ROLE OF INTERNET IN INDIAN ECONOMY AND PASSENGERS PERCEPTION WITH E-SERVICES PROVIDED BY INDIAN RAILWAYS

SIMERJEET SINGH BAWA¹, DR. HARPREET SINGH², NEERAJ GUPTA³ & DR. TANUJ SHARMA⁴

¹Assistant Professor, Chandigarh Business School of Administration, Chandigarh Group of Colleges, Landran, Punjab, India

²Professor and Director, A.S Group of Colleges, Khanna, Punjab, India

³Assistant Professor, Chandigarh Business School of Administration, Chandigarh Group of Colleges, Landran, Punjab, India

⁴Assistant Professor, Chandigarh Business School of Administration, Chandigarh Group of Colleges, Landran, Punjab, India

ABSTRACT

The Internet and online services have acted as a new catalyst leading to growth of businesses around the world. Internet has driven sensational change and its ceaselessly impact the Indian economy. It has empowered progressions of data, including amusement, news, budgetary and scholastic material. The online services help the firms in offering additional benefits and helps in introducing new advantages for all their customers. The online services help in ensuring that the consumers have access to information on click of a mouse and it helps in increasing the reach of that information among masses who have access to these facilities across the world. The online services have become a necessary and an important part of the overall bouquet of services offered by the businesses to their customers and a lack of them can lead to service firms falling below in the pecking order behind their competitors. This has ensured that all the businesses are embracing these online services and adding them to their portfolios to enhance the overall experience that customers have while consuming their services. With the help of these services the firms are able to get real time feedback from the customers which can help the firms in coming out with product and service improvements and enhance the experience of their customers. The addition of online services has become a must for all the businesses and it is helping break the barriers of time, geography and language etc. and other traditional barriers confronting businesses. These services are shifting the way businesses looked upon their customers and is helping them become more focused and targeted in their approach while offering more and more customized services for their customers.

The current research paper is focused on the impact of the online services of Indian Railways on the satisfaction of customers with those services. The results of the study indicate that all the four Independent variables chosen in this study based on literature review have an impact on the customer satisfaction with the online services offered by the Indian railways. The study also identified factors like New technology experience and easy access to information as and when required as most important factors encouraging adoption of online services where as factors like lack of technical skills, system is complex, additional charges to book online and privacy issues as factors which act as bottlenecks in adoption of online services offered by Indian railways. The current study has helped in identifying the issues which if worked on properly can help the Indian railways in increasing the acceptance and satisfaction of its customers with its online services.

KEYWORDS: Internet, Economy, Indian Railways, Passengers, E-Services

Received: Jun 08, 2020; **Accepted:** Jun 28, 2020; **Published:** Aug 31, 2020; **Paper Id.:** IJMPERDJUN2020981

INTRODUCTION

The rise of the utilization of the Internet is changing the means we interact, learn, communicate and negotiate. At

an equivalent time, new clients patterns are emerging because of the Internet and electronic commerce. An increasing number of enterprises are using the Internet so as to offer more services online to their customers and add higher added value to their customers and indirectly to their businesses. This has allowed the firms to shift their focus away from the traditional definitions of competition with only local players to competing with best players in the Industry internationally. This has raised the bar for all types of firms and the firm's which seem to be ignoring such technological changes most likely are left behind.

It is an information age and internet is the greatest revolution which is facilitating the growth of this age with the help of online services. Albeit moderate at first, India is slowly picking up the force and is turning into the nation with most noteworthy number of internet educated populace in the world.

The utilization of web directly affects nation's economy. A study reveals that examination from uncovers that on a normally 10% expansion in internet endorser brings about 1.08% of increment in output. (Indian Council for Research and International Economic Relations ICRIER). In this manner, the expanding internet infiltration huge effects nation's GDP. Internet is beating the imperatives like absence of elective foundation, absence of appropriate streets and absence of data reasonably proficiently and rapidly.

A study at international level revealed that, the internet has conveyed "huge monetary development, made wraps of occupations and created wealth" (McKinsey). In India, the internet contributed 5% to GDP development in the previous five years, higher than the normal 3% for Bric (Brazil, Russia, India and China) economies yet much lower than the US (15%). The manner in which the Internet adds to monetary development is by helping organizations minimize expenses, target clients better and sell products and ventures in business sectors around the globe significantly more without any problem. Utilizing the internet, governments can support residents rapidly, and at much lower costs (McKinsey). In India with the advanced infiltration has expanded essentially, as per measurable information web use has expanded to 429.23 million client in India and is required to stretch around 830m by year 2021. There has been huge ascent of web based business in India, as India's web economy is 165 billion dollar in 2019. Economy can get three collapsed profits by internet based business as far as firms, costs and profitability (Terzi, 2011). Both developed and developing economies are receiving rewards for digitization. Specialists state created nations are exchanging higher economic advantages from digitization; in spite of the fact that activity creation is more in the developing nations.

Internet is attached almost with every single business and all types of industry. One of the major affected industry from the internet is a service industry. Almost all types of services are totally attached to the internet. One of the major sectors in the service industry is transportation, it is also affected by the internet. Railways are one of the cheapest and fastest modes of transportation.

Operation of railway services has progressed loads since the appearance of the primary locomotive. Railways are the foremost most popular and preferred mode of transport for more than 70% of the population. With changing times, railway operations and services have developed with a much better orientation towards customers. The requirement for railways has become impervious with a growing population and particularly in an exceedingly country such as India, growth similarly as improvement of railways is a necessity.

Information and communication technology has had a central role in railways right from its beginning. Since the start, telephone and communication lines were carried on railway routes, as communication was crucial in railway

operations. Even in modern times, the development of railway services and operations is difficult without the integration of strong IT systems. Railway systems have improved in numerous fronts with intensive usage of the internet. A number of the foremost vital advancements are in fields of Security, Operations, Customer Services and access to railway services.

The Indian Railways provides services on stations as well as onboarding. Indian Railways also provides online services to its passengers. Online service helps the passenger to get access for surfing on railways official site and get their queries sought and get all the related information about their booking, delays, real running time of trains and much more. One of the highly important contributions of the internet in railways is in the domain of customer service and access to information. Railway systems are integrated with efficient and real-time frontend IT platforms for improvised customer services. Modern railway systems have to deal with massive commuters and increasing transportation of goods. Moreover, the need for better services has increased with the requirement of more pervasive railway services. In fact, they are the most important facets of access to railway service. For a huge and complicated railway network system such as India, efficient use of ICT can certainly make a difference.

With the advent of online services backed by rapid mobile and internet penetration with the Indian population, the Indian railways is also adopting technology like anything to ensure that they can offer majority of their services to their consumers online. The online platform offered by the firm helps its consumers to book tickets, meals and various other services online. The availability of such services has empowered the consumers who do not have to leave the comfort of their home to book all such services offered by Indian railways. The online services are available 24 by 7 and help the consumers through various websites like www.iretc.co.in and www.indianrail.gov.in. These websites have ensured that people can avail all kinds of services and keep a track of the schedule of different trains across the country. A real-time information system is a crucial aspect of customer service. Passenger inquiry about the availability of trains, arrival and departure schedules at stations and status of booked tickets are some of the aspects that serve as parameters of customer satisfaction of railway services. This has saved a lot of time and effort of the consumers in availing the services offered by the Indian railways. The railways have been making all out efforts to keep on improving on all the aspects so that the consumers can be provided the best of experiences while availing all types of services. Passenger ticketing and inquiry systems are being developed to be highly service oriented to provide an “ease of access” to customers. In present times, railway information systems are being integrated into mobile services. Adding to this, many web applications are being developed through which railway services can be accessed via mobile devices. Henceforth, it is important that the railway authorities understand the consumer perception about these online services offered by them. This awareness about consumer perception can help the authorities make necessary changes and improvements to ensure that the authorities can offer the best of services to their consumers.

IMPORTANCE OF CURRENT STUDY

Online services are becoming a necessary part of services amongst all the industries. The Indian railways had also started offering online services (including e-ticketing) to its consumers from the year 2002 when they started the online ticket booking services for the first time. Since then the railways has been making a lot of changes to the services being offered by them. These changes have been introduced to ensure that the consumers can get the best of services. And to offer best services to consumers as per their requirements and views, the administration needs to know how the consumers perceive the current set of services offered by the organization to them. The current study has made the attempt to understand the impact of internet on Indian economy and the overall perception of consumers towards the various online services offered

by Indian railways to its consumers and the reasons which promote it and the different problems faced while using such services.

REVIEW OF LITERATURE

Pohjola (2001), stated that development of innovation and related data and information help build up society's creation limit and way of life which are conclusive to the economic growth of the country. (M. Castells, 2000). Being a worldwide idea, digitization has unmistakable effect on economic development and work of any country. In another study, digitization index have been connected to higher development and work with expanding returns to scale. Human capital is a key part to the effect of digitization (Katz, Koutroumpis, and Callorda, 2014) So as to exploit online business, there must be a legitimate plan of action just as different techniques with the goal that the business is reasonable and provides economic development. (Mafe and Blas, 2006)

Rust & Kannan (2003), in their study explained the importance of e-service as a customer-centric phenomenon, and how it helps in increasing value creation for the consumers. They explained that how e-service orientation helps in shifting the focus away from products and transactions to the services and relationships which help in building customer equity. The authors explained how the services firms need to take full advantage of the internet based online service opportunities which help shift the focus from products to services, and help in building long-term customer relationships and increasing customer loyalty towards the firm. Thus e-service can act as both a strategic and tactical catalyst in improving the overall services offered by the firms to its customers thereby leading to better customer firm relationships.

Ghosh et al. (2004) in their study had attempted to analyse e-service and conceptualized e-service as an interactive form of information service. The authors pointed out that the information gathered from the consumers about their purchases or experiences can be analyzed and the results of the analysis can be utilized to further customize the services that organization offers to its customers. The study further pointed out that online service experiences help the firms in further integrating their communications with what they will be delivering to their consumers. This can help the firms in avoiding any confusion and helps the firms in delivering exactly what they promised based on feedback received from the consumers.

Rowley (2006) in her study attempted to list down a lot of advancements in technology which were helping in improving the tech based self service and e-service aspect of services. This helped the managements to reduce their costs and help the consumers consume service at their own pace according to their own comfort levels. This use of the tech enables self service of e-service mechanisms helped in the overall differentiation of the firm's service and helped them improve their customer interfaces. This helped in improving the customer experiences tremendously. The author concluded that for better understanding of the customer's e-service experiences, the firms need to not only focus on e-service quality dimensions but also focus on the different characteristics which define the e-service delivery aspects. Further they also needed to identify the factors related to e-services which could help them differentiate from one e-service experience from the other one.

Carlson and Aron (2010) in their study had examined the different relations that exist among the e-service quality dimensions, the level of customer satisfaction, the customer's attitude towards the website of the e-service provider and the overall behavioral intentions understood by the consumer in the context of websites which provide content based services. As per the authors, electronic service in today's business context is one of the primary drivers of success for an online

business. The firms need to boost their e-service capabilities to build their business. They authors suggested that e-service firms need to focus on creating positive evaluations of the e-service quality which can thus lead to greater levels of customer satisfaction. This in turn was linked to the type of attitudes customers form of the website of the firm and thus is instrumental in shaping the behavioral intentions of the customers, especially in the context of websites which offer content related to professional sports. The authors also emphasized on the need to measure and evaluate the e-service quality of the online firms as the reach of such firms was increasing at a tremendous speed among the consumers.

In a study by Sahney et al. (2010). The use of e-ticketing as a phenomenon had become very popular among the consumers due to increasing penetration of technology and its impact on the consumer behavior. The impact was visible among the demographic and the psychographic factors among the consumers due to the computer proficiency of the consumers using it and the consumer friendly interfaces which the online technology platforms were providing. The authors based on their study concluded that the consumers who had high level of tech skills and were looking for the tourism services to be used were the ones who were more likely to consume the services like e-ticketing being offered to them.

Khare and Handa (2011) in their study had emphasized on the success service delivery being an important determinant of the overall success for any firm in the service industry. And to ensure successful service delivery in today's context adding online service delivery channels was very important. The authors conducted an exploratory study to assess consumer's experiences with the online reservation system offered by Indian railways. The results were assessed based on what consumer's felt about the use of technology in improving the customer's experience of the ticketing system by the railways. The authors used the service quality dimensions by Parasuraman to judge the consumer's perception and the results clearly indicated the gaps in what consumer's experiences have been while using these services. The authors suggested that the firm needed to improve its services along the different service quality dimensions considerably if it wanted the consumer's to have a positive perception towards these online ticketing service offered by them.

In a study by Shetty (2014) the author had emphasized on the different ways the consumers perceived the e-ticketing services being offered by IRCTC. The results of the study showed that consumers had a positive perception towards the e-ticketing services offered by the firm, but were not happy with some technical bugs which hampered their experience with the service offered. The author in the study had suggested that IRCTC could improve the consumer's overall perception of its services by focusing on removal of the technical bugs affecting the service, and by making the user interface more consumer friendly, adding more online payment gateways, and coming up with more innovative features in its website to make the consumer's experience of using their website more positive and enriching. With the focus of policy makers on ensuring digital inclusion for majority of the population across the country and ensuring technology access to majority of the population, IRCTC needs to focus on strengthening the overall process of the e-ticketing and the related experience of the consumers using this service.

D. Anbupriya and S. Subadra (2017) during her research has explained that the internet has become an imperative travel service delivery channel. Online travel service provision has full-fledged developed as a favorite and preferred straight distribution channel in the travel industry. Further, she stated that there was a time when passengers pay standing within the line, hence creating their journey convenient and trouble-free. Indian Railways Catering and Tourism Corporation opened all the services online and passengers can easily be booked through its website.

In their study Naveen and Ranganathan (2018) had studied the Indian's railways passengers perception towards the overall performance of railways. The authors made an attempt to study the extent to which the performance of railways was influenced by the factors like service quality, innovation and technology etc. The authors concluded that to improve the passengers perception of the overall performance of railways the firm needs to improve on the dimensions like innovation and technology introduction to facilitate its services for the consumers.

THEORETICAL FRAMEWORK

For the purpose of current study Customer satisfaction was chosen as the dependent variable. Based on the review of literature, customer satisfaction has been measured extensively using two aspects in the context of e-services (including e-ticketing). These two variables are – customers satisfaction and customer retention. In their study Chang, Wnag and Yang (2009) have argued that customer satisfaction display similar patterns in context of e-services as they would when involved in a face to face interaction. The authors have stated that in case of lower perceived value, the consumers switch to other competitors leading to a decrease in loyalty. Satisfaction as a phenomenon takes time to develop based on the treatment meted out to them by the service firms. Henceforth, in the context of e-services there are different variables which influence the level of customer satisfaction based on the overall level of quality received by the consumer. Bernardo et al. (2013) explained in their study noted that loyalty in case of e-services is dependent upon the services offered both pre and post a sale and the environmental circumstances in which the transaction is carried out i.e. of consumers feel secure and supported by organization or employees, then it leads to increased customer loyalty. This further leads to increased customer retention (Enzamann& Schneider, 2005). The firms need to focus on building relationships with their customers as in case of e-services loyalty and retention is a by-product of the commitment, trust and involvement of organization to ensure that the consumer receives the value of the service provided to them (Chen, 2012). Henceforth the firms need to provide proper customer support services to ensure better customer experience leading to increased customer loyalty and retention (Kolsaker et al. 2004).

The e-services which influence customer satisfaction i.e. Infrastructure, customer technical support, user-friendliness and security have been discussed below.

Infrastructure

Infrastructure has been identified as one of the most important factors which has an impact of customer satisfaction in case of e-services(including e-ticketing). The e-services need to have a back-up infrastructure which helps in the integration of the e-services offered by the firm with the other support operations of the organization. This integration ensures that the firm is able to provide the uninterrupted services through the online platforms. Such integration ensures that the firm is able to build a comprehensive system encompassing all elements together to ensure all customer requirements can be fulfilled without any hiccups by providing the necessary backup support (Jakubauskas, 2006). The infrastructure developed by the organization has an impact on the customers'sability to easily use the system offered by the organization. This ensures accurate delivery of the services by ensuring continuity of service, reduction of risks and improved operational efficiency while offering e-services which includes e-ticketing mainly (Zambon et al. 2011).

Customer Technical Support

Furthermore in case of e-services and e-ticketing facilities customer technical support is also an important variable which has an impact on the customer satisfaction levels. The customer's evaluation is further dependent on the consumer's perception which is further formed by the level of technical support provided by the firm (Lau, Kwek and Tan, 2011). The consumer's consumption of e-services specifically e-ticketing will further depend on the customer support and service offered by the service firm leading to increased purchases of firm's products and services (Sureshkumar and Palanivelu, 2011). Kolsaker et al, 2004 have reported that to take maximum benefits of the e-service (e-ticketing) the firm needs to come up with relevant customer support programs so as to ensure that consumer's find it easier to use and avail these services with least amount of efforts.

Data Security

This variable also impacts the customer's satisfaction with regards to e-services offered. Smith and Smith, 2012 in their study had examined that security issues involved in e-ticketing services are found to be linked with integration of CRM systems with the process used to book tickets. This is due to the lack of attention paid to the proper integration of CRM systems with the ticket booking services. Furthermore, the data security threats in online or e-services offered to consumers have been identified as a very significant issue for the consumers. As per Yang and Jun, 2008, the customers are very unlikely to make purchases or use online services if they perceive a security threat associated with the service. Such security issues can impact the customer's satisfaction levels with the e-services offered by the firms. The service firms need to ensure that the customer's data is properly protected to gain trust of the customers and ensure that they regularly use the online services offered by the firm.

User Friendliness

The firms need to ensure that the online services offered by them to their customers are user friendly. If the customers don't find these services user friendly and they have to make extra efforts to avail these services then they are very likely to not switch to the online services and keep using the offline services provided by the firm. Lei, Quintero and Pierre, 2009 found in their study, that e-services or e-ticketing systems which require less steps were used more frequently by the customers. As per Dekkers and Rietveld, 2007, the customer's use of e-services can also depend on the characteristics of user like their technical skills and their propensity to use the online services more or less frequently.

OBJECTIVES OF THE STUDY

The current study makes an attempt to study the impact of internet on Indian economy and consumer's perception towards the e-services offered by the Indian railways for its passengers. To achieve the above stated purpose the following objectives will be tested in the current study –

- To understand and measure the perception of respondents towards the online services (including e-ticketing) and their influence on customer satisfaction.
- To identify the factors which motivate usage of online services offered by railways.
- To understand the impact of internet on Indian economy and factors while discourage the use of online services offered by railways.

RESEARCH METHODOLOGY

The descriptive research design is used for the study. The convenience sampling technique was used to select the respondents. A structured questionnaire was used to collect the data from the respondents. The questionnaires were emailed to a list of 400 respondents after asking a screening question to a list of 600 people who were in primary contact of researchers in the tri-city. The screening question was to identify who had used the online services (including e-ticketing) offered by Indian railways and who had not. Out of 600 people around 380 answered in affirmative. The questionnaire was mailed to these 380 respondents and only 238 responses were received, out of which 38 were either incomplete or had uninvolved responses so these were removed from the final analysis. A final sample of 200 respondents was selected for the final analysis. The techniques like regression analysis, chi-square analysis and descriptive analysis were used for the analysis.

DATA ANALYSIS AND DISCUSSIONS

Demographic Profile of the Respondents

The demographic profiles of the respondents was studied with the help of basic descriptive analysis only.

Table 1: Demographic Characteristics

Percentage	Frequency	Variable	Characteristic
44	88	Age	< 30 yr
37.5	75		30-45 yr
15.5	31		45-60 yr
3	6		> 60 yr
52.5	105	Gender	Male
47.5	95		Female
31.5	63	Educational Qualification	Post Graduate – professional
34.5	69		Post-Graduate – general
28	56		Graduate
6	12		Till Higher Secondary
30.5	61	Occupation	Private Employee
28	56		Government Employee
15	30		Businessman
10	20		Housewives
16.5	33		Student

In terms of demographic composition of the respondents Table 1 shows that, 44 percent (n = 88) were aged less than 30, 37.5 percent (n=75) were aged between 30-45 years, 15.5 percent (n=31) were aged between 45-60 years and only 3 percent (n=6) were aged above 60 years. Additionally 52.5 percent (n = 105) were male with the remaining 47.5 percent (n = 95) female. Of those respondents who completed the questionnaire, 6 percent (n = 12) had some education till higher secondary while 28 Percent (n = 56) had a graduate degree, 34.5 percent had a post graduate – General (n = 69), and 31.5 percent had a post graduate - professional degree (n = 63). A majority of respondents reported Private employee as profession (30.5 percent, n = 61), followed by government employee (28 percent, n = 56), followed by Businessman (15 percent, n = 30), followed by Housewives (10 percent, n=20) and finally students (16.5 percent, n=33).

To test the objectives of the study, first of all Cronbach alpha coefficients for all the variables were calculated and all the coefficients calculated for all five constructs were found to be above the threshold value of 0.7 (Nunnally, 1978). The cronbach alpha values for the constructs Infrastructure, customer technical support, data security, user friendliness and

customer satisfaction, were found to be 0.815, 0.715, 0.847, 0.806 and 0.888 respectively which are comfortably above the values proposed by Nunnally, 1978.

Multiple linear regression analysis was conducted to identify the overall impact of the IDV's (i.e. infrastructure, customer and technical support, data security and user-friendliness) on the DV i.e. customer satisfaction. The R^2 for the multiple regression run on the variables resulted in a value of 0.693 and significant. Thus all the variables combined together are able to explain 69 percent of variance in the value of Customer satisfaction which is well above the acceptable limits. The overall model is good and all the IDV's together significantly predict the change in the value of DV. The results indicated that the different variables put together were significant predictors of the customer satisfaction.

The simple linear regression was carried out individually between all the IDV's individually with the DV. The results of Individual regression between the different variables and the dependent variable are shared below –

The results from the single linear regression analysis between Infrastructure and Customers satisfaction indicate that a high and significant amount of affect of Infrastructure (IDV) exists on Customer Satisfaction (DV) with a R^2 value of 0.356. Similarly for the regression analysis between customer technical support and Customer satisfaction the R^2 value is 0.484 which again indicates that there is a strong effect that exists between customer technical support and customer satisfaction. Followed by Customer technical support the regression analysis between data security and customer satisfaction as variables have a R^2 value of 0.515 which indicates a high and significant amount effect of data security too on customer satisfaction. And finally for regression analysis between user friendliness and customer satisfaction the R^2 value is 0.398 which also indicates a high and significant amount of effect exists between user friendliness of the services and the customer satisfaction level.

Factors which Ensure Usage of Online Services by Railways Customers

There are various factors which have contributed to consumers adopting the online services offered by Indian railways including the e-ticketing services. These factors have been instrumental in ensuring that the Indian consumers embraced these technologies with open arms and helped the railways revolutionize the way they provided the services to their ultimate customers. The results of Friedman's test to reasons which have ensured that the consumers adopted these services have been shown below in the table II.

Table 2

Factor	Mean Rank for Factor	Chi – Square value	p value
Convenient	3.90	206.104	0.000**
Time saving	4.14		
Cost saving	4.01		
24 by 7 availability	4.46		
No long queues	4.12		
New technology experience	4.65		
Easy access to information as and when required	4.48		

The results for the Friedman test to understand the factors responsible for adoption of online services offered by Indian railways are shown in the table above which show that the chi-square value for the factors is 206.104 with a p value of 0.0000 which is less than 0.01. The results are statistically significant which means that these factors do serve as factors which may influence the adoption of such services. Similarly the factor i.e. New technology experience with a mean value of 4.65 comes out to be the most important factor which influences the customers to opt for the online services as this helps

the experience a unique way of experiencing the services. This factors is followed by easy access to information as and when required, 24 by 7 availability, time saving, no long queues, cost saving and convenient as the other factors which influence the acceptance of online services among the passengers (customers) of Indian railways.

Factors which have an Influence on Reluctance to Use Online Services Offered by Indian Railways

The current study also attempted to zero in on the factors which the railways needs to work upon in order to ensure that they are able to increase the acceptance of its online services among its customers who are reluctant to use or are using it reluctantly. These problems need to be worked upon by the Indian railways to ensure even more people start taking advantage of its online services and get satisfied with these services. The friedman test was again applied to identify the problems while using these online services offered by Indian railways. The results of the test are shared in table III below.

Table 3: Results

Factor	Mean Rank for Factor	Chi – Square value	p value
Risk in using credit card/banking details	4.37	221.665	0.0000**
Busy Internet networks	3.26		
Refund and cancellation issues	3.46		
Less number of payment gateways	4.17		
Lack of technical skills	4.76		
System is complex	4.69		
Additional charges to book online	4.56		
Privacy issues	4.50		

On the basis of the results of the Friedman test, we can conclude that the problems included in the current study are having a chi-square value of 221.665 at ap value of 0.0000 which is less than 0.01. This means these factors are statistically significant and the consumers find these problems to be really influential in impacting their choice for chosing to use the online services offered by Indian railways or not. On further inspection it was found that lack of technical skills emerged as the most important factor with a mean value of (4.76) and busy internet networks as the least significant problem among the factors studied. Indain railways needs to work hard to eliminate these factors as bottlenecks to the adoption of the online services among the customers in tricity.

From the above analysis it is evident that all the four independent variables (infrastructure, customer technical support, data security and user friendliness)used in this study are capable of explaining 69 percent of the variance in the variable of customer satisfaction with an R^2 value of 0.693. All the variables separately too have a significant contribution in explaining the phenomenon of customer satisfaction in the prediction of customer satisfaction all at the significance values of $p < 0.05$. Thus inclusion of all four variables used in this study to help predict the customer's satisfaction level with the online services offered by the service firm (Indian railways) in this case are supported.

IMPLICATIONS

The implications of the study are fruitful only in case the organizations in question are ready to accept where the flaws are and then work to iron them out. It clearly indicated that effect of digitization is progressively helping Indian GDP to develop. Alongside economic advantage, the irrefutable practicality of Indian internet economy is likewise changing the public activity of the Indians whose advantages are trying to measure. The results of the current study also indicate that the organization needs to take into care all the four variables discussed above i.e. infrastructure, customer technical support, data security and use friendliness as all these four variables were significantly predicting the customer's satisfaction level with the online services offered by the Indian railways. Along with this the firm also needs to make sure that they are able

to make it more convenient for the users to use their services by making them more friendlier to people with lack of technical skills and by making their systems more cost efficient for the customers. Furthermore, the Indian railways also need to take care of issues like educating customers on how to use their online services (especially to people with lack of technical skills), reduction of system complexity, minimizing additional charges for online services and taking care of the privacy issues to ensure that the acceptance for the online services can be increased among the customers.

The Indian railways needs to take into care the above mentioned aspects and design a simplified and a more comprehensive and holistic system to offer online services to a wide variety of audience. The Indian railways will be able to enhance the customer satisfaction level of its customers with its online services if it works on the different aspects mentioned above. This can only be achieved by having a relentless focus on the customer's ever changing and evolving needs and by taking care of the ever changing technical environment.

CONCLUSIONS

Internet is incredible stage not exclusively to create foundation yet in addition increment work rates in India and along these lines by and large effect in expanding financial and social development in Indian economy. The use of internet technology is imperative in railways. Digital technology can make railway services more secure and safe. Customer oriented features providing a range of services can be developed to make access to railways simplified and comfortable. To achieve these objectives the Indian railways needs to understand that customer satisfaction with their online services is driven by variables like infrastructure, customer technical support, data security and user friendliness of its services. Indian railways needs to understand what consumers want added to the current facilities and what bottlenecks need to be removed in order to make their online services more acceptable among the consumers and thereby increase their satisfaction with them. The issues identified in this study can help Indian railways in designing online services which are more acceptable among the customers and which can help in increasing the customer satisfaction levels.

REFERENCES

1. Anbupriya, D., and Subadra, S., (2017), "Perception of Passengers about Online Services Offered by Indian Railways with Special Reference to Salem Junction," *International Journal of Engineering and Management Research.*, 7(2), pp. 213-220.
2. Bernardo, M., Llach, J., Marimon, F., & Alonso-Almeida, M.M. (2013). The balance of the impact of quality and recovery on satisfaction: The case of e-travel. *Total Quality Management & Business Excellence*, 24(11/12), 1390-1404.
3. Carlson, J. and Aron O'Cass (2010). Exploring the Relationships between e-Service Quality, Satisfaction, Attitudes and Behaviours in Content-driven e-Service web sites. *Journal of Services Marketing*, 24(2), 112-127.
4. Chang, H.H., Wang, Y., & Yang, W. (2009). The impact of e-service quality, customer satisfaction and loyalty on e-marketing: Moderating effect of perceived value. *Total Quality Management & Business Excellence*, 20(4), 423-443.
5. Chen, S. (2012). The customer satisfaction-loyalty relation in an interactive e-service setting: The mediators. *Journal of Retailing & Consumer Services*, 19(2), 202-210.
6. Dekkers, J., & Rietveld, P. (2007). Electronic ticketing in public transport: A field study in a rural area. *Journal of Intelligence Transportation Systems*, 11(2), 69-78.
7. Enzmann, M., & Schneider, M. (2005). Improving customer retention in e-commerce through a secure and privacy-enhanced loyalty system. *Information Systems Frontiers*, 7(4/5), 359-370.

8. Ghosh, S., Surjadaja, H. and Antony, J. (2004). *Optimisation of the determinants of e-service operations*. *Business Process Management Journal*, 10: 616–636.
9. IRCTC to launch 'Rolling Deposit Scheme' for e-ticket. (2012, August 28). Retrieved June 12, 2020, from *The Economic Times*: <https://economictimes.indiatimes.com/industry/transportation/railways/irctc-to-launch-rolling-deposit-scheme-for-e-ticket/articleshow/15902125.cms?from=mdr#:~:text=%22We%20have%20decided%20to%20launch,booked%20daily%20through%20IRCTC%20website.>
10. Jakubauskas, G. (2006). *Improvement of urban passenger transport ticketing systems by deploying intelligence transport system*. *Transport*, 21(4), 252-259.
11. Khare, A. and Handa, M. (2011). 'Customers' quality perceptions towards online railway reservation services in India: an exploratory study', *International Journal of Services and Operations Management*, (4), 491–505.
12. Kolsaker, A., Lee-Kelley, L., & Choy, P.C. (2004). *The reluctant Hong Kong consumer: Purchasing travel online*. *International Journal of Consumer Studies*, 28(2), 295-304.
13. Lau, T., Kwek, C., & Tan, H. (2011). *Airline e-ticketing service: How e-service quality and customer satisfaction impacted purchase intention*. *International Business Management*, 5(4), 200-208.
14. Lei, T., Quintero, A., & Pierre, S. (2009). *Mobile services access and payment through reusable tickets*. *Computer Communications*, 32(4), 602-610.
15. Naveen, K. and Ranganathan, R. K. (2018). *Customers perception on the factors of Indian Railway Service to improve their service*. *International Journal of Pure and Applied Mathematics*, 118(20), 3739-3744.
16. Roland T. Rust, and P. K. (2003). *E-service: a new paradigm for business in the electronic environment*. *Communications of the ACM*, 46(6), 36-42.
17. Rowley, J. (2006). *An analysis of the e-service literature: Towards a Research agenda*. *Internet Research*, 16(3), 339-359.
18. Sahney, S., Ghosh, K., and Shrivastava, A. (2010). *Consumer "personality" in railway e-ticketing: conceptualization and empirical testing in Indian context*. *International Journal of Business, Management and Social Sciences*, 1(1), 9-20.
19. Shetty, V. S. (2014). *E-Ticketing in India – A study on Indian Railway Catering and Tourism Corporation Ltd*. *Indian Journal of Applied Research*, 4(5), 109-111.
20. Smith, A.A., & Smith, S.D. (2012). *CRM and identity theft issues associated with e-ticketing of sports and entertainment*. *Electronic Government: An International Journal*, 9(1), 1-26.
21. Sureshkumar, D., & Palanivelu, P. (2011). *Perceptions of value: E-CRM features*. *SCMS Journal of Indian Management*, 8(2), 106-111.
22. Verma, K. (2015, January 8). *IRCTC to popularize 'Rolling Deposit Scheme'*. Retrieved June 12, 2020, from *The Times of India*: <https://timesofindia.indiatimes.com/city/patna/IRCTC-to-popularize-Rolling-Deposit-Scheme/articleshow/45798860.cms>
23. Wolff, Christoph., (2001), "Getting India's Railways on Track," *McKinsey Research Report Quarterly*, 00475394, Special Edition, Issue 4 - Database: Corporate Resource Net.
24. Yang, Z., & Jun, M. (2008). *Consumer perception of e-service quality: From internet purchaser to non-purchaser perspectives*. *Journal of Business Strategies*, 25(2), 59-84.
25. Zambon, E., Etalle, S., Wieringa, R., & Hartel, P. (2011). *Model-based qualitative risk assessment for availability of IT infrastructures*. *Software & Systems Modeling*, 10(4), 533-580.