

Response to Consultation Paper on USSD-based Mobile Banking Services for Financial Inclusion of Telecom Regulatory Authority of India.

New Delhi, the 20th September, 2013

For kind attention of Shri Manish Sinha, Advisor (F&EA) Advisor (F&EA), TRAI.
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From P. Abraham Paul. Trivandrum dated 27 September 2013.

Dear Sir,

Subject: TRAI consultation Paper on Mobile Banking Services for Financial Inclusion:

Link to attachment: Money through Mobile (mTm) for Inclusive Growth. <http://wp.me/p1ZsI2-ue>

Please see my response to the following questions in the Consultation paper.

Chapter-III

Issues for Consultation

It may please be noted that answers/comments to the issues given below should be supported with justification. The stakeholders may also comment on any other issues related to the use of Unstructured Supplementary Service Data (USSD) as a bearer for mobile banking services, along with all necessary details.

Q1: Do you agree that USSD is one of the most appropriate modes for mobile banking for financial inclusion? If not, which mode do you think is more appropriate? Please support your viewpoint with reasons.

A1: (P. Abraham Paul)

Yes I fully agree. As of now USSD is the most appropriate, perhaps USSD is the only appropriate bearer for Mobile Banking services for Financial Inclusion.

Reasons: Unstructured Supplementary Service Data (USSD) messaging.

- . **USSD is part of Telephony Signaling (CC7) that is used in Mobile**

Switching system and hence can readily inter work with all modern Telco systems Mobile as well as Fixed line.

- **USSD is 'real time' signaling and therefore, response is assured and delay in response time is negligible, unlike SMS using Store and Forward method of message interaction, not assured and can be delayed due to other factors.**
- **USSD mode of signaling makes it most suitable in quick disposal of payments in the malls and such crowded payment counters where even few seconds of response delay is critical. Same is true at POS end where quick settlement bills are vital.**
- **Gets confirmation for cross check immediately on screen and no need to search in incoming message folder which is cumbersome and time consuming.**
- **USSD is session oriented and ideal for continuous non-broken independent, both way channel messaging without affecting the normal Audio/Video messages already happening in the link.**
- **USSD is readily supported by basic 2G system and work across 3G and other NGN systems.**
- **All modern telephony and banking billing systems support USSD and billing of USSD based services.**
- **The mobile Switching Systems (SSP) readily support USSD IN-trigger and IN SCP & SMP supports processing, charging, billing etc.**
- **USSD based System architecture is identical to what is in use for current 'Prepaid' systems. Therefore, technology is readily available; only some applications and plug ins are to be incorporated.**
- **Dependant, powerful and efficient stand alone USSD servers are already being used by Banks, Credit card companies etc. and no difficulty is anticipated in implement it at that end.**

- The messaging between Mobile phone and Mobile Money management system use only numeral and *# keys as being done for messages such as *123# etc. in prepaid service.

It makes the call handling simple and easy for any one who is conversant of making a telephone calls but and not literate enough to do text messaging.

- Less prone to commit typing errors.
- As * # and 'numerals' are needed in the messaging, Mobile banking service can also be extended in a limited way to Land line phones and PCO's in places using credit card like service access. In places where telephone systems using CC7 signaling not available, service can still be delivered land line phones with the help of suitable IVRS interfaced with Mobile money management system at the other end.
- Mobile banking service can be availed using cheap low end mobile Phones, especially by the rural poor. Govt. has plans to give free phones to poor so that they can avail the facility. USSD consumes very little power hence most suitable for people in remote places even the phone is used only for money management.
- USSD being part of CCS7 signaling it is far more secure than Internet based systems.
- Being a data field in the signaling path, USSD can work in places where the network access is weak for voice calls. USSD being in the signaling layer it is not affected much due to N/W congestion and therefore, USSD commands go through in places where there is N/W congestion, such as in Malls & crowded places.

(Note: USSD feature was not available in earlier version of CDMA Mobile systems. Present position need to be ascertained.)

Therefore, my considered view is that as of now USSD is the only method that is suitable to inter work both with Telephony and IP network involved in the proposed Mobile banking for Inclusive Finance.

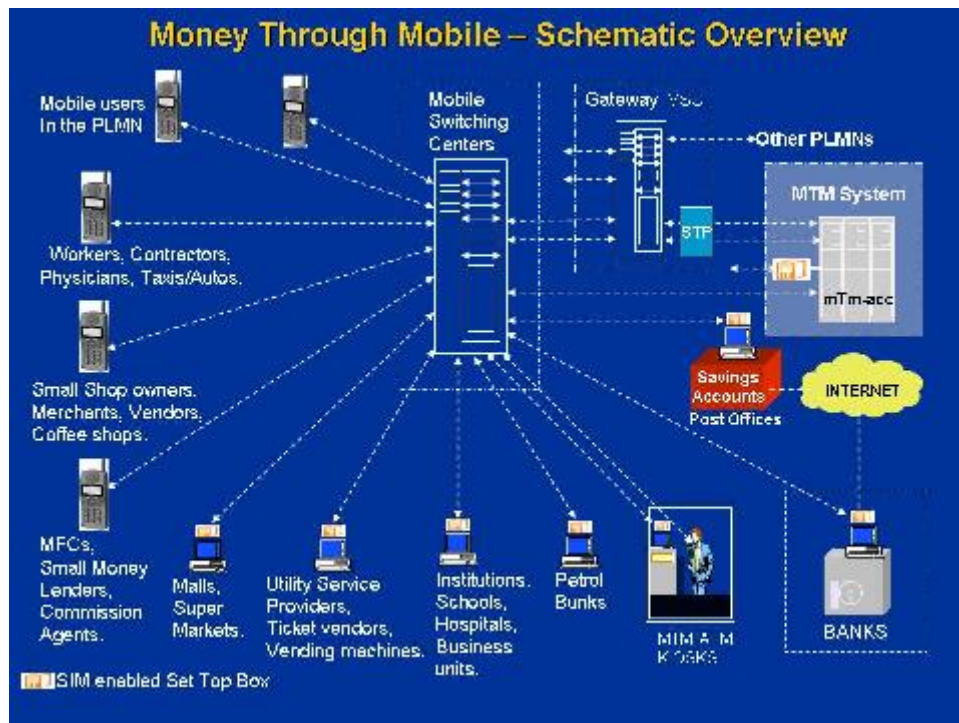
May be for certain information exchange other than billing function that is not time critical and need a message display record as in the case Rail ticket booking etc., SMS can also be deployed as a support system.

Q2: Do you agree that the Mobile Banking (Quality of Service) Regulations, 2012 should be amended for mandating every TSP, acting as bearer, to facilitate not only the banks but also the agents of banks acting as the aggregation platform providers to use SMS, USSD and IVR to provide banking services to its customers? Please support your viewpoint with reasons.

A2: (P. Abraham Paul)

(Note: This is topic I would like discuss in detail. Right from end of 1995 when I happened to implement the first IN based prepaid system in BPL Mobile Mumbai, I have experimented money management using mobile phone based Mobile Wallet and tested out Money Transfer between Mobiles. I have been propagating the idea since then. I would have implemented the system long back but for RBI clearance as huge amount of public money will be involved and regulatory process need to be in place.)

1. Please see my blog on this topic Money through Mobile (mTm) for Inclusive Growth. Link: <http://wp.me/p1ZsI2-ue>



Coming to the Q2, the whole issue shall be viewed keeping in mind the huge potential of Mobile Money.

If a modest amount Rs.10000 is transacted per phone per month, with billion Phones it amount to Rs.120,000 Billion per annum. Added to this, the amount involved in Governments plans of DBT in lieu of PDS and subsidies and other welfare payments in the anvil it will become much much more and growing; annually.

Mobile banking QOS: Another important aspect to be kept in mind in Mobile banking QOS, is that every TSP coming out with disparate services, products and methods will be confusing users as well as the market place, making it utmost necessary to have a Universal system in place.

I have dealt this in detail my thoughts on this are elaborated in my presentation on 'Money through Mobile (mTm) for Inclusive Growth' attached. I had given presentations on this to BSNL, and other forums many years back. I request you to please go through the relevant portion in my presentation. This is available in my blogs papaulsblog.wordpress.com in the link: <http://wp.me/p1ZsI2-ue> for any one to take and use. Many networks in other countries have already adapted it in one form or other.

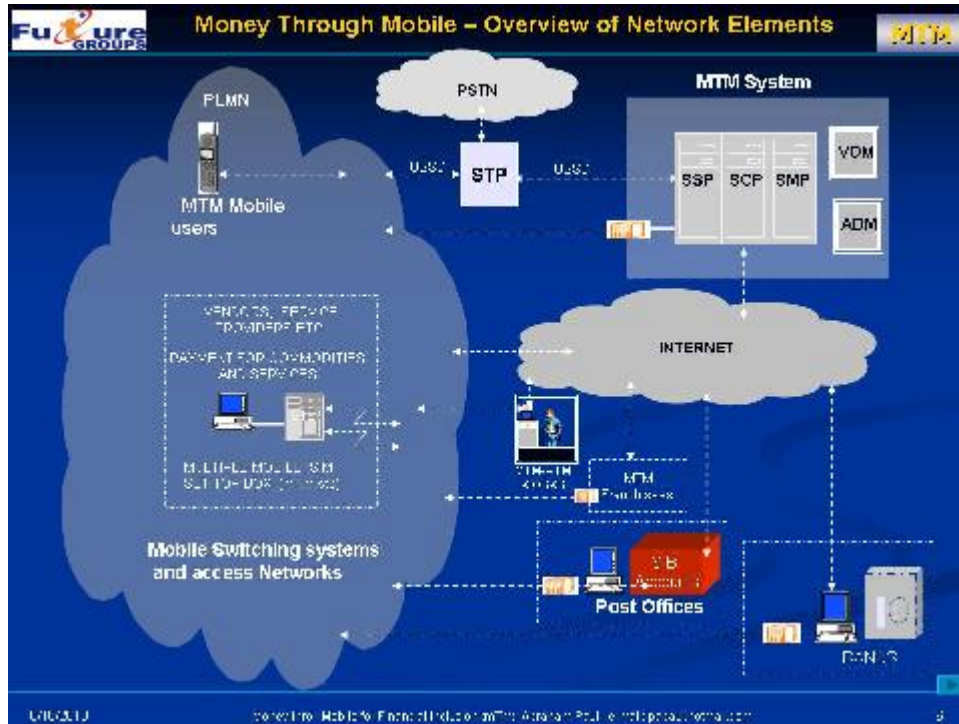
2. The discrete difference in my argument is that Mobile Money management using phones shall work as a Universal unbanked or exclusively banked system transparent to Telecom Service Providers as well as Banking Industry.

My considered view as answer to Q2 is therefore, that Mobile Money Management Money through Mobile, (mTm) an acronym coined by me, shall be Universal system and mandatory service and every TSP shall facilitate access to that Universal Money management system.

Reasons:

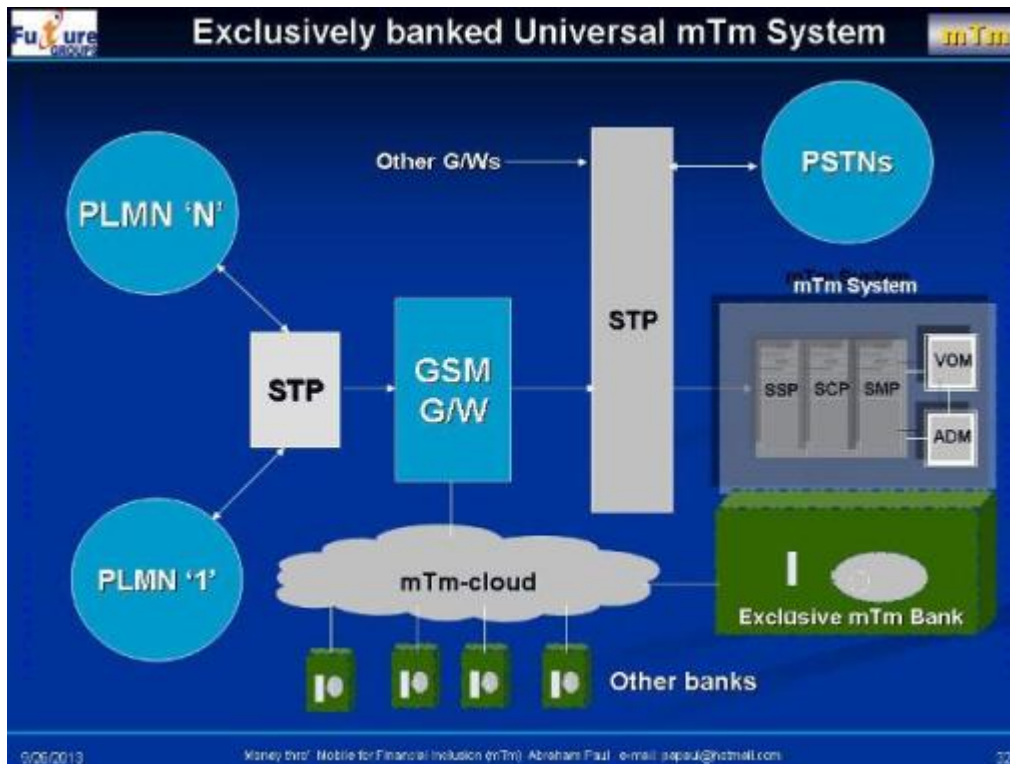
- Mobile e-commerce applications involve huge volume of low value transactions; therefore, cost of usage shall be proportionately low.
- Neither current Banking systems nor Micro Finance institutions have the capability to meet the needs of the common people especially in the lower economic strata across the country effectively and affordably.

- ❑ Therefore, Money through Mobile system need to be engineered and operated to make Banking & MF service available, accessible and affordable to mTm users of disparate Mobile Networks under well defined regulatory parameters.



- ❑ Idea of mTm-bank:
- ❑ Considering the potential of money involved in the transaction using over billion phones in the country, which is expected to be about Rs.120 Trillion which about seven times current union budget outlay. it is absolutely necessary to centrally mobilize, and regulate it.
- ❑ Over and above huge amount of money in the form of Direct Benefit Transfer related to various welfare programs and subsidy payments are in the anvil.
- ❑ Money through phone is being the most convenient and effective way of doing this mTm system is always a preferred choice.
- ❑ However, if Government consider that an Un-banked service can harm the economy in various ways, RBI should create a mTm-

bank exclusively to deal with all sorts of Money management using phones with necessary regulatory controls through National Payment Corporation of India.



This is different from SMS/USSD based Mobile banking over TSP access as well as on Internet.

The system can work transparently to TSP as well as banking industry which majority of the end users will find it comfortable to use an unbanked system.

However, since the type of money involved and also the confusions that can cause for the end user and the market place by disparate systems, products and services rolled out by umpteen TSPs and may be other third party service providers and Banks in the future, it will be necessary to have via media solution than give win-win solutions for the TSPs, Banking Industry, other stake holders in various POS / Vendors and most importantly the end users.

It can be done by creating and exclusive Bank (mTm-bank) exclusively for this purpose. Such an exclusive mTm-bank integrated with few mTm systems (IN based USSD supported systems as used for prepaid

service can be adapted) one in each region to start with, can take care of the entire money management using phones. It can be set up under aegis of NPCI under regulated by RBI. (Incidentally I planned, supplied and overseen implementation of BSNL's GSM & IN prepaid systems in the South region.)

mTm bank will integrate other banks and deal with their mTm transaction over mTm- internet- cloud. It is for RBI and banking industry to decide whether it is worth to integrate current form of 'Mobile banking' over Internet / SMS by banks with the proposed mTm-bank integrated mTm system bringing under one universal platform or leave it as it is as separate streams. Hope RBI and banking industry as a whole will give it a serious thought.

Moreover, there is no point in investing on the system by every TSP. Left to TSPs, they will be compelled to operate only in revenue earning areas and services may not be available, accessible and affordable to common man at rural and remote places. The onus of the decision to go for a Universal system instead of large number of disintegrated systems is with the TSPs.

I would request you to please have a look in my presentation where in I have dealt these points in great detail.

Q3: Do you agree that in case of USSD transactions for mobile banking, the TSPs should collect charges from their subscribers as they do in the case of SMS based and Application (App) based mobile banking? Please support your viewpoint with reasons.

A3: (p. Abraham Paul) Tariff issues.

The basic fundamental in such Micro money management system is that cost of usage to end users shall be negligible or minimum. One should be able to pay as low as Rs 0.50 (fifty paise) using phone with no additional cost of usage or service charge for that.

It is possible to do it by compensating the TSPs from the revenue generated by other features and effectively utilizing huge real cash accumulated in trillions of rupees with the Service provider.

Moreover, TSPs need to be compensated to make even for additional CAPEX & OPEX in providing access to billion users to Universal MTM systems with suitable ROI plus profit.

TRAI/RBI can think of charging in lines with NEFT and RTGS for pure money transfers between Mobiles involving other banks..

The POS owners, Vendors and others delivering services can be charged a one time charge as license and share of revenue proportionate to quantum of transactions on monthly or annual basis.

The system has great potential to generate sufficient revenue, for every stake holder to have their right share. Please see the slides related to Business Part 'Business part' in my presentation attached in the link : <http://wp.me/p1ZsI2-ue>

Q4: Do you agree that the records for USSD transactions must be generated by the TSPs to provide an audit trail for amounts deducted from prepaid subscribers and bills raised to postpaid subscribers? Please support your viewpoint with reasons.

A4: (P. Abraham Paul)

Yes. Considering the huge amount of public money involved, it is necessary to regulate and monitor the transactions.

With my proposal of an exclusive bank integrated universal mTm system records and statistics of every mobile money transaction will be available and can be used against non collection of service tax, and different forms of fraudulent money deals that can be used for prevention and penal actions.

This can be done centrally in the universal mTm system integrated with mTm bank as charging for all forms of mTm usage is done there.

Post paid or Prepaid or both?

The fundamental question is whether the system shall work on Post paid mode, prepaid mode or both. My considered view is mTm as envisage by me shall work on pre paid mode as billing at TSP end and at mTm service provider end, chasing payments and defaulter of a billion users is going to be impractical.

mTm user get money credited in advance in their mTm account, either by themselves or by their employers, Govt or by transferring from their normal bank accounts and use it use it for their day to day needs using phones. mTm ATM can be used to do hard cash transaction, can get mTm credits in lieu of hard cash through mTm SP franchisees or authorize agents.

To corporate customers and other such reliable end users over draft can be allowed by giving mTm SP allocating money into their mTm account that can be adjusted post paid basis as in the case of credit cards.

There are innumerable possibilities. All these depends on the decision of TRAI/ RBI that the entire system can work transparent or TSPs and normal banking Industry as proposed by me or not.

Q5: Would it be appropriate to fix a ceiling of Rs. 1.50 per USSD session for mobile banking? Please support your viewpoint with reasons.

A5: (P.Abraham Paul)

Part of the answer for this question is dealt in the answers to Q4. Details of Tariff definition, Charging and mode charging etc. are described in detail in the slides related to 'Business part' my presentation.

My business philosophy from the beginning is that success of any business lies in the ability to build volume; volume of customers, volume of usage etc. I objected tooth and nail in 1995 on Rs.16/-per minute mobile charging and that too also for incoming calls and additional peak time charges etc. aiming only at the creamy layer for business to grow. No one agreed but look what happened later as usage become affordable to common man.

My view therefore, is that for normal money spend on purchases, payment to various Point of Service and Point of sales shall be without cost to user except Govt. stipulated tax and duties as applicable that are included in the invoices.

For all money transfers into the user account and out from the user account to other user accounts involving other banks can be charged according banking industry rules currently in vogue like NEFT, RTGS etc.

Money both in physical form and virtual has to come into the account and go out from the account and for every such transaction can be charged on a percentage basis with fixed upper and lower limits.

TSPs get over all revenue share proportional to the volume of transactions everything aggregated by the mTm-bank. Charges for all inter bank dealings involving mTm transactions shall also be charged accordingly.

TSPs can charge normal installation and operation charges for all mTm POS, various venders, Micro Finance companies etc, for their connectivity.

It is for facilitating the above methods of charging I have proposed that mTm shall be on prepaid mode of working. There is no need to

generate any bills at TPS level or mTm bank level other account statements, balance statements and response for on line inquiries.

Salient features of charging methods suggested by me.

Future Groups **mTm - The Business Part** **mTm**

Business Scope of mTm Service Provider.

Potential of mTm as a business.
 As seen earlier, there will be billion phones in India soon.
 With a minimum monthly average of Rs. 10000/- transaction per phone, per month the annual business will be a mind boggling sum of Rs. 120,000 billion.

Most transactions being virtual e-money transfers between mTm-accounts within the mTm system, considerable portion of real money remain with mTm Service Provider.

The surplus liquidity available with mTm Service provider could be deployed profitably for earning considerable revenue:-

- By depositing or lending to banks or to other finance institutions to make it grow.
- mTm service provider can also venture in other legitimate 'Banking Products' and money instruments within regulatory parameters to earn revenue.
- While mTm account holders are given nominal interest for their balance in credit, mTm SP can lend it back to its customers as personal loans at normal lending rate.
- Trust worthy mTm account holders (mTm Customers) can be allowed limited overspent/overdraw, repayable with interest, as in Credit Card business.

9/27/2013 Money thro' Mobile for Financial Inclusion (mTm) Abraham Paul e-mail: papaul@hotmail.com 69

Future Groups **mTm - The Business Part. Revenue generation.** **mTm**

In addition to the revenue potential describe above, Other sources of revenue shall be from the following:-

- **Revenue from franchisee and ancillary businesses:**
 - Authorized mTm franchisees can be charged a fixed License fee and periodic fees as Service charge.
 - The mTm partners at Point of Service, and Point of Sales can be charged a fixed License fee and periodic charges based on revenue share model based on the amount transacted.
 - Certain revenue share arrangements can be done between mTm SP and various Vendors and vending machine operators.
 - Revenue share arrangements can be done between mTm SP and various Micro Finance Companies using mTm service.
 - mTm SP can charge a small service charge on various DBT amounts covered under Government subsidies and welfare Programs dispersed using mTm Service either payable by Government or charged to users.

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Cost to user for of usage of personal usage of mTm service shall be minimum. Accordingly a consolidated charging method instead of spot charging is suggested.

There shall be no limitation of monetary value on the lower side. It shall be possible to make payments as low as Re. 0.50 ie 50 paise, as single payment without usage charge. Cannot justify any service charge for such low value transaction.

Users can be categorized and upper limitation of payment amount can be fixed.

There shall be no direct usage charge for payment in shops, malls Taxi/Auto payments, Road tolls, at various vending machines.

There can be charges for money transfer one mTm user to other on a minimum amount basis as percentage basis and across the networks.

However, where other banks are involved, there can be charges for money transfer one mTm user to their bank a/c and from Bank a/c to their mTm a/c say a flat charge for each transaction of Rs. 5/- as being done for NEFT & RTGS with specified upper limit.

mTm account number, mTm chip cards and Annual fee.

Every mTm user account will have a unique a/c number.

Every mTm user is provided with a mTm chip card with a/c number.

mTm user can use this in mTm – ATM systems for cash transactions.

mTm user can use this in mTm – ATM systems for cash transactions.

mTm user can do all business transaction with mTm franchisees and authorized agents using mTm card.

This facilitate mTm user to avail mTm facility without using his phone. This enable people with no phones also to avail mTm facility.

Annual fee for mTm Card.

Every mTm user will be charged an annual fee of Rs. 120/- payable in advance at the time of registration and annually thereafter.

There will be an additional Govt. service tax as per rates applicable chargeable per card on usage fee.

Future GROUPS **mTm - The Business Part. Usage fee** **mTm**

Usage fee.

Every mTm user will be charged usage fee on monthly basis.

The usage charge will be a uniform 0.10% of the total money transacted in his mTm account during the month charged and debited to his mTm account at the end the month.

There will be no additional service tax chargeable to user on usage fee.

Mode of charging

Charging of Annual fee and monthly usage fee will be autonomously done by the mTm system and debited in users mTm account in mTm bank.

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Future GROUPS **Revenue share between mTm SP and Telcos** **mTm**

For the reasons mentioned above there shall be no usage charge per access for mTm customers from Telecom SP.

TSPs revenue for providing mTm service access, shall be on suitable 'revenue share basis' on total accrued revenue from all sources; proportionate to number of successful access attempts on mTm system payable by mTm service provider.

TSPs can earn revenue in the normal form of charging done from mTm users, Franchisee, Vendors, and POS. for provision of connectivity and usage charges except mTm for access calls which is shared by mTm SP.

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Please my presentation attached or in the link <http://wp.me/p1ZsI2-ue>

Q6: In case your response to Q5 is in the negative, please suggest an alternative

methodology to fix a ceiling tariff for USSD session for mobile banking. You may also support your viewpoint with a fully developed model with associated assumptions, if any.

A6: (P. Abraham Paul)

As can be seen in my response to Q5 is that there is enough and more money in this for all stake holders to have their appropriate share.

As explained in detail in my presentation and other papers attached cost to the end users shall be kept low. There are various other ways and means to generate considerable revenue.

The prime point we need to keep in mind is that a major portion of money management done by the Money management service provider being in virtual mode, most of the money the end users pay into the system in hard cash remain with system service provider, and this huge money can be profitably deployed in various money instruments to grow.

As most functions of the system works autonomously there can be considerable savings in operation costs. Also TSPs save on foreign exchange and other CAPEX because the Universal mTm system take care of the operational functions, TPD need to provide access through their systems and network.

As the proposed model is on Prepaid basis, there is no need to do billing and chasing payments and no revenue loss due to defaults.

I have dealt all these and how system impact on Poverty eradication and the most talked Financial Inclusion of people in the lower social economic strata across the country.

Forget everything else but the caption of this paper, and the theme is about 'Financial Inclusion' and that need to be the prime concern.

Make the system, easy to understand, simple to use, available, accessible and affordable and it will prosper on itself. After all the slogan is customer is the King here we have 72% of target Customer are either poor or middle class and let us make them Kings.

Q7: Is there any other relevant issue which should be considered in the present consultation on the use of USSD as a bearer for mobile banking services?

A7: (P. Abraham Paul) Life cycle of software releases of Telecom systems and ICN becoming being too short, it is necessary to assure

that USSD upgrades or absence or major changes in it in future generation system continue to be available and work with various types of Telecom systems and in its new releases and technology changes that can happen in the future. This is another argument that a Universal system is preferable as it will not be affected by technology changes happening in otherwise large number of TSP integrated systems.

Universality of mTm system: As mentioned, it is possible to provide mTm service to fixed lines, and in remote areas using small Telecom systems linked to universal mTm system using satellite connectivity. The services can be mostly with IVRS support on the mTm system end and therefore USSD capability in those links may not be of great concern.

Earlier version of CDMA GSM systems did not have USSD feature though it may be so in later releases. Still the software release versions in every TPS system and USSD servers in the Banking systems need to be compatible to enable Universal working of the Mobile money management service.

Providing access to and from foreign countries need to be examined on technical level as well as foreign exchange regulation aspects. However, money lenders may find it a convenient method for express money transfers. It may lead to some amount of money laundering.

As mentioned earlier the main advantage with my proposal of an exclusive bank integrated universal mTm system is that; records and statistics of every mobile money transaction will be available and can be used against non collection of service tax, and different forms of fraudulent money deals that can be used for prevention and penal actions.

There is a myth that Mobile money management transparent to banking system can be disruptive to banking industry. The fact is just the other way around. The entire money dealt with will go through the banking system by POS and other stake holders and payments to TSPs etc. that will compliment and supplement business of banking industry.

Conclusion: I hope my response to this Consultancy paper will be of some use.

I have over 55 years experience in Telecom and was involved in the implementation of many new technologies in this country while working in DOT Technology wing for 38 years, and later with GSM Service provider implementin one of the earliest GSM systems with all VAS and peripheral systems in 1995, first to put through CCS & links between GSM and PSTN in '95, first to test out and put through Roaming in the country, first IN based pre-paid system in India in 1996.

I have written ma articles on various contemporary topics on telecom and Money through Mobile is one of my favorite subjects. I have been writing to all concerned about this for many years.

I will be only too glad to be of some help if any one need it.

My articles are available in the web for any one to take it and use. I have no business interest in any manner.

Thanking you, yours faithfully,

P. Abraham Paul.

Ex: M.D, Future Communication Networks, FCOMNET, India & UAE / Vice President (T.S) SPCNL SIEMENS ICN Germany / Director (SC) SIEMENS ICN RHQ UAE / G. M & SMT TBG, BPL Mobile, India / TES (I) D.O.T India.

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PS: An acknowledgment will be highly appreciated.

My blogs related to this topic:

1. Impact of transition from Voice to Data and Multimedia. <http://wp.me/p1ZsI2-23>
2. Universal un-banked or exclusively banked Money Management by phone. <http://wp.me/p1ZsI2-4g>
3. Phones can save fuel, time and efforts, space and reduce cost of printing money. <http://wp.me/p1ZsI2-8j>

4. Universal Money Management by Phones for Financial inclusion, mCommerce and mGovernance. <http://wp.me/p1ZsI2-ht>
5. Universal Money Management by Phone. <http://wp.me/p1ZsI2-p9>
6. It is suicidal for Telcos to allow banking industry hijack pay by phone VAS. <http://wp.me/p1ZsI2-d>
7. Indian Telecom Industry missed the bus in Pay by Phone VAS. <http://wp.me/p1ZsI2-30>
8. Money through Mobile (mTm) for Inclusive Growth. <http://wp.me/p1ZsI2-ue>