

An Analysis of Extent of Use of Online Utility Services in Punjab, India

Anupriya Nayal^{1*} and Preeti Sharma¹

¹Department of Extension Education and Communication Management, Punjab Agricultural University, Ludhiana, Punjab – 141004, India.

Original Research Article

ABSTRACT

Aim: To analyze the extent of use of online utility services.

Study Design: Descriptive survey research design.

Place and Duration of Study: Rural (Doraha and Sidhwan Bet block), peri-urban (AyaliKalan, Sunet and Threeke villages of Ludhiana I block) and urban areas of Ludhiana district, between August 2018 to May 2019.

Methodology: Using a structured interview schedule, data was collected randomly from 180 respondents having sixty online utility service users each from rural, peri-urban and urban areas of Ludhiana district of Punjab, India. The statistical tools such as frequency distribution, percentage, arithmetic mean, category interval method, Kruskal Wallis H-test for k independent samples and cumulative cube root frequency method were used for the analysis of data along with Statistical Package for Social Sciences (SPSS) software.

Results: Overall, higher percentage of the respondents had moderate to high extent of use of online utility services and were using them for bill payment, online/ mobile banking, entertainment, online shopping and for other miscellaneous services.

Conclusion: Extent of use of different online utility services was comparatively higher among urban respondents.

Keywords: Online utility services; extent of use; bill payment; online ticketing; online banking.

1. INTRODUCTION

The world has been transformed into a global village because of the revolution brought by internet technologies in communication [1]. Government of India has recognized information and communication technology (ICT) as an essential service and considered it as one of the thrust areas for the country's development [2]. The rate of acceptance of ICT is continuously accelerating which has brought about significant advances in relatively all aspects of human

existence. Perception of the customer is altering with the ease of internet availability [3]. The affordability and multi-functionality of smartphones are making mobile as the device of choice for users in both rural and urban India [4]. Increase in internet penetration is directly and positively impacting the service industry [5] by creating exceptional possibilities for online merchants. India has an immense economic opportunity as the tele-density in rural India is only 45 per cent where more than 65 per cent of the population lives [6]. Online services are

intended to raise the productivity and competence of the private and public sectors by making the services accessible at all times of the day. It even includes 'digitization' of utility services which facilitate routine operations of the public. Online utility services are services that are provided by different organizations with the use of the internet for public use in day to day life such as paying bills, e-ticket booking, money transfer, applying for various identification cards (Passport, Aadhar Card, PAN Card) etc. It has enabled internet banking or mobile banking in the banking industry [7], modernization of land records, online utility bill payment system, online shopping, e-commerce, e-learning, e-government services, e-voting, e-ticketing, online food ordering, e-post office, e-tax payment, e-passport seva, online RTI, e-courts etc. India, currently, has third largest internet user base in the world with 300 million users. 50 per cent of these users are connected to internet through mobile only. It is observed that this 150 million mobile only internet users are playing an important role in the growth story of digital payments [8]. The number of UPI transactions almost touched 250 million in June 2018 and the number of merchants accepting card payments has more than doubled in the last two years to cross 3 million. Overall, the proportion of cash transactions in the total consumer spending in the country has decreased to 68 per cent in 2017 from 78 per cent in 2015 [9]. It is assumed that digital payments in India will supersede cash by 2022. Online shopping, payment of utility bills (like electricity, mobile bills, water bills, etc.) and movie tickets are the three things that an Indian user primarily pays for through digital platform. The progress of the digital payment sector is driven by multiple factors including convenience to pay, the ever-growing smartphone penetration, availability of lucrative offers, rise of non-banking payment institutions (payments bank, digital wallets, etc.), progressive regulatory policies and increasing consumer readiness to the digital payment platform [8].

In this technological era, the issues associated to technology, including diffusion, acceptance, adoption and adaptation have been the focus of research for different disciplines [10]. The government aims at leading towards Trillion Dollar Digital Economy with its 'Digital India' initiative. 'Digital India', a flagship programme of the Government of India, was launched for revamping India into a digitally empowered nation and knowledgeable economy. It is centered on three key vision areas: digital

infrastructure as a core utility to every citizen, digital empowerment of citizens, and governance and services on demand [11]. The expeditious growth in utilization of online utility services and internet penetration is making it imperative to analyze the extent of use of online utility services so as to effectively harness the potential of these services to provide the maximum benefits to the society. While the ambitious programme aims at transforming India by ensuring digital access, digital inclusion, digital empowerment, and by bridging the digital divide, it becomes imperative to study the status of online utility services' usage. This study aims to understand the extent of use of online utility services by users of Punjab, India. Knowing the users' extent of use of online utility services will benefit decision makers during the development phase, they'll be able to take into account the factors that influence users' decision to use a particular service so that they are able to provide the specific service in the specific contextual condition, which is tailored to the needs of the specific user. It may give an insight on how much people are digitally literate and their extent of using digital devices which may guide extension workers in utilizing the potential of digital devices for extension activities. Thus, this research will provide valuable knowledge and information to government, policy makers and service providers to enhance acceptability of the online utility services in future.

2. METHODOLOGY

The quality of any scientific research is judged on the basis of its methodological approach. Therefore, the study was conducted in the state of Punjab with a view to analyze the extent of use of online utility services in the state. A self-structured interview schedule was pretested on 27 non-sampled respondents of urban, peri-urban and rural areas. Pretesting was done to find out the reliability and validity of the research tool. The reliability of the interview schedule was recorded as 0.737 i.e. 74.00 per cent. For data collection, the researcher personally visited the respondents to collect the required information. Purposive and random sampling techniques were used for the current study. The family members of the selected households were asked to designate a family member who was responsible most of the times for using online utility services. That designated member acted as respondent for the study. Statistical tools such as frequency distribution, percentage, arithmetic mean, Kruskal Wallis H-test for k independent samples and cumulative cube root frequency

method were used and the data was analyzed using Statistical Package for Social Sciences (SPSS) software to yield information relevant and consistent with the objective of the study. Extent of use of online utility services was defined as the frequency of use of online utility services. It was measured on a five-point continuum i.e. always, mostly, sometimes, rarely and never with the assigned scores as 4,3,2,1,0. Using cumulative cube root frequency method, it was categorized as low, moderate and high extent of use on the basis of the score range given below:

Table 1. Score range of cube root frequency method

Extent of Use	Score Range
Low	<17.07
Moderate	17.07 – 36.30
High	>36.30

3. RESULTS AND DISCUSSION

Respondents' extent of use of online utility services for different purposes such as bill payment, online ticketing, online/ mobile banking, accessing personal documents and for other miscellaneous purposes was studied.

3.1 Extent of Use of Online Utility Services for Bill Payment

Table 2 highlights the extent of use of different online utility services by respondents for bill payment of cell phone, telephone, electricity, TV recharge, fees payment and insurance payment. Mean scores have been calculated on a scale ranging from 0 to 4 wherein the score range indicates- never, rarely, sometimes, mostly and ticketing such as railway ticket, cinema/concert/ theatre ticket, airplane ticket, bus ticket, unreserved ticket through mobile application and taxi booking.

3.3 Extent of Use of Online Utility Services for Online Ticketing

Table 3 highlights the extent of use of different online utility services by respondents for online ticketing such as railway ticket, cinema/concert/ theatre ticket, airplane ticket, bus ticket, unreserved ticket through mobile application and taxi booking.

According to the data presented in the table, overall mean score (\bar{x} =2.17) revealed that respondents were sometimes using online interface for booking of railway tickets and were rarely using the services for booking of movie

always. According to the data presented in the table, the overall mean scores revealed that online utility services were mostly used for cell phone recharge (\bar{x} =3.54), sometimes used for electricity bill payment (\bar{x} =2.14) and television recharge (\bar{x} =1.69) whereas rarely used for payment of fees (\bar{x} =0.98) and insurance (\bar{x} =0.81) and negligible usage was seen for online payment of landline bills (\bar{x} =0.35). A significant difference was stated in usage of online utility services across the three areas for bill payment of cell phone (H=36.04), electricity (H=46.31), television (H=32.17), fees (H=23.66) and insurance (H=14.85) at $p < 0.01$.

A significant difference was observed within the bill payment services in selected three areas [H (rural)=215.92, H (peri-urban)=193.09, H (urban)=192.45; $p < 0.01$]. Thus, it can be concluded that urban respondents were significantly more engaged in online bill payment of different services than rural and peri-urban respondents. Even the findings of Roy and Sinha [12] stated that e-payment system was accepted dominantly by the urban people while rural and peri-urban people hardly knew about it as majority of them were rare users of ATM card only. It is also seen that users of online services were mostly highly educated people [13]. It can be interpreted that qualification has a huge impact on the adoption of technology. Thus, the more qualified a person is the higher the chances of him adopting a new technology.

3.2 Extent of Use of Online Utility Services for Online Ticketing

Table 3 highlights the extent of use of different online utility services by respondents for online tickets (\bar{x} =1.40) and for taxi booking (\bar{x} =1.13). Thus, significant difference was recorded in usage of online utility services across the three areas for booking of railway ticket (H=77.82), movie tickets (H=73.55), taxi booking (H=85.16), booking of airplane ticket (H=39.60) and bus ticket (H=40.56) at $p < 0.01$. Overall, there was significant difference observed within the selected three areas for using online utility services for online ticketing of different services [H (rural)=50.14, H (peri-urban)=112.31, H (urban)=141.69; $p < 0.01$]. It can be concluded that urban respondents were significantly more engaged in online ticketing than rural and peri-urban respondents. This may be due to the fact that rural and peri-urban respondents were unaware or had less exposure about online ticket booking. Technology is convenient to use when the user can use it

without any difficulty or effort as people are always apprehensive in using a service if they are not comfortable in operating it [14]. Therefore,

easy accessibility of agents for ticket booking in rural areas can be a reason for less usage of these services by rural users.

Table 2. Extent of use of online utility services for bill payment (n=180)

Online Utility Services	Mean Score (0 to 4)			Overall Mean	Kruskal Wallis $\chi^2(H)$
	Rural (n ₁ =60)	Peri-urban (n ₂ =60)	Urban (n ₃ =60)		
Cell Phone Recharge/ Postpaid Bill Payment	3.22	3.50	3.90	3.54	36.04*
Electricity	0.92	2.35	3.15	2.14	46.31*
Television Recharge	1.18	1.05	2.85	1.69	32.17*
Fees Payment	0.43	0.70	1.82	0.98	23.66*
Insurance Payment	0.40	0.57	1.47	0.81	14.85*
Landline	0.20	0.45	0.40	0.35	1.73
Kruskal Wallis $\chi^2(H)$	215.92*	193.09*	192.45*		

*Significant at 0.01 level of significance

Table 3. Extent of use of online utility services for online ticketing (n=180)

Online Utility Services	Mean Score (0 to 4)			Overall Mean	Kruskal Wallis $\chi^2(H)$
	Rural (n ₁ =60)	Peri-urban (n ₂ =60)	Urban (n ₃ =60)		
Railway Ticket	0.80	2.20	3.52	2.17	77.82*
Cinema/ Concert/ Theatre Ticket	0.43	0.87	2.90	1.40	73.55*
Taxi Booking	0.27	1.05	2.07	1.13	85.16*
Airplane Ticket	0.13	0.60	1.98	0.91	39.60*
Bus Ticket	0.02	0.33	1.48	0.61	40.56*
Unreserved Ticket through Mobile Application	0.00	0.00	0.05	0.02	4.02
Kruskal Wallis $\chi^2(H)$	50.14*	112.31*	141.69*		

*Significant at 0.01 level of significance

3.4 Extent of Use of Online Utility Services for Online/ mobile Banking

Table 4 highlights the extent of use of different online utility services by respondents for online/ mobile banking such as payment of tax, bills, loan, rent as well as digital transaction of money and accessing e-statement. According to the data presented in the table 4, for digital transaction of money (\bar{x} =1.93) and for accessing e-statement (\bar{x} =1.55), urban respondents reported maximum extent of use of online utility services across the three areas. The overall mean scores revealed that respondents were rarely using online interface for digital transaction of money (\bar{x} =1.13) and for accessing e-statement (\bar{x} =0.90).

Rest of the services such as tax/ loan/ rent/ bill payments were not used to that extent by the respondents as revealed by their scores. A significant difference was observed within different online/ mobile banking services in selected areas [H (rural)=32.15, H (peri-urban)=81.75, H (urban)=90.48; p<0.01]. It can be concluded that urban respondents were significantly more engaged in online/ mobile banking than rural and peri-urban respondents because the latter may be less educated and may not be aware of the process of e-banking and the benefits provided by these services. Also, it may be due to the fact that with better educational qualification, urban respondents' awareness regarding potential benefits of using these services increases thus, affecting their extent of use. The findings are concurrent with the results of the study conducted by Kumari [15]. A survey

conducted by ASSOCHAM [16] also shows that Punjab has just over 130 e-transactions per 1,000 people. Success of e-commerce payment systems also depends on consumer preferences, technological advancement, security and privacy [14].

3.5 Extent of Use of Online Utility Services for Miscellaneous Purposes

Table 5 highlights the extent of use of different online utility services by respondents for miscellaneous purposes such as online hotel booking, online shopping, online food order, money transfer service and similarly various other services.

According to the data presented in Table 5, it can be concluded that urban respondents were significantly more engaged in using money transfer service, Indian Postal Services, courier services, online hotel booking and online food order than rural and peri-urban respondents. The overall mean score (\bar{x} =2.72) reveals that

respondents were mostly using online interface for entertainment and overall mean (\bar{x} =1.78) revealed that respondents sometimes used online utility services for shopping of various products. Rest of the services were not used to that extent by the respondents as revealed by their mean scores but significant difference was observed in respondents' extent of use of all services except land records and digital locker system. Overall, a significant difference was observed for using services for miscellaneous purposes within the selected three areas [H (rural)=373.77, H (peri-urban)=398.99, H (urban)=244.54; $p < 0.01$]. It has been seen that people from urban background are more exposed to different mass media and are well equipped in its usage [17]. Also, feeling self-efficient makes respondents more confident about their ability to use new technologies and online services [18]. Hence, it can be interpreted that because of better education and lifestyle demands, urban respondents were more engaged in using online utility services.

Table 4. Extent of use of online utility services for online/ mobile banking (n=180)

Online Utility Services	Mean Score (0 to 4)			Overall Mean	Kruskal Wallis $\chi^2(H)$
	Rural (n ₁ =60)	Peri-urban (n ₂ =60)	Urban (n ₃ =60)		
Digital Transaction of Money	0.43	1.02	1.93	1.13	29.61*
E-statement	0.43	0.72	1.55	0.90	20.56*
Tax Payment	0.13	0.00	1.33	0.49	37.49*
Bills Payments	0.03	0.07	0.42	0.17	10.33*
Loan Payment	0.13	0.07	0.13	0.11	0.41
Rent Payment	0.00	0.00	0.00	0.00	0.00
Kruskal Wallis $\chi^2(H)$	32.15*	81.75*	90.48*		

*Significant at 0.01 level of significance

Table 5. Extent of use of online utility services for miscellaneous purposes (n=180)

Online Utility Services	Mean Score (0 to 4)			Overall Mean	Kruskal Wallis $\chi^2(H)$
	Rural (n ₁ =60)	Peri-urban (n ₂ =60)	Urban (n ₃ =60)		
Entertainment	2.77	2.58	2.82	2.72	6.61**
Online Shopping	1.25	1.85	2.25	1.78	47.29*
Money Transfer Service	1.22	1.73	1.90	1.62	10.36*
Indian Postal Services	0.75	1.07	2.80	1.54	54.73*
Online Food Order	0.07	1.32	1.78	1.06	74.40*
Courier Services	0.73	0.67	1.55	0.98	11.84*
Electronic Newspaper/ Magazine	0.73	0.45	1.33	0.84	13.57*
Online Hotel Booking	0.07	0.38	1.77	0.74	44.91*
Education	0.47	0.35	1.08	0.63	16.90*
Tax E-filing	0.13	0.00	1.53	0.56	44.99*
Agriculture Produce Marketing	0.00	0.00	0.28	0.09	10.23*
Land Records	0.10	0.00	0.12	0.07	2.03
Digital Locker System	0.00	0.00	0.08	0.03	4.02
Kruskal Wallis $\chi^2(H)$	373.77*	398.99*	244.54*		

*Significant at 0.01 level of significance, **Significant at 0.05 level of significance

3.6 Overall Extent of Use of All Online Utility Services

In Table 6, the overall extent of use of all online utility services is shown. It was calculated by adding the respondents' extent of use of individual services which was further categorized as low, moderate and high. It can be stated that overall, higher percentage of the respondents (38.33%) had moderate extent of use followed by 33.33 per cent of the respondents who had high extent of use and less than one-third of the respondents (28.33%) were found to have low extent of use. It can be concluded from Fig. 1 that majority of the respondents had moderate to high extent of use of online utility services. Davis stated that people tend to use or not to use a system to the extent that they believe it will

help them perform their job better (perceived usefulness) and also that the beliefs of the efforts required to use a system can directly affect system usage behavior (perceived ease of use) [19]. Thus, it can be concluded that due to perceived usefulness of online utility services to urban people, its extent of use is more by urban respondents. Similarly, due to the perceived ease of use for urban respondents, its use is more by urban as compared to peri-urban and rural respondents. Today, the world has transformed from knowledge savvy to techno knowledge savvy [20]. Therefore, the perception of users can be changed and can be made positive by awareness program [21]. It can also be stated that different personal and family characteristics of individuals affect the users' extent of use of online utility services.

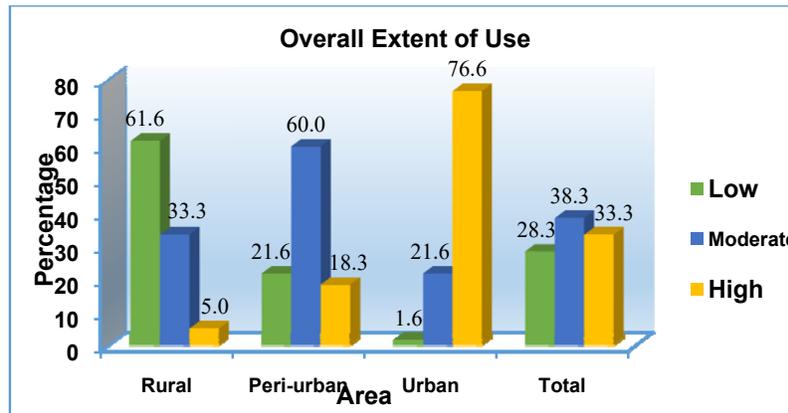


Fig. 1. Graphical representation of the respondents on the basis of their overall extent of use of online utility services

Table 6. Overall extent of use of all online utility services (n=180)

Extent of Use (Score range)	Rural (n ₁ =60)		Peri-urban (n ₂ =60)		Urban (n ₃ =60)		Total	
	f	%	f	%	f	%	f	%
Low (<17.07)	37	61.67	13	21.67	1	1.67	51	28.33
Moderate (17.07-36.30)	20	33.33	36	60.00	13	21.67	69	38.33
High (>36.30)	3	5.00	11	18.33	46	76.67	60	33.33

4. CONCLUSION

The analysis of the data revealed that online utility services were being used maximum for bill payment of cell phone, electricity and television and in case of online/ mobile banking, online utility services were majorly used for digital transaction of money and for accessing e-statement. Respondents were mostly using online interface for entertainment and sometimes

for online shopping, money transfer and postal services. Urban respondents were significantly more engaged in the use of all the mentioned services than rural and peri-urban respondents. It may be due to the fact that urban respondents had more usefulness of online utility services due to their work structure and lifestyle. Overall, higher percentage of the respondents had moderate to high extent of use.

5. LIMITATIONS OF THE STUDY

- The study was limited to 180 respondents of Ludhiana district. Thus, the inferences derived from the investigation regarding the extent of use of online utility services may not be generalized for everyone. The generalizability of the results to other potential users remains to be determined.
- The findings of the study were based on the expressed views of the sampled respondents. Although every effort was made to get accurate information from the respondents, the possibility of giving some biased information by the respondents cannot be completely ruled out.
- The study has the usual limitation of a single student research project related to time and other resources.

6. CHALLENGES DURING RESEARCH WORK

- Language often posed as a communication barrier between the researcher and the rural and peri-urban respondents.
- The tabulated data was analyzed using Statistical Package for Social Sciences (SPSS) software. However, identification of appropriate statistical techniques for analysis of the data to yield information relevant and consistent with the objectives of the study posed a challenge.

7. SUGGESTIONS FOR FUTURE WORK

- As the findings of the study show that urban respondents were significantly more engaged in the use of all the mentioned services than rural and peri-urban respondents. Thus, it is suggested that provision of better digital infrastructure and high speed internet connectivity in rural and peri-urban areas can increase the extent of use of online utility services in these areas.
- It is suggested that the service providers should design user friendly online utility services for greater acceptance across all age groups.
- For facilitating the use of online utility services, it is suggested that awareness regarding secured use of online utility services should be created among masses through trainings and different media platforms.
- It has been seen that users were predominantly using online platform for

entertainment and not for its utility purpose. Therefore, it is suggested that digital literacy should be promoted among the users regarding the potential benefits provided by these services such as relative advantage, ease of use etc.

- In order to increase the extent of use of online utility services among rural users, action research can be conducted to facilitate users' behavioral change towards greater adoption of cashless services.

CONSENT

As per international standard or university standard, respondents' written consent has been collected and preserved by the author(s).

DISCLAIMER

The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors. The authors duly acknowledge the financial assistance provided by ICAR-Indian Council of Agricultural Research for the research conducted at post-graduate level.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Jain D, Goswami S and Bhutani S. Consumer behavior towards online shopping: An empirical study from Delhi. *Journal of Business and Management*. 2014;16:65-72.
2. Rajput A and Nair KMK. Significance of digital literacy in e-governance. *The Standard International Journals*. 2013;1:136-41.
3. Choi C. The effect of internet on service trade. *Economics Letter*. 2010;109:102-04.
4. Mukul P. Rising online video consumption at heart of India's next internet growth driver. 2018. Accessed 24 February 2018. Available: www.indianexpress.com.
5. Masoud E and AbuTaqa H. Factors affecting customers' adoption of e-banking

- services in Jordan. *Information Resource Management Journal*. 2017;30:44-60.
6. Srivastava S. Digital India-Major initiatives and their impact: A critical analysis. *ELK Asia Pacific Journal of Marketing Retail Management*. 2017;8:1-11.
 7. Reddy K and Reddy MS. A study on customer's perception and satisfaction towards electronic banking in Khamman district. *Journal of Business and Management*. 2015;17:20-27.
 8. Anonymous. Digital payment industry in India. 2019. Accessed 23 April 2019. Available: <https://www.ibef.org/blogs/digital-payment-industry-in-india>.
 9. Roongta and Shah. The top five trends in India's digital payment landscape. 2018. Accessed 28 April 2019. Available: <https://www.livemint.com/Technology/ACHEI1t6mB34c4xM5DiTsN/The-top-five-trends-in-Indias-digital-payment-landscape.html>.
 10. Oye ND, Iahad NA and Ab.Rahim N. The history of UTAUT model and its impact on ICT acceptance and usage by academicians. 2012. Accessed 28 January 2018. Available: <http://elpjournal.eu/wp-content/uploads/2016/03/itsj-spec-1-1-3.pdf>.
 11. Anonymous. Digital India power to empower. 2018. Accessed 22 February 2018. Available: <http://digitalindia.gov.in/>.
 12. Roy S and Sinha I. Determinants of customers' acceptance of electronic payment system in Indian banking sector – A study. *International Journal of Scientific and Engineering Research*. 2014;5:177-87.
 13. Cho YC and Sagynov E. Exploring factors that affect usefulness, ease of use, trust and purchase intention in the online environment. *International Journal of Management and Information Systems*. 2015;19:21-36.
 14. Mittal S, Pant A and Bhadauria SS. An empirical study on customer preference towards payment banks over universal banks in Delhi NCR. *Procedia Computer Science*. 2017;122:463-70.
 15. Kumari P. A study of online banking usage among university academics. 2016. Accessed 18 March 2019. Available: https://www.researchgate.net/publication/305324036_A_Study_of_Online_Banking_Usage_among_University_Academics.
 16. ASSOCHAM. E-governance and Digital India: Empowering Indian citizens through technology. 2015. Accessed 26 January 2019. Available: <https://www2.deloitte.com/content/dam/Deloitte/in/Documents/technology-media-telecommunications/in-tmt-empowering-indian-citizens-through-technology-noexp.pdf>.
 17. Bhalla S. *Effectiveness of social advertisement in promoting adoption of health and hygiene practices by rural women*. 2018. M.Sc. thesis, Punjab Agricultural University, Ludhiana, India
 18. Galan JP, Giraud M and Waarden LM. A theoretical extension of the technology acceptance model to explain the adoption and the usage of new digital devices. 2018. Accessed 25 February 2019. Available: https://www.afm-marketing.org/fr/system/files/publications/20160429234015_S05_P3_GALAN_GIRAUD_et_MEYER_WAARDEN.pdf.
 19. Davis FD. A technology acceptance model for empirically testing new end-user information systems: Theory and results. 1985. Accessed 26 February 2019. Available: <https://dspace.mit.edu/handle/1721.1/15192>.
 20. Mohanta G, Debasish SS and Nanda SK. A study on growth and prospect of Digital India campaign. *Saudi Journal of Business and Management Studies*. 2017;2:727-31.
 21. Kanupriya, Rita and Kaur A. A study of behavior of consumer towards online shopping. *Orbit Biz Dictum*. 2016;1:43-55.