Chapter 6

Research Triangulation and Synthesis

In the previous two chapters the results of the analyses have been presented. This chapter attempts to synthesize and discuss the results obtained and findings in relation to the research questions and the proposed hypotheses.

6.1 Discussion

Service quality of government portals differ with phases of evolution in e-government. Since the first phase of e-government implementation provides web presence of government information, citizens’ view on service quality at this stage is rarely considered. As the stages in e-government gradually advances, interactions with users increase, bringing in ‘citizen involvement’ factor. While making policies and strategies, government administrators try to provide service based on their own understanding about users, often failing to match up with citizens’ expectations. This gap of understanding between the service providers and the end users results in poor service quality of web portals.

Hence the purpose of this study was to identify the performance indicators for government portal e-service delivery from citizens’ perspectives. The factors were identified and adopted from review of relevant existing studies in the field of information systems, marketing and online commerce to develop research framework for assessing e-service quality of government portals in India. The research area was confined to two popular transaction oriented web portals of Indian Railways Catering and Tourism Corporation (IRCTC) and Income Tax Department (IT). As these portals are fully operational and properly implemented they can help to get an in depth insight to the users’ expectation and requirement
from the government portals. The Technology acceptance model proposed by Davis et al. (1989), the DeLone & McLean (1992) IS Success model and the e-ServQual scale frameworks were used as base for this study. Some modifications were made with addition of new variables to test the proposed framework in the context of government e-service delivery in India.

The study elicits eight service quality dimensions perceived by users of a government portal: comprehensive information, citizen convenience, reliability, technical adequacy, security/privacy, citizen relation, transaction transparency and communication. A second order model was proposed which represented hypotheses that these seemingly distinct, but related constructs can be accounted for by a single common underlying higher order constructs: ‘overall service quality’.

A series of hypotheses were developed based upon the objectives to find the performance indicators of e-service quality of government portals and how they are related. The set of hypotheses were tested during the empirical part of the study and the findings that follow from the analyses are presented according to the hypotheses proposed.

The findings were consistent with the proposed quality dimensions. The factors address 3 essential aspects of e-service quality: security/privacy and transparency of transaction, completeness of information about the service, citizen centric features and usability of portal.

6.1.1 Discussions on H1: Comprehensive Information (CI) is positively related to e-service quality

Comprehensive information (CI) was considered as one of the performance indicators for e-service quality in this study. In previous studies (Mahmood, 1987; Miller & Doyle, 1987; Srinivasan, 1985) establish that complete information and content relevance for the existing
users and potential users help in increasing acceptance of web enabled applications. Accurate and sufficient information are widely-used measures for a successful information system.

From the analysis of data, it was found that the variances explained by CI leading to e-service quality were 58% (IRCTC) and 26% (IT) while for the structural model leading to citizen satisfaction the values were found to be 62% and 41% respectively. There were two items CI_item1 and CI_item2 which were found to be highly correlated with CI in both the cases of IRCTC and IT. The path estimation values of CI_item1 are 0.89 and 0.78 and those of CI_item2 are 0.78 and 0.87 respectively. The statements pertaining to CI_item1 was “I need go to other site to check for related information” and for CI_item2 was “I think all information provided in the portal is sufficient” which delineated that if a citizen finds the information to be relatively comprehensive and sufficient in a government web portal or the content is complete for his query, he is likely to use the online service. CI showed factor loadings of 0.79 (IRCTC) and 0.64 (IT) for second order factor demonstrating significant role in service quality of portals.

The observations explain that citizens prefer to use the e-service when they bear the trust of finding the information to satisfy their need and they do not have to verify the authenticity of the information. Thus H1 is significant and is justified.

6.1.2 Discussions on H2: Reliability (REL) is positively related to e-service quality

Another very important factor which influences the service quality of government portals is the reliability of information. REL takes into account the characteristics of timeliness, accuracy (Papadomicelaki & Mentzas, 2009) and description of service or product being offered by the portal to the entirety. This factor was represented by three items in the questionnaire: “I find recent and latest information in the portal”, “I get detailed instruction for any service I opt for from the portal” and “I find it easy to navigate between the web pages in and outside the portal”. Reliability of web portals assures the ability to render
dependable services (Parasuraman et al., 1988) and can create a positive attitude towards using online services. It also assures of accessibility to quality information for citizens which is relevant, current, reliable, and easy to understand with pertinent detail and format (Barnes & Vidgen, 2000). Our findings conform to the requirement showing factor loadings for REL as a sub dimension to overall service quality (OSQ) of 0.56 and 0.49 for IRCTC and IT portal thus explaining the importance of REL explained by e-service quality of government portals. Variance of 31% (IRCTC) and 24% (IT) were explained by REL to serve e-service quality. The variance values were not very high because reliability factor encompasses several aspects of a portal. Since the study was confined to only service quality from users’ perspective only some features could be captured rest was considered as residuals. The three items, REL_item2, REL_item3 and REL_item4 in case of both the portals were found to be highly intercorrelated (Ref: Appendix IV e and Appendix Vc). The factor loadings as shown in SEM in case of IRCTC portal were found to be 0.75, 0.79 and 0.78 while those for IT portal were found to be 0.62, 0.60 and 0.77 respectively. The regression values were quite high and significant reiterating that the items explain the factor quite well. The observation implicated that users’ generally have reliability on government portal as the trust in public administration is high. Current updated information with well organized hyperlinks to get complete information of a service or product is what a citizen is contended with. Though an e-commerce site needs to take care of several other aspects to build the reliability factor, for a government site or portal the assurance of the state or the sovereign is more depended upon.

6.1.3 Discussions on H3: Citizen Convenience (CCON) is positively related to e-service quality

Traditional e-government is gradually giving way to ‘transformational government’ to cope up with the expectation of citizens. This new approach looks beyond the technical aspects of e-government processes and intends to address the organizational and cultural barriers which hinder effective realization of public
service benefits. Citizen convenience parameter tries to encompass the facilities provided by an e-government portal so that a citizen can comfortably use the services.

The factor CCON was represented by five items in the questionnaire as “The system is available 24/7”, “I find a tour guide for the site”, “Voice aid /animation is provided for handicapped or unaccustomed people”, “I get the option of entering the data in multiple/regional language” and “The service is complete by itself and I need not go to other authorities to complete the task”. Factor loadings of the items CCON_item1, CCON_item2, CCON_item3, CCON_item4 and CCON_item5 on the first order factor for IRCTC were found to be 0.87, 0.81, 0.67, 0.74 and 0.64 respectively. For IT portal the factor loadings were found to be 0.70, 0.53, 0.72, 0.64 and 0.75 respectively. Factor loading of CCON on the OSQ were found to be 0.25(IRCTC) and 0.35 (IT). The variances shown by the dimension were also low at 6% (IRCTC) and 12% (IT) with OSQ. Though the loadings and variance shown were low in value yet they were found to be significant statistically. It was decided to accept the factor’s contribution because the indicators are quite important to assert citizen centric services.

Since e-government services are delivered online, users expect a 24 X 7 support. It has been observed that though portal services are available round the clock, banks or other financial organizations which help to get the transactions complete, allow transactions only during office hours. Hence, citizens attempting transaction after or before regular hours cannot transact. This limitation refrain people from utilizing online public applications. Besides, citizens who are new to the web interface do not understand the complicacy of online transaction affairs and need the facility of voice aid or guided tour to carry out such activities successfully. Most of the portals do not provide such features making the process inconvenient. Language problem is another barrier for adoption of e-government. For citizens with less education, it is difficult to get connected to an online environment without their primary language. India being a country of 22 official languages, diverse culture and pronounced knowledge divide, problems of e-government diffusion is rather grave. Shareef et.al. (2011) while studying for a new e-government adoption model,
observes that most countries are still struggling to attain service level at transaction and integration phases. Due to lack of proper integration of internal activities of government departments, manual intervention is required to complete a task. Complexity and incomplete service availability compel end users to follow the brick and mortar government procedures curbing the growth of e-government practice. To popularize e-services the services need to be citizen oriented. As the study aims at developing an instrument to assess e-service quality for transaction oriented government portals, the hypothesis was accepted.

6.1.4 Discussions on H4: Transaction Transparency (TTR) is positively related to e-service quality

Transparency in online transaction mode for government portals can be a deciding factor for citizens to use e-services if they have option to choose between traditional method and the electronic method (Rocheleau & Wu, 2005). Though online services save them hassles of conventional ways like queues, collection of receipts etc. yet the virtual mode is critical as high level of security needs to be monitored for the complete process.

Despite the security factor, there is the relative advantage to users of completing transactions over the internet, as compared to alternative (Seybold and Marshak, 1998; Moore and Benbasat, 1991; Rogers, 1983). According to Loiacono, Watson and Goodhue (2007) for online transaction a web site must support functional task needs, respond on time and gain the users’ trust in carrying out virtual transactions. Three observed variables; TTR_item1, TTR_item2 and TTR_item3 were included in the questionnaire as “I find the service to be cost effective”, “I get the refund in case of cancellation” and “I find the service to be transparent”. The factor loadings of the indicators were 0.90, 0.59 and 0.84 on the
first order factor for the IRCTC portal. The values for the IT portal were 0.66, 0.63 and 0.71 respectively. Variances shown by the TTR as a sub dimension of OSQ were 5% (IRCTC) and 21% (IT). The value for IRCTC was low as the service tax charged was quite high for the IRCTC portal and citizens generally disapprove of it. In case of IT portal, the transaction is quite cost effective as otherwise citizens need to pay separate fees for the tax consultant. The regression weights of TTR on OSQ were found to be significant with values of 0.22 (IRCTC) and 0.46 (IT). The regression weight for IRCTC was much below the accepted value of 0.5, but still the factor was accepted as it had strong theoretical basis (Rocheleau, and Wu, 2005; Loiacono, Watson and Goodhue, 2007). It was also observed that the factor showed considerable loading in the case of IT portal reinstating that the context also can determine the variation in result.

6.1.5 Discussions on H5: Communication (COM) is positively related to e-service quality

Communication factor tries to encompass the interaction between the citizens and the public administrators. The virtual medium of service delivery lacks the physical cues which can be supported by a good interaction interface. According to previous studies (Reddick, 2005; Streib & Navarro, 2006) communication of government with users is quite significant to promote positive attitude in citizens to use online services. Communication can be made through either electronic modes like emails, message boards or personal contact. Detailed contact information of concerned authority can help citizens to address their queries or problems. This factor was represented by three indicators COM_item1, COM_item2 and COM_item3 in the questionnaire as: “I find information according to the criteria defined by myself in the portal”, “I can contact the concerned authority when I need to” and “The home page of the portal has message board the customers” respectively. From the analysis of data, it was found that the variances explained by COM leading to e-service quality were 63% for IRCTC portal and 39% for the IT portal.
The factor loadings for the observed endogenous variables on the first order factor were significant for both the portals with values 0.71, 0.87 and 0.73 in the case of IRCTC and 0.62, 0.70 and 0.73 in the case of IT portal respectively. The factor loading for first order sub dimension on OSQ as shown the structural models for IRCTC and IT portals were 0.79 and 0.62 respectively. The results conform to the proposition that communication is one of the significant characteristics of e-service quality of government portal in India. It was found that citizens doing transactions online do regard interaction as vital to ensure that their trust in electronic mode is secured. For e-transactions the citizens often have to provide their personal and confidential details online which might create a sense of insecurity in them. Contact particulars of concerned department or an interface to interact or a customized search option often answer their queries giving them confidence to use the facility on a regular basis. The findings from both the portals accord to the hypothesis.

6.1.6 Discussions on H6: Citizen Relationship (CREL) is positively related to e-service quality

With growing demand of citizen centric services, establishment of citizen relationship has become a priority (Reddick, 2010). As has been mentioned in Chapter 3, recent studies suggest that good citizen services and a good relationship with citizens can help to build trust among users (Wolfinbarger et al., 2003; Pan et al., 2006; Wu, 2011).

Keeping the aspect in mind, three items were included as CREL_item1, CREL_item2 and CREL_item3 in the questionnaire to represent the factor citizen relationship (CREL) as: “All services offered related to my query is properly explained”, “I find valuable tips to in the portal” and “I receive confirmation and other information through emails or SMS”, respectively. Variances explained by the factor in the model are 39% for IRCTC and 22% for IT. Factor loadings of CREL on OSQ were found to be significant with values 0.62 for IRCTC and 0.47 for IT. Thus the result conforms to the proposed hypothesis and justifies
the consideration of the factor in the proposed model though it may vary with the context and portal type. Citizens are contended if they get valuable inputs, a customized search option and regular follow ups from the concerned public agencies. IRCTC is a portal where people opt for the service because of convenience and thus view relation factor as a priority. In portals like IT where things are mandatory and for all, people somewhat rely on goodwill of public sector and use the system with a confidence that the relation that is maintained is supposed to be the best possible way. Irrespective of these differences, it was observed that citizens do give importance to the support extended to them by public agencies to carry out the online activity smoothly. Citizen relationship is a support given to users when they need from the government which in return builds hope and dependency with complete trust (Papadomichelaki & Mentzas, 2009). Since service quality changes with different stages of e-government development, this factor needs to be given special thought to enhance usage and popularize virtual services among citizens of India.

6.1.7 Discussions on H7: Technical Adequacy (TAD) is positively related to e-service quality

Technical Adequacy (TAD) was considered to be yet another significant indicator to assess overall service quality of government portals. Results of data analyses of two cases were studied to get the understanding of citizens’ percept about the factor. Two statements were framed to judge the importance of the factor as “The pages are loaded at a fast speed” and “The browsing speed is fast and response time taken is less” and were represented by TAD_item1 and TAD_item2. Variances explained by the items of the factor were 72% and 70% in case of IRCTC and 45% and 63% for IT portal. The overall variance of the factor in the model was 23% (IRCTC) and 31% (IT). The factor loadings of the items on the TAD were also found to be significant with values of 0.85 and 0.83 (IRCTC) and 0.67 and 0.79 (IT). The factor loading of TAD in the model for IRCTC was found to be 0.48 and for IT was estimated to be 0.56 confirming a substantial contribution in OSQ. The result thus supported the proposed hypothesis. It was
found that citizens do not get involved in the technical integrities of portals rather to them quick upload and download of required documents form the basis of adequate technical support. Fast accessibility and timely response make the citizens contended to an appreciable extent so that they can continue using the online services.

6.1.8 Discussions on H8: Privacy and Security (SP) is positively related to e-service quality

Security and privacy had always been a concern for e-government projects. Citizens often need to share personal details and sensitive information in order to avail the facility of e-transaction. It is the responsibility of government authorities of concerned department to endorse security in the actions. Culnan and Armstrong (1999) observed that when organizations make effort to protect individual privacy they have come back users. According to other studies (Zeithaml et al., 2000; Yoo & Donthu, 2001; Welch & Pandey 2005; Yang et. al, 2005, Shareef et. al, 2011) security and privacy affect citizens’ attitude towards adoption of e-government services. To include this essential factor in our study we identified two variables SP_item1 and SP_item2 represented by the statements “No one else can access my account and private information” and “I find the portal to be safe for online transaction”. It was found from the results that the variance explained by the factor in the model was 39% for IRCTC and 30% for IT portal. Factor loadings of the items on the factors were found to be 0.64 and 0.94 for IRCTC portal whereas for IT portal the values were 0.84 and 0.79 respectively. The regression weights for the first order sub dimension on the second order factor (OSQ) were 0.63 (IT) and 0.55 (IT). Observations from both the portals concur with the hypothesis that citizens in India, value security and privacy features of a transaction based portal. Citizens are not quite concerned about the technicalities used to enforce such features but consider the factor to be vital to the extent that their information remain secured with the department and not shared with any third party without their knowledge.
6.1.9 Discussions on H9: Overall satisfaction (OS) of users with portal depend positively on overall e-service quality (OSQ)

Service quality and satisfaction are two different constructs (Bitner, 1990) though studies have verified that there is a causal relation between the two constructs. To reiterate the observation, researchers (Oliver, 1989; Parasuraman et al., 1985, 1988; Yang et al, 2004; Padhy & Swar, 2009) conducted studies in various context and established that service quality influences many user centric attributes including levels of customer satisfaction. Cronin and Taylor (1992) verified the casual relationship between service quality and customer satisfaction and later on Spreng and Mackoy (1996) in their study explored the relationship between service quality and satisfaction showing that perceived service quality was an antecedent to satisfaction. Padhy and Swar (2009) also confirmed that quality standards result in customer satisfaction. Overall Satisfaction (OS) was separately measured by two indicators OS_item1 and OS_item2 represented by the statements “All in all, I am highly satisfied with the portal’s services” and “The portal can largely fulfill my needs at this stage” respectively. The variance of OS in the model was found to be 34% for IRCTC portal and 41% for IT portal. Regression weight with OSQ were found to be significant with values 0.58 (IRCTC) and 0.64 (IT). The result thus justified our proposed hypothesis and validated the proposition that good service quality from users’ perspective do assure satisfaction among users to a great extent.

6.2 Triangulation of Results

As a good research practice, researchers use triangulation, to enhance the validity of research findings. It is essential to use multiple methods and sources of data in the execution of a study in order to withstand critique (Mathison, 1988). Triangulation is necessarily a strategy that helps in the elimination of bias and
allows rejection of plausible opposing explanations for a truthful proposition of some social phenomenon (Campbell & Fiske, 1959; Denzin, 1978; Webb, Campbell, Schwartz, & Sechrest, 1966). In this study both data and method triangulation have been used. Data triangulation refers to using several data sources. Denzin (1978) included time and space perspective to expand the notion of data triangulation and justified that understanding of social phenomenon requires examination under various conditions.

In this study, concepts of data and method triangulation were used not only to compare different data sources (IRCTC and Income Tax portals) but also to investigate the same phenomenon. Using data from diverse sources and designs based on literature review helped us to incorporate judgments on limitations of each data source in this research.

It was found that overall service quality (OSQ) of IRCTC portal is hardly influenced by citizen convenience (CCON). Only 6.1% of the variance of OSQ is explained by CCON. On the other hand, OSQ of Income Tax portal is affected double fold by CCON. The outcome of the observation is that CCON does influence service quality, but the effect is not pronounced at this stage of portal implementation. If we go by the conventional process of evaluation, statistical analysis shows the first order model to be valid (convergent validity, discriminant validity, construct validity and face validity) with good reliability (CR > 0.7) while second order model shows discrepancy in AVE value. Since this research involves both qualitative and quantitative methods and aims to suggest a generalized model for service quality assessment of transaction based government portal, we cannot drop a construct or reject a hypothesis on the basis of quantitative analysis only. A deeper understanding of literature and interaction with experts and users posits that CCON is important to evaluate service quality in citizen centric environment which e-government 2.0 is focusing on.

A similar observation was noted for construct transaction transparency (TTR). TTR in case of Income Tax portal explained only 4.6% of variance in OSQ while TTR for IRCTC portal explained 21.4% of variance in OSQ. The construct was re-examined and it was found that the critical ratio was >1.96 at 0.05
level of significance indicating that residual of the factor accounted for the maximum variance and not the error. Residuals could be special factors which were not considered within the scope of the study, it being limited to users’ perceived service quality. Transparency issues related to a transaction based online service are essentially contributory for service quality of a government portal so the factor could not have been deleted altogether based on low variance value of second order model. Moreover, since in this study a priori theory-driven model is being used constructs cannot be dropped based on the inspection of a full path model (nomological network model) until and unless it is an absolutely non-contributing path (known as theory trimming). Other constructs exhibited moderate variance and factor loadings and were naturally retained.

6.2.1 Synthesis of results

A close inspection of the results suggests that the overall service quality is satisfactorily explained by the eight factors which have been derived solely based on literature review and interviews with citizens who use e-government services extensively. All the eight factors were found to be significant showing varied regression weights with the focal construct, overall service quality. The proposed model also shows that 41% variance of OSQ can be explained by the overall satisfaction (OS). The observations have been represented graphically in the figure 6.1
It was found that in case of IT portal, factors like Citizen Convenience and Transaction Transparency show marked difference in variance values compared to IRCTC portal. The observation can be justified as for a citizen tax payment is a mandatory duty, so services provided by income tax portal are vital for all citizens. Tax calculation in India is a complicated job and is generally done with the aid of tax professionals so; the citizens appreciate getting a platform for calculating their own tax and paying online. At the same time they tend to be rest assured about the transparency of the procedure and cautious about the cost effectiveness of the alternative option of online service. Since the portal is used frequently and intensively, citizens using the sites are aware of the convenience that should be provided to them and more concerned about the transaction utility compared to other portals.
In case of IRCTC portal, a deviation was also noted with three other factors. Comprehensive Information, Communication and Citizen Relation are the three constructs which show a marked difference from the values found in IT portal. Observation is justified as the citizens who opt for the online service from this portal do it by their choice. Other alternatives available for them are travel agents, cyber café agents or ticket outlets. The category of users also varies widely whose understandings of the virtual facility is limited and thus depend on detail information from the portal. Since there is a heavy traffic online for ticket booking during the peak hours of morning, the server sometimes fail to cope up with the demand and often the connection end up incomplete. This problem makes it essential for the authorities to build a good communication with users so that they get their tickets booked on time and be able to conduct a smooth transaction. Citizen Relation is also a factor which acts as a support to imbibe confidence in citizens. They want the portal to suggest them with different schemes, answer their queries promptly and a regular follow up so that they feel connected as in traditional government.

6.2.2 Insights from Analysis

Following insights are derived:

- Income Tax portal need to be more specific with the availability of the service 24 X 7 with multi language support.
- The service should be explained in a lucid language either through voice aid or through proper site tour.
- Transaction should be transparent and cost effective.
- A two way communication must be established between the users and the administrators.
- Security though is a concern, yet emails or other communication should be established between the tax payers and the department, which presently is lacking.
• For the IRCTC portal several other facilities like more language interfaces, 24X7 transactions support and train scheduling details need to be addressed. A voice guide or animated cite tour can help to enhance usage of the service.

• Transaction refunds are sometimes a problem especially when the tickets issued are i-tickets delivered at the doorstep of a user physically. The cancellations of i-tickets only happen in ticket booth. Since this is an online service, all bookings and cancellation need to be online.

• Transaction service charges are quite high which do not prove to be cost effective for tickets of less value. The organization should consider the effectiveness of such online service if they want to reach out to mass.

6.3 Concluding Remarks

The synthesis of results obtained in previous chapters conclude that service quality of transaction based government portal can be expressed by Citizen Convenience, Transaction Transparency, Technical Adequacy, Comprehensive Information, Reliability, Security and Privacy, Communication and Citizen Relation, but the degree to which it can be explained by each factor depend on the development stage of the portals and the purpose of use. The service quality of these portals also influences the experience of overall satisfaction among users. The next chapter concludes on implications on practice and research, limitations and future scope for research in this area.