hardware) should be enabled with mechanisms (firewalls, encryption etc.) to prevent data theft or misuse.
7. Authentication involving ADHAR etc. may have to expose user data to a third party, increasing security and privacy risks.

THE RESEARCH

I INTRODUCTION

Individuals who have accesses and capability to use internet effectively can appropriate benefits of Internet. Adoption of Internet lies at the cross-roads of technology and society. Considering the Chesbrough (2000) framework the challenges are understood along the given pointers.



Source: Chesbrough et al, 2000:32

Figure 1: Business model led mediation between technical and social domain

II CONCERNS AROUND THE PAYMENT MECHANISIM

Challenges related to the payment systems can be categorized as:

- *Hotspot ownership:* ownership of target locations could always be challenging, since all the spots may not be equally attractive for the vendors, wishing to invest. While a part of this problem could be resolved by the market-mechanism (the best spots charging premiums), the Government in many places could be a stakeholder as well, especially in cases where it has control over strategic locations with greater demand. In order to sustain transparency, the record related to all such payments need to be stored by the Government. It might be a good idea to make a database of all the available hotspots, and open it for local/regional auctions, on a pre-specified date. The payment mechanism in this case, could be facilitated by having a secure payment gateway in place (*Rupay* for example), controlled by a third party. The same payment gateway could be part of the bigger payment gateway infrastructure, or be kept separated.
- *Networking and Equipment:* The network equipment installed by the vendors, must

have the necessary hardware and software requirements (firewalls, encrypting abilities) to ensure data privacy and protection. In some areas, the maintenance and security of these devices would need further evaluation to fix the accountability. Also, in cases continued poor data rate, or unavailability of the service, or violations of the SLAs, there needs to be provisions related refund of user money, or other forms of reparations.

- *Authentication and Security:* User authentication is one of the most challenging aspects in this case. Authentication can be done trough UIDAI based system for the Indian citizens and an OTP given to the customer on mobile through text message.
- *Billing and Roaming:* For the vendor, based on the data consumed, the ISP can charge a suitable price. The consumer may pay directly to the ISP, based on the data pack chose. A separate third-party can handle the billing services. *W*hen the user is authenticated every time he switches to a new ISP a separate OTP would need to be generated, hence a separate entity would be required for generating the OTP.
- *Customer Ownership:* Efforts needs to be maintained to integrate the mobile services being already subscribed by the consumer (2G/3G/4G), with the wi-fi hubs. However, this would need engagements between the ISPs and the TSPs, with agreements on several aspects, such as revenue sharing, billing provisioning etc.

II WHO PAYS FOR THE PUBLIC WIFI HOTSPOT

Adoption of mobile services took off only after introduction of the Calling Party Pay scheme, hence it is important to understand who really pays for the public wifi services, to ensure there is demand for the public wifi services. It is observed that Indian population is sensitive to pricing when demanding wifi services. Substantial part of the Indians population prefers low wifi speeds rather than to pay for the high wifi speed. Further there are parts of a wifi market that are unprofitable and underserved by commercial networks, and public wifi can fill that gap (this will rarely be the most efficient solution, compared to subsidizing extended broadband coverage, either on the demand or supply side). On the other hand, some parts of the broadband network can become congested at peak-load, and private providers may seek to off-load some of that data traffic onto wifi networks (Qiu et al 2013). This can be efficient because it reduces overinvestment in broadband peak-load capacity.

The provision of services by the public wifi hotspots to the end user could be free or paid by the end user. In South Korea free public wifi spots are common. Japan shows the evidence of both free and paid wifi hotspots.

The free service to the end user could be provided through sponsorships and advertisements or cross subsidized by a high speed user to a user preferring the low speed service.

Private companies that would benefit from increased Internet use, such as for example Google, Yahoo or Facebook could sponsor the public wifi hot spots. The logic is that 'free' wifi is a subsidy to internet use, thus leading to increased consumer demand. In a monopolistically competitive industry, this increases the economic rents that accrue to companies that sell goods that are complementary with increased internet use. Thus a PPP provision is a possibility.

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APPENDICES

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