Proposed E-Services Quality Model and its Impact on the Indian Society

Dr.Anand Kumar Shukla[a], Mandeep Singh[b], Nisha Sharma[c], Dr.Reema Goyal[d], Sonia Thakur[e]

[a] Associate Professor, Chandigarh University, Mohali, Punjab, India
[b,c,d,e] Assistant Professor, Chandigarh University, Mohali, Punjab, India

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Abstract: The web technology now is a strong medium to provide information and services to the public in just a short span of time. Basically an e service provides information through the websites or web applications which can interact billions of people at a given time. This could not be possible through the traditional services and approaches. Electronic services are very famous and effective in terms of e-commerce. Type of e-service depends upon the motives of firms or organizations. The motive may differ with the objectives of the firm. For example, banking sector and e commerce organizations may provide their services to the society. Governments may provide schemes for the welfare of society with these means along with lot of benefits, such infrastructure is also a very easy to use and time consuming, so peoples are getting dependents of the e services and mobile applications, especially for the mentioned sectors like insurance, banking, shopping, finance, educations, real states, social media relationship, political elections, billing, entertainments, online movies, web-series, food ordering and delivery, and health sector etc. So as people are getting used to of it, risk of cyber fraud is also increasing. As the use of online transaction has increased rapidly, especially during the lockdown and after this, peoples are dealing with e-cash rather than the cash, for this they are using either their bank accounts directly, or the e-wallets for making payment. . So hackers are doing fraud by so many ways, bank accounts and e-wallets are the prime target of them. Several cases have been reported for so far, this fraud. So there is a huge impact of the e-services and applications on the society.

Keywords: e-Services, Health Sector, Rohilkhand, Web-Models, Privacy Risk.

I. INTRODUCTION

There are three famous E-Service Frameworks like E-Speak, Jini and the Open Agent Architecture there we try to focus on that and their key-features and also on some difference. Whenever there is need of Write, compose, deploy, mediate, discover, and connect, e-Service , E-Speak Framework provides mechanisms for that [1] [2]. E-Speak basically based on the Network Object Model, in which a client may perform by using the concept of RMI (Remote method invocation) and publish-and-subscribe mechanism [3]. India is a country with world's largest democracy. In the past in 1990s the literacy rate of India was only 52%. Only 25% of the population was urban and Information Technology was the new area which was not much popular among the people of India. The E-Services were not very much in use. However, by 2001 the literacy rate was increased. It was 64.84% and with 27.8% of urban population. This was the time when the Information Technology was also gradually becoming popular. There were limited sectors which were involved in creating and providing the E-Services for limited or specific users. Government of India had also started thinking about this sector and was planning for launching some of their schemes through the E-Services. Government was also trying to link some of their departments with the e-services but still the problem was the availability of technology for the public, the resources were limited (like computers with Internet connectivity etc.) [4].

But as the time passed literacy rate of the urban population was increased [5]. According to the "*Ministry of Statistics and Programmed Implementation Central Statistics Office Research & Publication Unit, New Delhi* ", in 2011 the total population of India was 1.21 billion, among them 375 million was the urban population. The literacy rate was 64.84% in 2001 and by 2011 it was raised to 72.99 % [6]. This indicates that as population was increased, urban population has also increased. The present population of India is approximately 1.26 to 1.28 billion, where the urban population is approximately 420 million [7], if we talk about the urban population and its literacy ratio the number is very large.

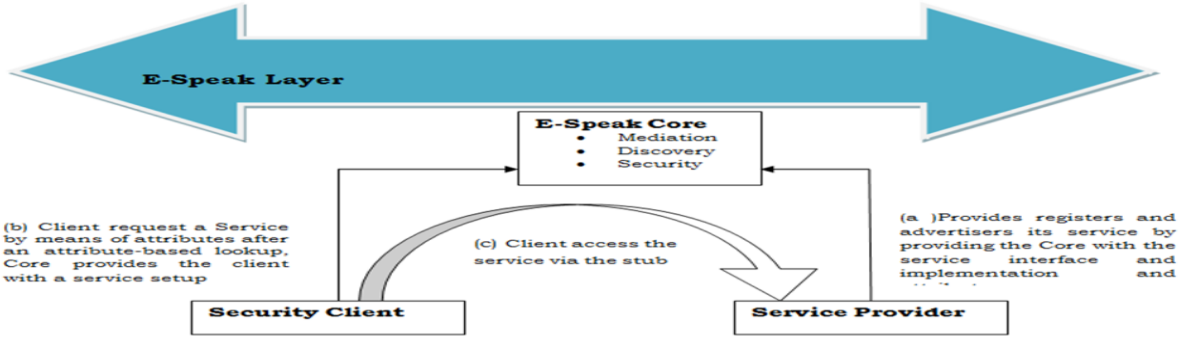

Figure No. 01, E-Speak Session [5]

The literacy rate of India is more than 73% and the literacy rate of developed countries is more than 86% [8]. This is the motivating figure for the researchers who want to focus his/her research on the urban areas. Information Technology or E-Services can be successful as a research subject where the literacy rate is high. Apart from literacy rate there are some more causes which are equally important in success of Information Technology i.e. availability and effectiveness of the technologies.

E-Services are the keys of the Information Technology. India has world's second-largest Internet users [9]. By 16th august 2020 the internet users in India were 565,124,989 which are 42.8% of Indian population. The Indian users are 13.5 % of world users [10]. As the population and literacy rate increases, technology like Internet also becomes popular. With the help of many advanced technologies the handling of Internet and E-Services also becomes easier. This motivates researchers to do the research in the field of Information Technology and E-Services.

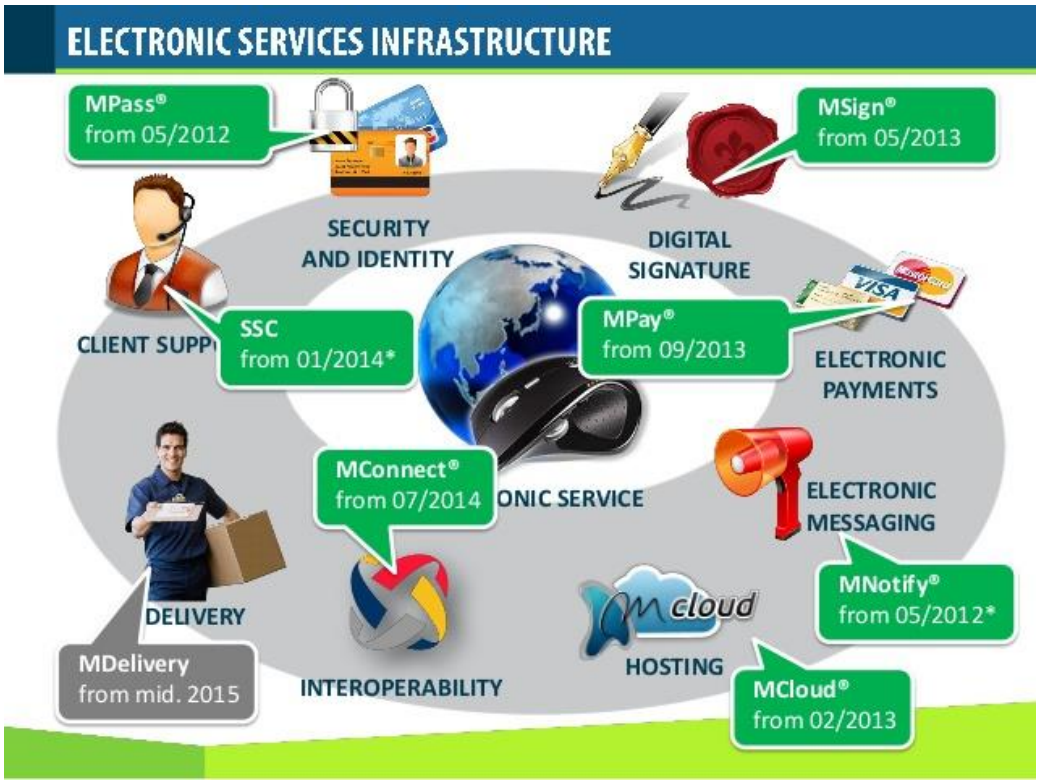

Figure No. 02, e-Service infrastructure [18] [19].

Ninety-four percent (94%) of users access the Internet through their mobile phones in Urban India. However, 64 % also use the desktop or laptop to access the Internet but 90 % of those who use the mobile phone to access the Internet, consider it as their primary device for browsing [11]. These are the facts which really motivate researchers to do the work in such growing areas.

II. ADOPTION OF E SERVICES BY INDIAN GOVERNMENT

There have been studies [12] that, this is the age of Internet and Technology, which is becoming one of the most effective medium of communication with a lot of interfaces. Public and private sectors are using this technology to reach the customers or public. Since last few years the use and development of E-Services are very much effective for connecting with the public in India [13]. The Government is launching many schemes for the welfare of the public in the form of e-Services under the slogan "Making Digital India" [14] [15]. For example there are few following E-Services which are already running in India [16].

- e-Mandi
- Land Records
- School Education Mission Mode Project (MMP)
- Direct Benefit Transfer (DBT)
- Central Excise and Customs
- Ministry of Corporate Affairs (MCA 21)
- Passport Seva
- e-Tourist Visa
- e-Courts

- Common Services Centers (CSC) 2.0
- e-District
- Jeevan Pramaan
- Vikaspedia
- Chennai based Exemplar Worldwide Ltd.

As per the Knowledge Processing Offices, in the market the percentage of e- Governance is greater than INR 400 billion [17]. As per the NASSCOM, Indian Government used to spend approximately 200 billion rupees on the IT sector [18]. Several projects like AADHAR, railway modernization, NeGP, APDRP etc have outsourced by the Indian Government. The Government is using Information Technology not only for the better administration and for better connectivity with maximum population.

III. PROBLEM AREA IN SERVICE QUALITY MODELS

As we have discussed in previous sections that everywhere e-Services are being used. Private and public sectors are launching their e-Services. If we talk about the Government sector, Government is also launching many policies through E-Services for the welfare of society [19] [15]. Rohilkhand is one of the biggest regions of the state Uttar Pradesh with more than 20 million populations with good literacy rate. Bareilly is not only the largest city in this region but also the district of Bareilly covers the major portion of Rohilkhand. This region is very much dependent upon Bareilly, especially in terms of Medical help and facilities. Bareilly District has one central University namely IVRI(Indian Veterinary Research Institute (IVRI)) , one state University (MJP Rohilkhand University) and 3 private University along with 25 Management and Engineering colleges which specify that the population of Bareilly district is well qualified and literate [20] [22].

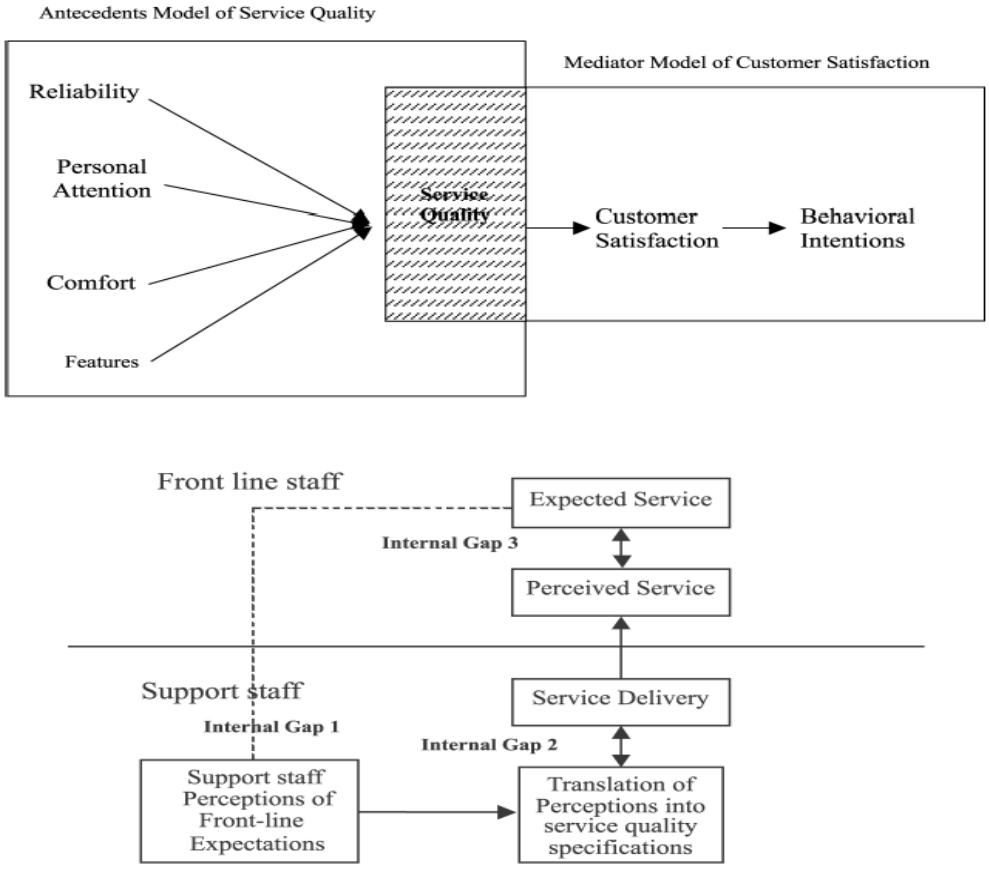

Figure No. 03: Service Quality Models

If we talk about the Medical facilities, Bareilly city is blessed with 3 Medical colleges namely Sri Ram Murti Smarak Institute of Medical Sciences (MSIMS), Rohilkhand Medical College(RMC) and Rajshree Medical College along with more than 200 Hospital and Clinics. About 1000 Doctors are doing their practice in Bareilly. *"Apart from such facilities and services Bareilly doesn't have any e-service, which can provide the medical assistance in terms of providing medical related information to the Rohilkhand region".* The following research questions are based on the same.

IV. E-SERVICE INTELLIGENCE

This research tells about the e-service intelligence. E-Service intelligence is like a latest modern technology, which can assist to find solutions as well as it has also some research challenges. There are many established applications which describe that e-service intelligence can play a crucial and important role for tackling with e-service. This indicates that it might be contemplated about the capability and issues of a combined comprehending e-service economy. Many technical and managerial aspects are involved which need to be investigated. There is also a need of emphasis upon the use of smart technologies along with web technology with full of confidence. This combination will definitely explore the common development of e-service [27][28]. This research raises the shortcoming of existing healthcare e-services. There are very few healthcare service platforms for the senior citizens. There is need of a good healthcare based e-service for them which will help them to keep their body fit with healthy mind. A good healthcare support E-Service can also be very helpful in providing the stroke precaution. This articles integrated ICT-based study [28][29] appliance with the study materials on actualized healthcare and a personalized service as a interface indicating and describing the problematic issues faced by the elderly. There are habits that many doctors and experts from clinics, hospitals gave the tutorials as study materials for the precaution mainly for strokes. The E Service going to play a crucial role by providing the knowledge for many precautions and healthcare related issues which is the great help for the oldies they can easily find the knowledge which will cause for improving their fitness and health [29].

V. PROPOSED FRAMEWORK FOR E-SERVICE QUALITY

This research proposed a conceptual Model (Figure No. 04) for rating the quality of electronic services in some areas like banking

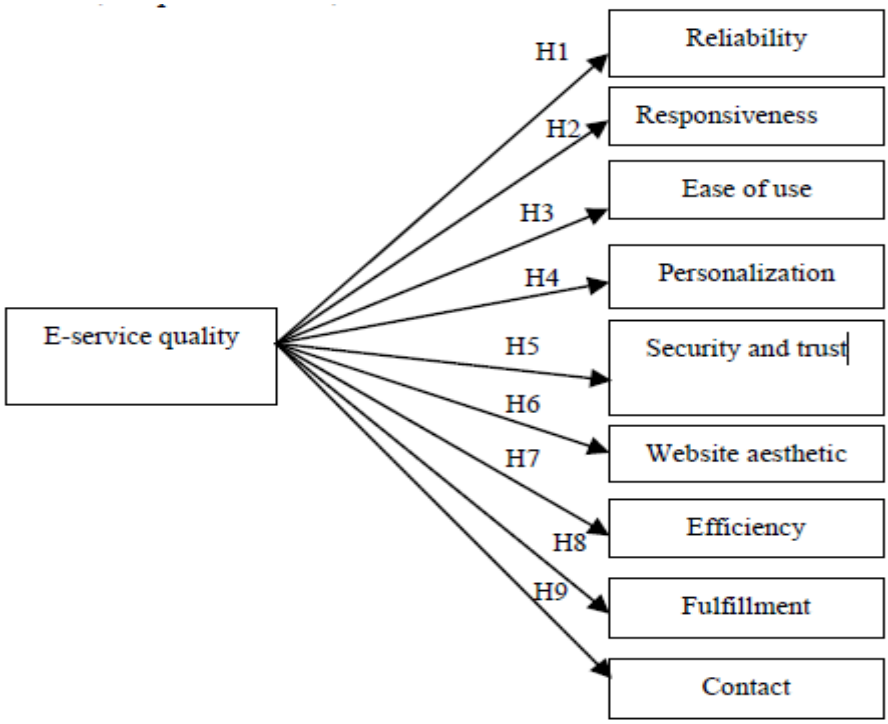

Figure No. 04. Proposed Framework for E-service Quality in Indian Banking Contest [30]

The Model has 9 dimensions which are basically dependent upon the findings and recent research in the related areas. The suggested dimension can have the proposed dimensions may have supremacy on the e-service quality. Study said that the proposed model will help the financial organizations to improve the quality of the e-service, especially the verification of suggested dimensions is considered from the user and employee point of view. The conclusion shall lead to develop an appropriate parameter to measure the quality and adaptability of E-Service in the financial sector of India [30] [31] [32] [33].

Some real-life applications of e-Services are e-Governance, e-Health, e-Business, e-SMR, e-O.B.S, etc. Consider the below diagram:

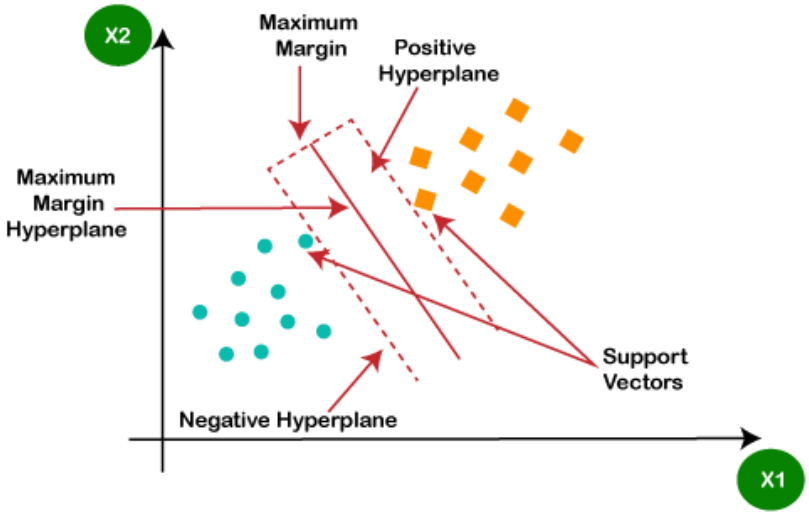

Figure No. 05 Real-life applications of e-Services [7]

As we can see in the above diagram, the hyperplane has classified datasets into two different classes.

DS=$(\sum_{i=1}^{p} DSRi)\ /TR$

Where:

DSR –The satisfaction degree in terms of requirement i

TR – Total requirements (numbers)

p – The number of requirements (the degree of satisfaction) for a user of executive requirement (is a value from 0 (no satisfaction) to 1 (fully satisfied)).

Loop of consumers represents the % of users. Those have used the same e-service multiple times. The representation of Cost is the fee that has to be deposit to retrieve the service.:

C= $\sum_{i=1}^{w} NRiDiPi$

Where

NRi – Resource in numbers for i

Pi – Price of each unit for i

Di – Units as per the usage for i

Cost of e-Services can be measured as:

Cr= $\sum_{i=1}^{k} Ci$

Where

k –Project phases

Ci, - Total cost of resources from the phase i

VI. PROPOSED E-SERVICE QUALITY MODELS

In this research work the author is very much concerned about the contribution and role to produce an instrument and technology, which will be going to measure, validate the quality of an electronic service like website. A good technique of conducting a survey is used which will help in analyzing, validating, reliability testing of an e-service. There are six following factors in which the validation, reliability, responsiveness and accuracy can be checked or tested.

1. Availability of a website
2. Responsiveness
3. Design
4. Quality and authenticity
5. Assurance
6. Presentation

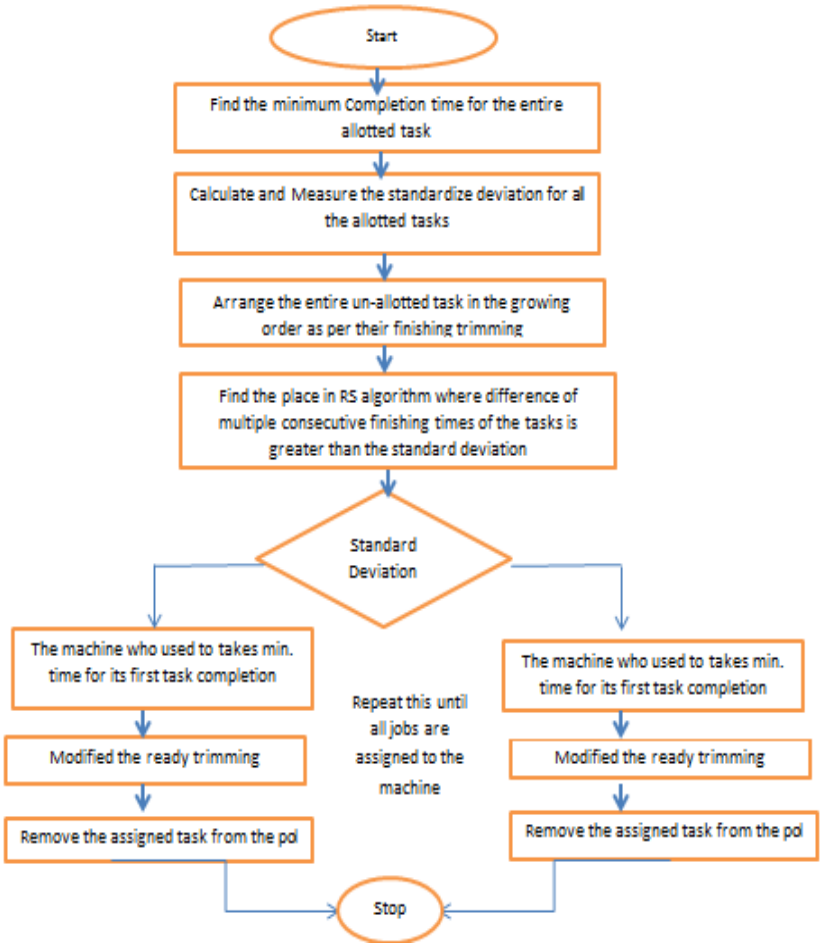

Figure No. 06; A QoS based Maximum-Minimum, Min-Min switcher algorithm for job-scheduling

Some studies on web evaluations suggest that customer preferences for such items may be an inverted U-relationship and not linear [50]. The meaning is that there is the difference in the choices of different groups of users, like some users may like or prefer high rich quality graphics, quality effects, good quality of flash animation, high definition of images and many other things. However, there might be a group which may prefer quality of information than the presentation, no matter what quality of animation, graphics, the image are of, but they are mainly concerned about the content of the website [51].

This research has a different aim from the past that consider the quality-loyalty relationship on the collective stage .The aim of this research is to recognize the association between the elements among the attributes of recognized service quality and the some kind of service loyalty. In this research this is clear that quality dimension of the e service is associated with other types of customers loyalty but not with the case of personalization. The idea of dependability and assurance are the main key factors that can have influence on faithfulness, purpose of re-purchasing, and the soft-spoken positive skills under the raised pricing. The quality of customer service and web responsiveness influence negatively the propensity to switch and communicating negative word-of-mouth. Additionally, believe or trust or promise of guarantee (used correspondingly in alternative studies, which has been found to exhibit a positive influence on price tolerance [33]

In this article author's purpose the quality e-Service models as per below figure no. 06 with the help of four panel, panel A, panel B, Panel C and Panel D to analyze the academic foundation of e-service quality and to propose a theoretical model for the information technology. After 2001 there are rapid qualities developments in the e-Service, many researchers have been attracted toward. Thus a clear demand arises for creating a service quality model which accommodates the quality measures and disagreement pattern [51].

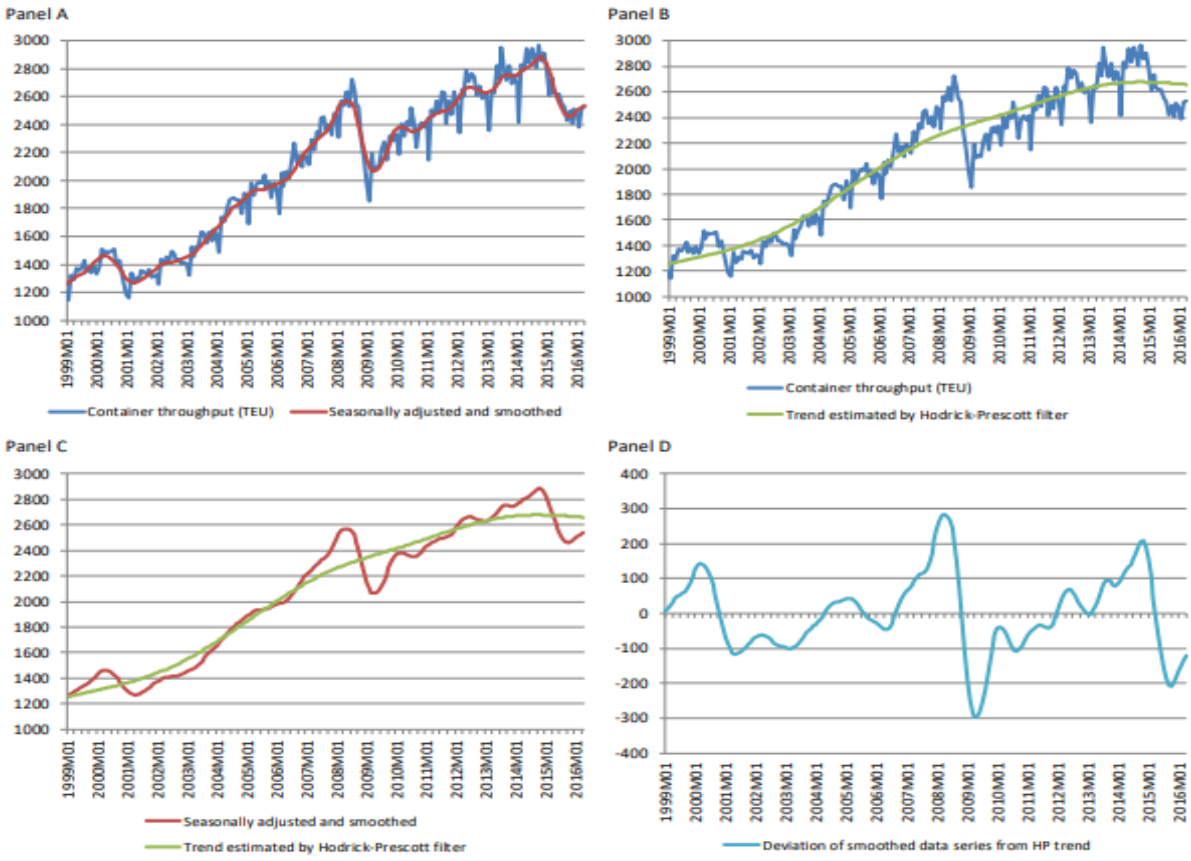

Figure No. 07, Proposed Measurement of e-Service quality models.

In this article the author describes the concept and some specific features of e-services based on the current literature. He also narrated the quality concept, approach of service quality and describes the mechanism on which the quality approach depends. He shares several research prospects and findings on electronic service quality and proposed a theoretical e-service quality model.

The e-service quality model combines traditional approaches as well as modern approaches for the E-Services, singular attributes of e-services, appropriate e-service quality measures and disagreement structure on e-service quality. There is a truth which almost is the finding of this article which makes a relation to the evidence that there is a comprehensive approach in which the proposed model is combined. There are many suitable aspects stirring e-service quality into a single model [41][42]. So, the upcoming research proposal depends upon the current study. The model which is proposed in this particular research could be examined with studies which involve different culture study [43] [44].

This research has discussed about the several challenges in the e- Services adoption and its implementation with required analysis of the study on e-Services implementation and also a proposal has been made towards the development, implementation and acceptance of Electronic Service on specific areas. Although there are many countries which have successful E-Service implementation and implementation and acceptance which further help in economic growth, but still there is need of more research work for implementation profitable, working E-Service System with the help and definite support from Government for reaching or providing the benefits of Electronics Services to the end User or Public. Research also shows that there is need of awareness program and service availability for further enhancement [34] [35] [36]

VI. MODELING OF E-SERVICE & its ROLE IN VALUE CO-CREATION

In this research and study some issues exists which have been lifted from the system and are based on e-service modeling and also introduced an organization standard techniques based method committed to modeling of the engineering of such a fantastic dynamic system. Following are the some important offerings of the article:

i). Identification of the paradigms encompassed by e-service based systems

ii). Demonstration of the strength of e-service solutions by means of the travel agency case study

iii). Presentation of three e-service frameworks and their comparison from the modeling point of view

iv). The proposition of a method dedicated to modeling the architecture of e-service based systems

The benefits of this method are given below:

i). This method can easily combine and associated with any famous object oriented development method like OOSE, BOOCH, OMT

ii). The notation of this method is written in development, modeling language, Unified Modeling Language (UML)

iii). The documentation of the different models conforms to the IEEE Recommendation for Architectural Description

At last From when the E-service systems come into existence in a non-static behavior, there are the methods which produce the method for creating the design for the behavior of modeling with few of good techniques, such method has been really very helpful in many case studies like modeling of Stockbroker by E-Speak, and many more [38] [39] [40].

In this research and study the Author has reached to the conclusion that the E-Service is the electronic way from which services can be expressed over the electronic media like internet, wide intranet, wide area network etc., Now-a-days electronic media is very powerful tool for the advertisement and communication people are very active on electronic world so this is very beneficial and effective if the service should be represented at Electronic service, Also if talking about the both customer and provider point of view in marketing co-creation of values is equal to a value. Without considering and understanding of the customer's mind and their demand there is a high chance of marketing failure in a very quick time, we should have to be very realistic for achieving the main objective of using the e-service with the association with value co-creation and with the use of DART models. Author want to say that value co-creation is the new concept in the field of market, so there is the limitation of getting related research work in this article [45] [46].

VII. ANALYSIS OF E-SERVICES ON FUTURE ASPECTS

Ivanov wants to focus on the future aspects of e services and its applications, apart from that there are lot of opportunities of upcoming enhancement and development research work in e service research work [49], "*One makes research today on yesterday's visible effects of the use of externally given technology which was adopted the day before yesterday. When the results happen to be published tomorrow they will be obsolete and used to justify new research to start the day after tomorrow about the consequences of today's technology which is already becoming obsolete*". Although there is current Swedish survey tells that the present research is making the pillar of tomorrow's information system and its applications. According to "Grounland and Anderson" [50] there should be a major role of theory and its testing , but this will not an easy task as it seems this will definitely a challenging task for the upcoming research on the e-services[49] [50].

VIII. STAGE-MODELS OF PUBLIC E-SERVICES

This article is basically talking about the models and their stages which mostly depend upon the conceptual framework. The outcomes of this research is that, the models which have been talking about are lacking in clarity at the time of distribution of service outcomes and the findings are that these models are lacking in clarity when dividing the service output and judgment on the specific stage. There are the divisions among the stages which are not clear and discernible from one another depends upon the parameters given in the models. The elegant model of service category depends upon the many important issues which have been discussed in this article. At very early there is the need of discussion about the identification stage of the customer is the main thing to differentiate the levels and services from one another. There are many among the model's base the diversion of very first stages more on complexity. In author's point of view, this is not a good method of differentiating the stages from one another's due to the difficulties being more of a because of complexity being more of a continuation of the growing level of difficulties.

In this paper author presents refined model (Figure No. 08) for E-Government services which is inspired from the Model and its analysis which are included in this article. Refined model has many differences than the included analyzed models in this particular article, there is also a considerable issue that can achieve all the desire result and outcomes of one-stop government, this requires more and more study and analysis in terms of what service has to be developed. So the future work might be to develop the model which short out the problems arise at the time of combination between government agencies, and also is to implement this model in practice[52] [53] [54].

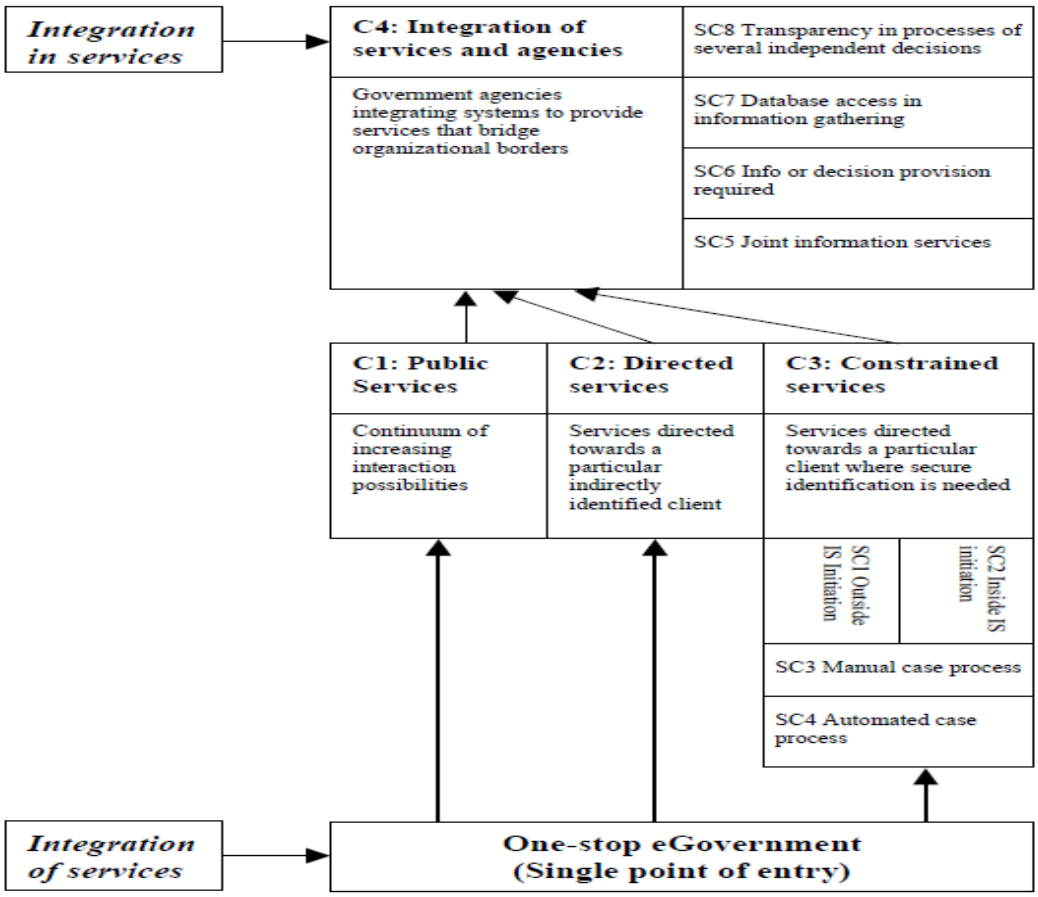

Figure No.08: Refined model categorizing services and evolving E-Government [49]

IX. REDUCING ONLINE PRIVACY RISK TO FACILITATE E-SERVICE ADOPTION

This research and study draws the attention on the problems of privacy of the general public in the area of information technology which creating bad impact onto the society. A survey has been already conducted for that. There are many e –services, but some of them are lacking in terms of privacy, security of customer's information which is almost destroying the privacy of the clients and customers, who can be produce negative impact on e services so we have to very much concern about the privacy and security. This has to take into consideration that how security, privacy can be improves, how to identify such factors which are cause of that, this is the responsibility of the researchers also to work on confidentiality of information, used the technology acceptance model to announce that customers evaluation of a security danger related to e service moments are the methods of their confidentiality and dependability concerns.

Further, the result of this article supplies the proof that the personal information security risk obstruct e-service acceptance, so while expanding the usability, availability, etc. of e service this should be the first priority to maintain the trust of the consumers by making some policy or strategy for the security and risk management on a very regular basis [55] [56].

CONCLUSION

This chapter deals with the problem statement, origination of idea, motivation and literature review. The literature review is represented by some segmentation in including purpose and scope, structure and content. This chapter contains the relevant studies already done. Initially this study shall bring up theories in support of research problem by starting with a broader view of e-Government concept and its objectives. Finally, this study and analysis will narrow down this research problem and comes up by general principles to support our research question.

If we are going to adopt the above solutions and propose approaches in the development and of e-Services, then it will definitely will go to be much efficient and accurate than before. The model has been proposed are also guide researchers, academicians and developers to serve the humanity through their skills.

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