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Effect of IT and Mobile Infrastructures on the Online Business in Ethiopia: Trends, Opportunities and Issues

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***Abstract*:** *The internet is penetrating the Ethiopia at the rate of 1.90% or more, and the current scenario is, less than 1% population is using internet here, but the mobile technology is penetrating here at the rate of 5% per year and more than 30% population is using mobile here in Ethiopia. The world is focusing on African countries for their business based on IT enabled services and the Mobile based services, as today world is growing rapidly with the help and support of these services and here there is a great scope to incorporate of online business like online shopping, e-business, e-commerce, m-commerce. Etc. This paper is an attempt to study about all current possible strength and the weakness available in the infrastructure of the mobile and IT networks at Ethiopia and how it can be defined and solved to promote the Online Businesses for online shopping, e-business, e-commerce, m-commerce etc in Ethiopia.*

I. Introduction

The world greatest Economist were forecasted that the world's top six fasted growing countries are in sub-Sahara African countries. There rapid booming sectors are infrastructures and IT services like Mobile Technology and the web based services. As per the reports, the top 50 countries with reference to the economy will be potential countries from African reasons. The African Development Bank are also expecting that there will be a makeable increase in the per capita income of the people across the African countries and consumer paying capacity by within next 15 years, Resulting many MNC's are trying to get a chance to develop IT market in this continent and many of them had already arrived here with great hope and doing their business in this region.

The world is focusing on these African countries for their business for the IT enabled services and the Mobile based services, as today world is growing rapidly with the help and support of these services and here there is a great scope to incorporate these features.

Electronic Commerce is still in its infancy in Ethiopia and is not popular here by the internet users. Most of the people here do not have credit cards and the Internet connections are slow and unreliable; however, Internet service is improving, and hence there is a great scope available for the e-business, e-commerce and m-commerce in near future.

II. Study about the Internet Users in Ethiopia:

The Ethiopia is one of the high potential country, which may go for Internet and mobile penetration in coming days, and it is expected to raise the number of internet user exponentially, this is really very good news, for the online business, e-business and e-commerce and m-commerce in this country.

Study of the Internet users in the African Regions:

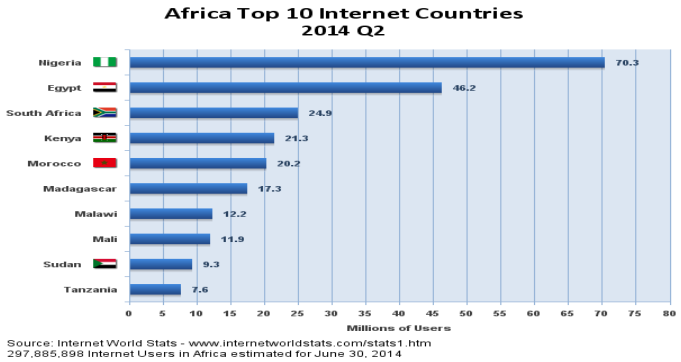

Figure-1

Source: http://www.internetworldstats.com/stats1.htm

As per the statistics, The Ethiopia is not under top 10 internet users country in African region, now if we go in details with the statistics, we will see that it is the 16th countries among all the countries in the African region, with an internet penetration percentage of 1.9% and the current internet users are approx 0.8% of the total population.

	AFRICA 2014 POPULATION AND INTERNET USERS STATISTICS FOR 2013 Q4						
		Population	Internet Users	Internet Users	Penetration (% Population)	Internet	Facebook
Sl. No.	AFRICA	(2014 Est.)	31-Dec-00	31-Dec-13		% Africa	31-Dec-12
1	Nigeria	177,155,754	200,000	**67,319,186**	38.00%	28.00%	6,630,200
2	Egypt	86,895,099	450,000	**43,065,211**	49.60%	17.90%	12,173,540
3	South Africa	48,375,645	2,400,000	**23,655,690**	48.90%	9.90%	6,269,600
4	Kenya	45,010,056	200,000	**21,273,738**	47.30%	8.90%	2,045,900
5	Morocco	32,987,206	100,000	**18,472,835**	56.00%	7.70%	5,091,760
6	Sudan	35,482,233	30,000	**8,054,467**	22.70%	3.40%	n/a
7	Tanzania	49,639,138	115,000	**6,949,479**	14.00%	2.90%	705,460
8	Algeria	38,813,722	50,000	**6,404,264**	16.50%	2.70%	4,111,320
9	Uganda	35,918,915	40,000	**5,818,864**	16.20%	2.40%	562,240
10	Tunisia	10,937,521	100,000	**4,790,634**	43.80%	2.00%	3,328,300
11	Ghana	25,758,108	30,000	**4,378,878**	17.00%	1.80%	1,630,420
12	Angola	19,088,106	30,000	**3,645,828**	19.10%	1.50%	645,460
13	Senegal	13,635,927	40,000	**2,849,909**	20.90%	1.20%	675,820
14	Zimbabwe	13,771,721	50,000	**2,547,768**	18.50%	1.10%	n/a
15	Zambia	14,638,505	20,000	**2,254,329**	15.40%	0.90%	327,600
16	Ethiopia	96,633,458	10,000	**1,836,035**	1.90%	0.80%	902,440

Figure-2, Source: http://www.internetworldstats.com/stats1.htm

Whereas the total internet penetration of the African region is almost 26.5% and the internet users are approx 9.8% of the total African population.

Internet Usage Statistics for Africa

(Africa Internet Usage and 2014 Population Stats)

INTERNET USERS AND POPULATION STATISTICS FOR AFRICA						
AFRICA REGION	Population (2014 Est.)	Pop. % of World	Internet Users, 30-Jun-2014	Penetration (% Population)	Internet % Users	Facebook 31-Dec-2012
Total for Africa	1,125,721,038	15.7 %	297,885,898	26.5 %	9.8 %	51,612,460
Rest of World	6,056,685,527	84.3 %	2,737,863,442	45.2 %	90.2 %	924,331,500
WORLD TOTAL	7,182,406,565	100.0 %	3,035,749,340	42.3 %	100.0 %	975,943,960

Figure-3

Source: http://www.internetworldstats.com/stats1.htm

It shows that here there is a great scope of the Internet Penetration and with this scope of internet penetration the scope of the IT enabled services will also be in demand in near future.

III. Study about the Mobile users in Ethiopia:

As per the statics available, Ethiopia is the 11th country of the African region in terms of mobile users and it is growing at the rate of 5% per annum, and it is expected to have approx 30 million mobile users are in this country. The mobile services are gearing up in Ethiopia at a better rate than the Internet Penetration percentage in this country, but the fact is, we may club the mobile users as well as the Internet uses for our study, as here the internet can be accessed on the mobile devices and it is being very popular way of accessing the Internet in this country as any other developing countries.

Sl. No.	Region	Country	2011	2012	2013
1	Africa	Nigeria	94908699	112408197	126880410
2	Africa	Egypt	84926206	96605104	99601080
3	Africa	South Africa	57703574	65382673	70433736
4	Africa	Morocco	36554000	39016230	42439617
5	Africa	Algeria	35615926	36393536	39517045
6	Africa	Kenya	28080771	30731754	31309017
7	Africa	Congo, Democra	16491792	22110672	30277315
8	Africa	Ghana	20752828	25055031	27679937
9	Africa	Sudan	24193763	27478000	27624844
10	Africa	Tanzania	23457682	26888405	27160635
11	Africa	Ethiopia	13893095	18805000	24108406
12	Africa	Mali	10819784	14604653	19744308
13	Africa	Uganda	16336522	17486146	19467938

Total of mobile connections registered by mobile operators in a country. Range: 2011 – 2013, Source: GSMA Intelligence

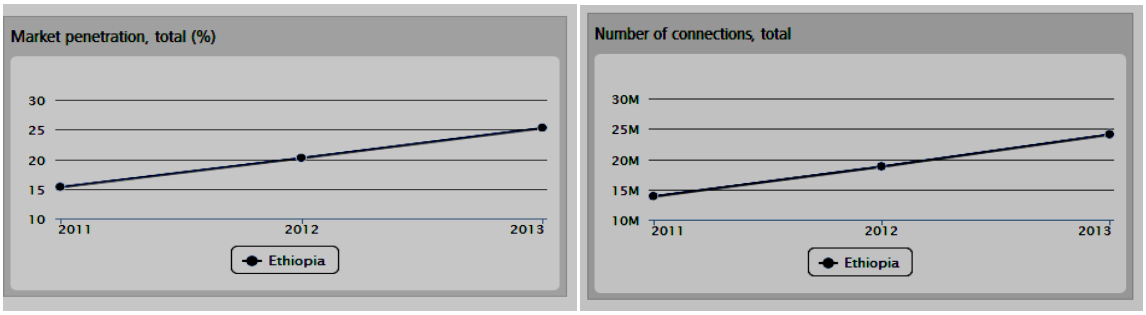

Figure-4

Total of mobile connections registered by mobile operators in a country.
Range: 2011 – 2013, Source: GSMA Intelligence

IV. Current policy for the Internet Banking and mobile Banking in Ethiopia:

For all the current policy of the Internet and mobile banking, we have taken the policy and its implementation of these facility available in the Commercial Bank of Ethiopia, as it is the pioneer and leading banking sector of the Ethiopia.

4.1 Internet Banking

Internet Banking in Ethiopia may facilitate many transactions comfortably form your home or office, using Internet Banking following services can be done:

- Viewing account balances and transactions.
- Fund transfers between customer's own current accounts and savings accounts.
- Third parties payments, including bill payments to predefined customers within Ethiopia.
- Viewing and downloading Current and Saving account statements.
- Stop Payments request on cheques, etc.

4.2 Mobile Banking:

Mobile Apps using Android phone gives an access to account on the Android device. Now, banking tasks stated as follows can be performed from the palm of the client's hand very easily.

- Real time Account Balance
- Account Statement
- Funds Transfer between own account
- Pay to beneficiaries
- Manage Beneficiary(Add, List and Delete beneficiaries)
- Exchange Rate
- Local Money Transfer using Mobile number
- Request for cheque Book
- ATM Locator

4.3 Issues related to the Internet and Mobile Banking for the Online Shopping:

As per the unofficial records, very few customers are using Internet banking here in Ethiopia, due to the following reasons:

- The less number of Internet users in the country.
- Less penetration percentage in the country.
- Lack of awareness program towards the Internet banking.
- Lack of mobile version site of CBE.
- Lack of Internet infrastructure to the remote areas, and
- The most important is to use Internet banking one has to register his/her device.

The biggest drawback among the above is the point number 6, that is, if you wish to use Internet banking and its related facilities then first of all you are supposed to register the device to which you are accessing the Internet, which leads to the restriction of the uses from the Internet banking either form the home or form the office, which is a great limitation in our view.

- ✓ A customer may not have a personal Internet device.
- ✓ The device may be cloned and there may be a chance of fraudulent activities.
- ✓ His/her office may not permit him/her for the financial transactions.
- ✓ The office may not give him the details of the Internet connection for the personal use.
- ✓ The office may put some, DLP devices and his confidential data may lose in the public network of the office LAN.
- ✓ If you lost your device, you will have to do the entire activity of Internet banking once again.
- ✓ The same Internet device may not work to the other countries and hence a customer may not be in a position to use Internet banking, outside the country.
- ✓ Cost of Internet is very high in Ethiopia.

V. Online Business/shopping in Ethiopia and its scope:

Online Business, or e-business, is the application of ICT that is being supported of all the activities for the business. This will constitutes the exchange of products and services between businesses, groups and individuals and can be seen as one of the essential activities of any business. Electronic commerce focuses on the use of ICT to enable the external activities and relationships of the business with individuals, groups and other businesses or e business refers to business with help of internet i.e. doing business with the help of internet.

Following are the few of the leading web sites which are trying their level best to do and promote e-business in Ethiopia:

- www.mereb.co.et
- www.sheger.net
- et.kaymu.com
- www.gulit.com
- http://ethiopian-online-globalshopping.com
- http://www.ethiopianonlineshopping.com/
- http://www.ethiosouq.com/
- http://www.virtualtourist.com
- http://yabeto.com
- http://designerground.com
- http://www.ezega.com
- http://www.ethiopianclothing.net/

VI. The current model of electronic payments in Ethiopia:

Current Business Model for the money transaction at the business premises supported by the electronic money transfer using swipe machine, as above below in the figure, but the model fails, if the client has different bank's debit card and the swipe machine installed is of another banks. The problem lies here that the internet banking, mobile banking or even e-banking in Ethiopian banks are only liable to pay bill or any payments, only to the predefined customers, even if, it is third party payments. Hence the Clients bank may not be the same as of the merchant's bank and of course for the online payments, which is real time, it is impossible to make it predefine list of customer for the payments.

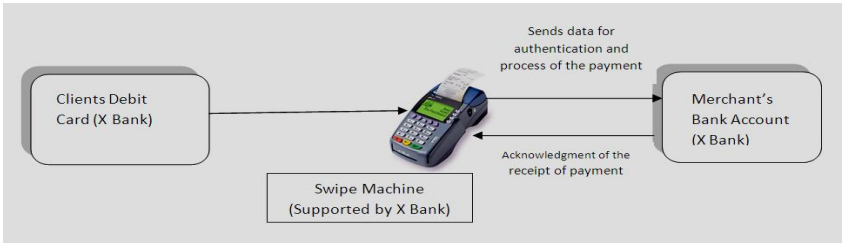

Figure-5 Current Scenario of the real time payments in Ethiopia

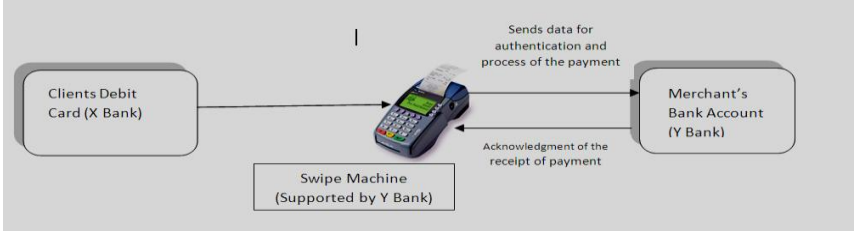

Figure-6 Problem in the current payment system

VII. The proposed model of the e-business:

The proposed model using the payment gateway is having following interfaces:

i) Client interface
ii) Merchants Interface
iii) Payment Gateway Interface
iv) Client's Bank Interface
v) Merchant's Bank Interface

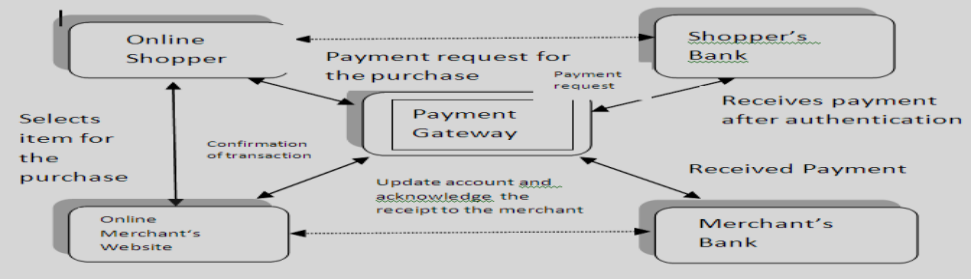

Figure-7 Proposed model for the e-business

7.1 Flow Diagram for the proposed system:

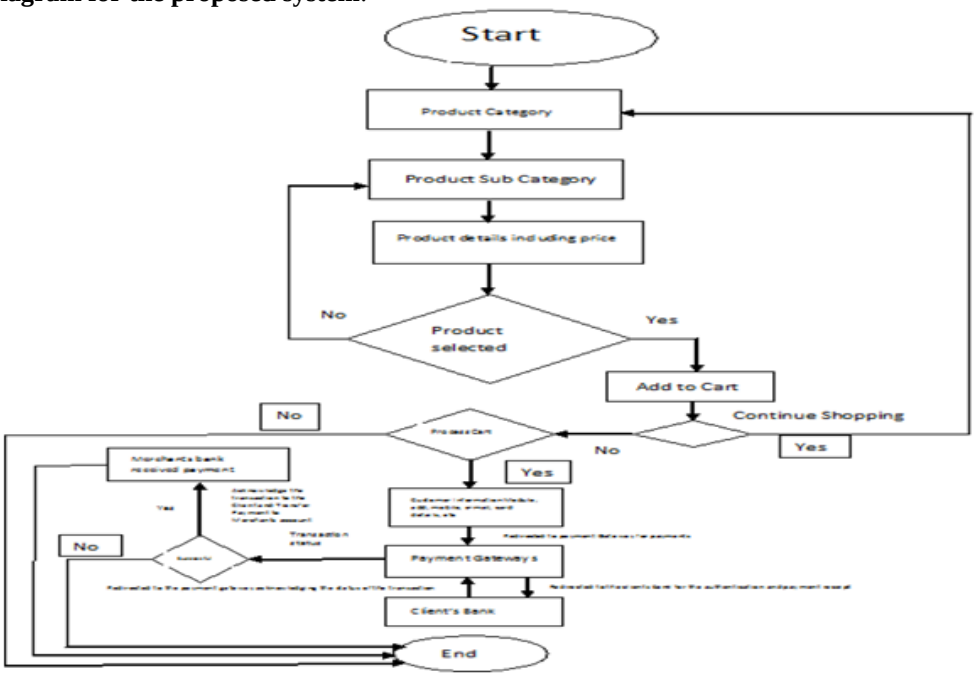

Figure-8 Flow Diagram of the proposed model

7.2 Concern for payments using Payment Gateway:

Followings are the points of consideration for the clients as well as the merchant's for the payments or the receipts of the payments:

- Privacy: It is necessary to assure privacy in the payments like bank accounts.
- Naming: There should be a way of identifying the customer's bank accounts and the merchant bank accounts.
- Security: In gateways security should provide to protect data of transactions.
- Integrity: Data should be difficult to change.
- Confirmation: When transaction took place customer must have notification and merchant must have confirmation
- Confidentiality: Any third parties should not be able to access or view such payments.
- Settlement: Separate banking institutions must have a way of settling their account.

VIII. Proposed model for online recharge of the Mobile devices:

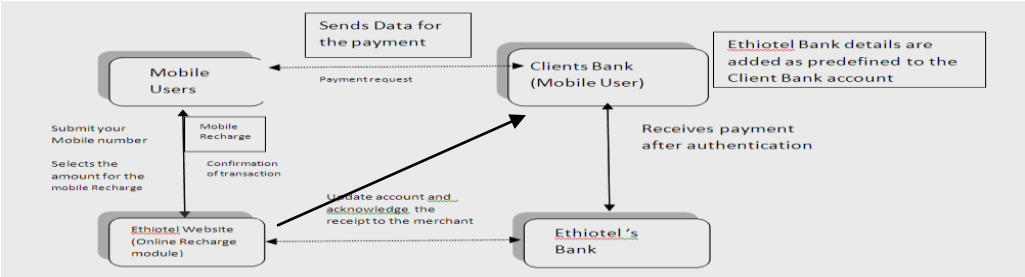

Figure-9 Proposed model for the online mobile recharge using current system

a. Flow Diagram of the Proposed System:

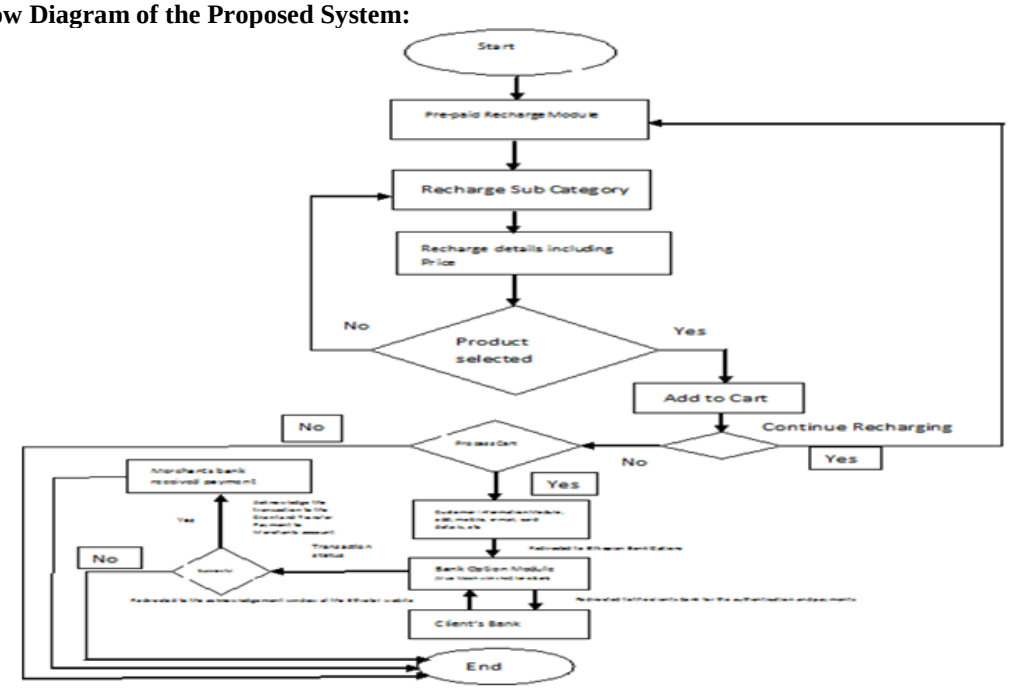

Figure-10 Flow Diagram for the proposed model for the online mobile recharge using current system

b. Online Mobile Recharge Using M-Birr:

On 1 January 2013, financial institution the National Bank of Ethiopia (NBE) issued a directive that allows transaction-based mobile banking, Paper receipts will be required for every transaction and the transfer limit is ETB 6000.

The way of mobile recharge in Ethiopia, is with the help of stretchable paper recharge coupons or by borrowing recharge from any near and dear, but there is no way to recharge in online or any other different means, as per the internet sources now the Ethiotel is launching a new way of flexi recharging mode, in which a agent is being provided certain amount's recharging facility to the clients. The above model is a proposed model for the online recharge of the client's mobile in any time; it does not require any limitation of time, space and unavailability of the recharge coupon or even the failure of the ethiotel network or the USSD code for the recharge.

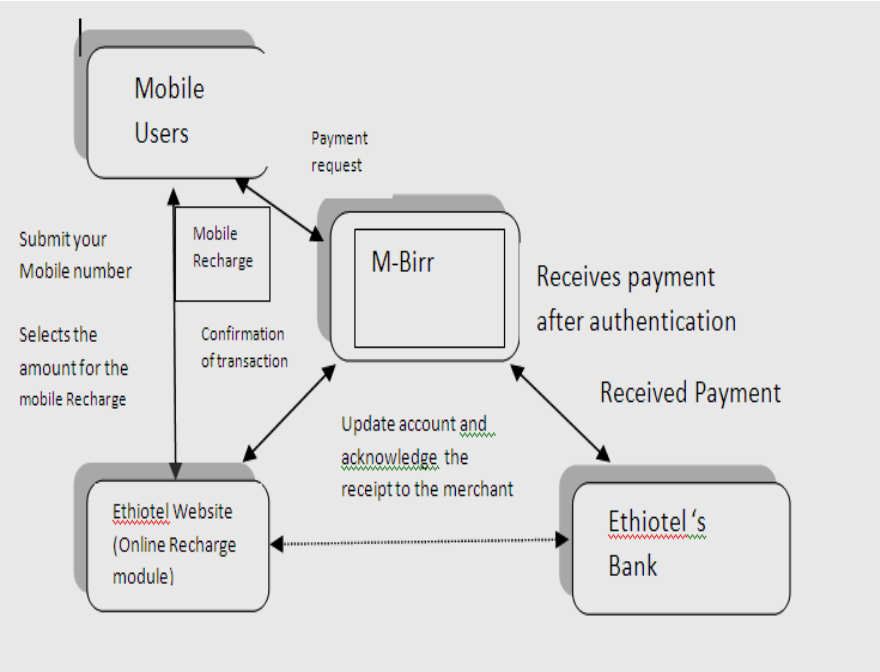

Figure-11 Proposed model for the mobile recharge using M-Birr

c. **Flow Diagram of the Proposed Model:**

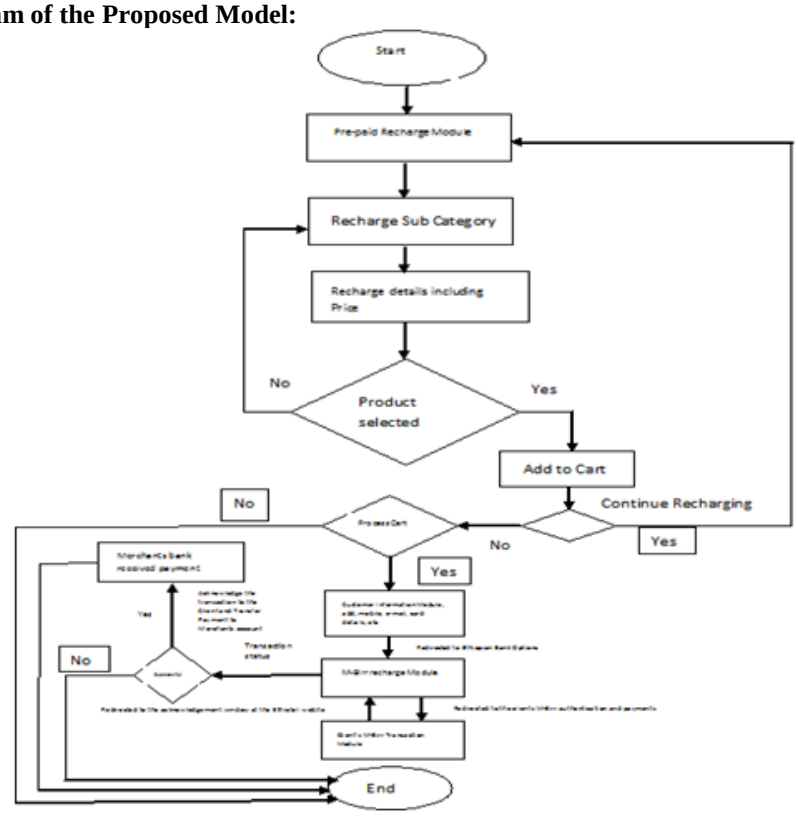

Figure-11 Flow Diagram for the proposed model for the mobile recharge using M-Birr

IX. Issues

i) The biggest problem with the transaction model of the e-commerce or e-business that it is a real time transaction model and it does not required any predefined liked payment model, as prescribed by the leading banks Internet Banking and Mobile Banking in Ethiopia.

ii) This problem is also due to the lack of Payment Gateway available in this country, although there is a significant progress in this direction for the online payment through M-Birr, but it is having again limitation that through it a client may process his/her transaction upto ETB 6000.
iii) The online business model in this country is really at the very infant stage but the promotes and site owners are trying their level best to come up with some innovative ideas, like in absence of the proper payment model, they are also promoting their sales with the post payment options.
iv) The greatest problem is the clients are being not provided with the credit cards, which is one of the major drawbacks of the promotion of online shopping in this country.
v) The online shopping is not growing here with the speed and penetration level of the Internet and Mobile in the population.
vi) No financial networks that links different banks
vii) No legal and regulatory framework for e-commerce and e-payment
viii) Inadequate telecommunication infrastructure
ix) Low level of credit card access.
x) Cyber threats and its related consequences, as there is no concrete policy is available here to come up with the situation.

X. Conclusions

Ethiopia is growing fast, but its mobile and electronic payments infrastructure is weak ,the most important point is, due to the lack of payment gateway here the online or e-business is not gearing up, although the speed of growth of the internet users and the mobile users are at very good here. The current situation may support the online mobile recharge as proposed in this paper effectively, but the need of the payment gateway is highly required for the effective support to the e-business, e-commerce and m-commerce in Ethiopia.

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