स्वदेशी शोध संस्थान
धर्मस्य मूलं अर्थः

Arthaayam
Vol.1, Issue 2, (Jan-Mar) 2026, pp. 99-115

Arthaayam
(A Multidisciplinary Research Journal)

ISSN (O) 3139-3136

CITIZEN'S EXPERIENCE AND LEVEL OF SATISFACTION ABOUT E-SERVICES: A STUDY OF TRI-CITY OF CHANDIGARH, MOHALI, AND PANCHKULA

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Received: 14 December 2025; revised: 10 March 2026

Abstract

The use of technology to improve government service delivery and accessibility for the benefit of citizens, corporate partners, and employees is known as e-government. It improves how businesses, individuals, and other government organizations get government services by utilizing information technology, especially the internet. Thanks to e-government, citizens can interact with and receive services from the federal, state, or local governments at any time of day. The degree of happiness among citizens is significantly influenced by the service's accessibility and the way users engage with the website. People's satisfaction levels are positively impacted if they can get a smooth, prompt response and have their questions answered.

Given the significance of e-governance, the current study attempts to determine the experiences and degree of satisfaction of users who received e-services via e-governance programs. The investigation is carried out using SPSS software. Regression analysis, hypothesis testing, t test, p value, and other statistical methods were employed. It was found that the people of Chandigarh, Mohali and Panchkula were satisfied with the provision of e-services based on the selected quality parameters.

Keywords: e-government, regression analysis, hypothesis testing, t test, and p value

1. Introduction

In the early 1970s, when IT applications were unheard of in government and even limited in business, Chile was the first country to implement true e-governance. The techniques of IT were used not only to make government paperless but to perform government work efficiently. To help the Chilean government weather a severe inflationary crisis brought on by an economic blockade brought on by the halting of copper exports, which accounted for 80% of Chile's foreign exchange profits, Prof. Staffor Beer created the first e-governance program. The software so developed did help the government in

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restoring the prices back to normal and the country was able to survive. Consequently, Chile became the first nation to successfully adopt e-governance (Prabhu, 2013).

Many nations began implementing e-governance in their governing processes after taking this incredible success story into account. One such initiative was by the President of the United States, Mr. George W. Bush, who issued President's Management Agenda (PMA) for e-government in the US in 2001. The agenda aimed at making better use of ICT to eliminate wasteful government expenditure, reduce government paper work burden on citizens and business, and improve government response time to citizens from weeks to minutes. The key goal was to reduce the time taken by citizens to 'three clicks on the internet' to access any government information or service.

In developed nations, interacting with the government online without having to wait in large lines is not difficult to imagine. According to their experiences, if they use electronic methods, they will be able to decentralize their duties and procedures. Every citizen can then get in touch with the government, which will have all the forms, legislations, and information they need. But despite the promise of e-governance, there remains a risk of a "digital divide" that would widen the gap between countries. Where there are no internet, infrastructure, technological "expertise", or incentives, e-governance appears to be impractical. Furthermore, developing nations have inherited a governance structure that was marked by numerous levels of controls and approvals, lengthy procedures, and a significant amount of paperwork and file processing. Governments oversee development and taking care of the welfare of their citizens (Basu, 2004).

The population of India as per census 2011 stood at1.21 billion, while the average annual population growth rate was recorded at 1.1% in 2021. The rise in population's emphasis on improving efficiency and effectiveness in government administration led to the adoption of the internet for government services and processes. Because of increasing population, the former President of India, Late Dr. Kalam vision it right: "primary function for any government is to deliver the governance services to citizens. e-governance plays a significant role in a big democratic country of over 1 billion population like India because e-governance enables citizen friendly, freely access to information and seamless flow of information across all levels of government in a federal set up" (Kalam, 2014).

Realizing how crucial digital infrastructure is to carry out government operations, Digital India is a model initiative to guarantee that all citizens have access to services that are connected across ministries or jurisdictions. On July 1, 2015, Hon. Prime Minister Shri Narendra Modi introduced Digital India, a government initiative aimed at transforming India into a knowledge-based and digitally powered society. One of the key pillars of Digital India, which aims to revolutionize government via technology, is e-governance. The union government has incorporated information on welfare programs intended for unorganized workers into the "eShram-One Stop Solution"

portal to expand the reach of e-governance to underprivileged and unorganized workers. The website now includes information on 12 schemes from various departments and ministries. It would guarantee that all unorganized workers who register on the portal will have access to all the facilities in one location. To guarantee a wider audience, the services will also be provided in regional languages (Anand & Khemchandani, 2019).

1.1 International Studies

Electronic government is a significant aspect of governance. Welch, Hinnant, and Moon's (2004) findings offer some supporting data. It was discovered that most people are satisfied with the government's attempts to deliver services and information. Those who call for more e-services to be prioritized and service expansion, however, are not as satisfied with government websites. It is observed that a website's absence of interaction has a negative correlation with user satisfaction. Kolsaker and Kelly (2008) discovered that consumers value communication, personalization, and ease of use when they tested identical aims on 300 residents of a comparatively affluent community in South-East England. This study backs up the earlier research showing that a lack of interaction does have a detrimental effect on user satisfaction. Another study by Bernhard et al. (2018) put the concept into more detail by demonstrating that the level of digitization, as indicated by an index, is correlated with citizen happiness. The e-interaction score was low when compared to all other sub-indices (Welch & Hinnant, 2005).

A similar study was carried out by Verkijika (2018) in Sub-Saharan Africa, where 279 e-government websites from 31 SSA nations were assessed using heuristic evaluation. Since the method has been shown to be highly efficient, simple, and quick—especially when evaluating many websites—heuristic evaluation has been utilized extensively in e-government usability studies for in-depth inspections. The region's e-government websites were deemed to have poor usability, with poor performance in the areas of legitimacy, accessibility, information architecture, navigation, and user-help. PP Blom and Uwizeyimana (2020) examined South Africa's e-governance position during the global shutdown to determine the effectiveness of e-health, e-education, and e-municipal service delivery. In certain private schools with strong ICT infrastructure to deliver e-services effectively, it was discovered that education was applied successfully. Additionally, e-health has been working efficiently since the national lockdown. E-municipal services could not reach poor people. There were long waiting times to receive help from the consultant, online payments were a challenge, and call centres were overwhelmed.

Based on above discussions, it can be said that governance is vast and intricate system that includes all societal institutions and organizations. Heeks (2001) through his study has emphasized the contribution of e-governance in improving government processes (e-administration); connecting citizens (e-citizens and e-services); and building external interactions (e-society). With the help of several case studies, he has shown

that e-governance is a current, not just future, reality for developing countries. So, a good governance is widely considered as one of the pillars of the governance. It denotes certain positive attributes of governance that promote overall public welfare.

Kluver (2005) in his study highlights how Chinese government has designed e-government to face the critical administrative and political problems. It is found that China's move towards e-governance is consistent with the policies of People's Republic at least since 1949. The Chinese government has always viewed advanced technology as a measure of national greatness and imperative to establish China's status as a preeminent power. For the purpose, China began emphasizing 'informatization' in 1980s, when information technology became targeted as a 'key strategic industry'. Additionally, several "golden projects" to boost the IT industry and modernize the IT infrastructure were highlighted in China's Ninth Five-Year Plan in the 1990s. Providing some rationalization and normality of citizen-state interactions and openness to the vital information flows required for efficient policymaking are among China's government-centric aims.

Piaggessi et al. (2011) have provided a few global examples of how nations have structured their frameworks for e-government: GePeGi (Korea) e-government framework: - the framework comprises of three factors: demand factors (maturity of civil society and include information management, e-capacity and economic support), supply factors (development of ICTs and include network infrastructure, hardware infrastructure and application infrastructure) and policy factors (maturity of government and include IT policy, Institutional and Legal Support policy and IT manpower policy). Another such examples are Singapore e-government framework: - based on G2C, G2G and G2B. While the G2C and G2B services involve electronic service delivery as the main component, the G2C services are seen to involve knowledge management and education in information and communications. To guarantee a smooth interface and interoperability in government contacts and transactions with workers, citizens, and enterprises, the framework also recommends a heavy focus on ICT infrastructure and operational efficiency.

Millard (2017) in his study highlighted the initiatives by European countries to establish a good e-government structure. Despite having complete control over their own public and electronic government policies and strategies, the 27 member nations have long engaged in various forms of mutually beneficial cooperation. To promote efficient and effective digital public services as important component of EU's Digital Single Market, the new 2016-2020 European eGovernment Action Plan (European Commission 2016) was formulated (Millard. 2017).

1.2 National Studies

Governance, rooted in the welfare state concept, prioritizes inclusive citizen development and public welfare over economic growth, aiming to improve citizens' well-being and quality of life. Yadav and Singh (2012) in their study considered

e-governance as one of the key pillars of the developed society. According to them, there are four pillars of e-governance, which helps a country to successfully implement a proper e-governance system. They are: Connectivity (the requirement to connect to people); Knowledge (hiring of professionals to address technical issues and enhance e-government services); Data content (a database needed to share information and knowledge related to government services over the internet); Capital (refers to government's money and used for such services) (Yadav and Singh, 2013).

Madon (2004) investigated how the e-governance initiatives AKSHAYA and FRIENDS affected the development of Kerala in South India. As a result of their function, AKSHAYA centres were discovered to have started offering a variety of ICT applications that acted as a local centre for economic activity and social harmony.

Citizens now have more faith in the government to provide them with a reasonable degree of satisfaction free from corruption because of FRIENDS. Shah (2007) emphasized that the government procedures can be made more effective, efficient, and user-friendly with the help of the internet. The primary concerns that the government should address are security, legal matters, infrastructure, expertise and awareness, access to the right to information, and interdepartmental cooperation. Study was conducted by Saxena (2005) in the state of Karnataka showed that how implementation of computer aided counselling of teachers for transfers has bring about excellence in governance by introducing transparency, openness, fairness, and rationalisation.

Following the implementation of e-governance efforts based on the aforementioned pillars, it is equally important to assess user satisfaction. Warale and Diwakar (2015) evaluated the literature on satisfaction levels in relation to India. They found that the state of Maharashtra had an overall satisfaction level for the e-governance initiative SETU of about 52%, which is slightly above average. Nonetheless, it was noted that citizens do not receive their certificates on time, which was caused by a greater incidence of application rejection, inadequate instructions from SETU operators, and the lack of a signature authority. The presence of agents (middlemen), misdirection, inadequate staff guidance, and non-integrated service delivery were among the grievances raised by the public. One of the main purposes of eradicating corruption by e-governance is completely unfulfilled due to lack of transparency and absence of inspection or audit by the government.

Banarjee and Katare (2016) formulated a Website Quality Assessment Index (WQAI) and then used it to compare websites of selected districts of Madhya Pradesh. The analysis demonstrated that if interface, navigability, and content are improved, the district e-governance web portals will be enhanced and fine-tuned, resulting in more effective use of the e-governance websites for better citizen services.

A similar study was carried out by Gilmore and D'Souza (2006) in the state of Hyderabad with the help of 30 customers selected through random

phone interviews. Respondents expressed satisfaction with the websites' availability in their native tongue. Over half of the respondents assessed the service as poor, which is concerning for the service providers, and the information they received from the websites was just adequate. The findings demonstrate how citizens rate their degree of satisfaction according to several characteristics. Literate residents may have different expectations than illiterate citizens, and the government should work to provide e-services that meet the needs of all societal segments.

A recent study to know the awareness among citizens about various services provided by Gujarat government, conducted by Biju et al. (2013) showed that how citizens were not aware of the various e-services available to them. However, e-governance facility provided by Gujarat government initiatives such as using latest technology to provide immediate response to their citizens, may prove beneficial to them.

Barua (2012) investigated the staff adoption of e-governance in the Indian pension office after assessing the degree of citizen satisfaction. The study collected data from 60 employees who worked on the system. It was discovered that the Pension Management System (PMS) was effective in replacing the laborious manual system, was simple to use, had technical infrastructure with the help of technical staff, and appeared to boost employee respect among coworkers in various West Bengal government departments and organizations.

Building on the idea and significance of e-governance, the current study will focus on citizens' experiences with and satisfaction levels with e-services offered by the government. Three regions were chosen for the study: Punjab, Haryana, and Chandigarh.

2. Objectives of the Study

- To map the experiences and satisfaction levels of users who were offered e-services through e-governance initiatives.
- To know the quality aspect of e-portals.
- To suggest various policies for scaling up customer's satisfaction and overall experience.

3. Research Methodology

The goal of this study is to provide explanations. The study utilizes both primary and secondary sources, including in-person observations, surveys, published studies, informed policies, and websites and online resources. For the fulfilment of the objectives of the study, the primary data was collected from i) Chandigarh (a Union territory), ii) Mohali (a district headquarter of State of Punjab officially known as SAS Nagar) and iii) Panchkula (a district headquarter of State of Haryana). The primary data was collected through structured questionnaire. The data so collected were analysed using appropriate statistical tools such as linear regression, chi-square test, percentage, and frequency, etc.

A comprehensive and in-depth questionnaire was created for a thorough investigation to meet the goals of the research study. To record the responses, the questionnaire uses both qualitative and quantitative characteristics. Qualitative research parameters were used to examine and analyse the experiences and satisfaction levels of users of e-services, to formulate an opinion

regarding the quality aspects of e-service portals. The quantitative parameters were used to examine statistical data as per the requirements of the objectives of the study. Through this questionnaire, citizens' responses were elicited with respect to citizens' experiences and satisfaction levels while making use of such online portals and citizens' suggestions or feedback for better citizen service delivery. In terms of the study's goals, only specific demographic groups are of direct interest. The inhabitants of Chandigarh who have benefited from services offered under the Chandigarh Administration's e-Government project are included in the "targeted relevant population segment."

The combined population of Tri-city, according to 2011 census, is around 14.41 lakhs- Chandigarh 10.54 lakhs, Panchkula 2.11 lakhs, and Mohali 1.76 lakhs. Due to the unavailability of the 2021 census, the population size was based on the 2011 census. Given the population of 14.41 lakhs- Chandigarh 10.54 lakhs, Panchkula 2.11 lakhs and Mohali 1.76 lakhs, *the sample size has been taken as 0.1 percent of the population of respective cities* (Yamane, 1967).

The 0.1 percent has been formulated through Yamane's formula i.e.

Finite population: $n' = \frac{n}{1+\frac{z^2\hat{P}(1-\hat{P})}{\varepsilon^2 N}}$

where;

z is the z score

ε is the margin of error

N is the population size

$\hat{p}$ is the population proportion

we have Z= 95%, ε= 2.6% (calculated from the formula: $Z^* = \frac{\sigma}{\sqrt{n}}$

this means that there is a 95% chance that the real value is within ±2.58% of the measured/ surveyed value.

N=14.41 lakhs, $\hat{p}$ = 50%, using 50% population proportion maximizes the required sample size, ensuring a conservative and sufficiently large sample.

By applying the above formula, the sample size came to 1420 which is nearly 0.1 percent of total population size. Thus, the present study has taken sample size of 0.1 percent of the population of respective cities.

The frequency of sample from Chandigarh is 1054, Panchkula is 211 and Mohali is 176, comprising 73.2%, 14.6% and 12.2% proportion of the total sample size (i.e. 1420) respectively.

4. Data Analysis and Interpretation

4.1 Citizen's satisfaction level towards e-services

To record citizen's experience and satisfaction level towards e-services through online portal, the study identified three broad parameters, i.e., *time taken to avail the e-service, uptime and speed of the e-portal and user friendliness of the e-portal.* The responses of the citizens were recorded on a five-point scale; 1 indicates that the citizens are not satisfied at all; 2 indicates rather dissatisfaction; 3 indicates indifferent experience; 4 indicates rather satisfied; and 5 indicates the respondents are fully satisfied.

The study measured citizens' satisfaction and experience using respondents' mean scores, finding that higher scores indicate higher satisfaction levels with e-services. The mean score with respect to the questions on citizen's satisfaction level towards e-services are given in the following table:

Table 1: Citizen's Overall Satisfaction level towards e-services

Statements	Chandigarh	Panchkula	Mohali	Overall mean
S1- Overall, how satisfied were you with the amount of time it took to get the service?	4.06	3.71	3.96	3.99
S2- Overall, how satisfied were you with the accessibility of the service (in terms of uptime of portal and speed od data upload or download)?	3.85	3.80	3.85	3.84
S3- How satisfied were you with the overall 'ease of vailing the service', i.e., whether it was user friendly?	3.92	3.88	4.00	3.92

Source: Computed by Authors

Findings suggested that most of the citizens were satisfied with respect to the time taken for providing the select e-services. The satisfaction score for the question "overall, how satisfied were you with the amount of time it took to get the service?" was found to be highest (mean = 3.99) for tri-city respondents. The inter-city comparison reveals that the satisfaction level of respondents of Chandigarh is the highest (mean score 4.06). The second highest satisfaction score pertains to the question "how satisfied were you with the overall 'ease of availing the service', i.e., whether it was user friendly?" with mean score of 3.92; indicating that tri-city respondents expressed satisfaction with the ease and user-friendliness of e-services offered by their respective governments, with respondents of Mohali being highly satisfied. Lastly, the satisfaction score for the question "overall, how satisfied were you with the accessibility of the service (in terms of uptime of portal and speed of data upload or download)?" was found to be the least among three select parameters (mean = 3.84). However, it can be interpreted that the tri-city respondents were rather satisfied with respect to the accessibility of the e-services but, their satisfaction level for this parameter was lower in contrast to other parameters. The inter-city comparison of score of this parameter further reveals that the respondents of both Chandigarh and Mohali reflected the highest mean score of 3.85 followed by Panchkula (mean score 3.80).

4.2 Citizen's experience regarding use of e-service

The study identified ten quality indicators that were incorporated into the user questionnaire to gather information on citizens' perceptions of the e-portals' quality. A five-point scale was utilized to gauge citizen perceptions of quality parameters, indicating that higher scores indicated higher quality perceptions of e-governance service portals.

For this, hypothesis was formed for each of the above quality indicators. Null hypotheses are defined as that the quality statement follows and Alternate Hypotheses are defined that the quality statement does not follow. The study used one sample t-test to compare the actual mean with assumed mean of the scale i.e. '3'. The statements for which actual mean was significantly greater

than '3'; it was concluded that respondents have positive perceptions of quality parameter. In other words, it can be interpreted that null hypothesis was rejected, when p (actual level of significance) was found to be less than alpha (assumed level of significance; 0.05). Findings relating to citizen's perceptions towards quality of e-governance service portals are given as under:

Table 2: Findings on citizen's experience towards quality of e-service delivery mechanism

Null Hypothesis	Chandigarh	Panchkula	Mohali	Overall Mean	t value	p value	Accept or reject H0
H0(1): it is untrue that citizens did not have to browse/surf for long	3.57	3.73	3.47	3.58	10.209	0.000	Rejected
H0(2): it is untrue that citizens find extensive FAQs on service portals	3.49	3.73	3.45	3.52	9.308	0.000	Rejected
H0(3): it is untrue that citizens easily found what they were looking for on service portals	3.70	3.95	3.81	3.75	14.368	0.000	Rejected
H0(4): it is untrue that citizens were able to get through the right interface without difficulty	3.69	3.86	3.79	3.73	13.279	0.000	Rejected
H0(5): it is untrue that workflow of e-service portal and the user interface was designed in such a manner that citizens got what they needed	3.81	3.95	3.89	3.84	17.289	0.000	Rejected
H0(6): it is untrue that e-service portals were supported by dynamic helpline services	3.44	3.82	3.94	3.55	9.430	0.000	Rejected
H0(7): it is untrue that interactive features of e-service portals were quite helpful	3.54	3.73	3.51	3.57	9.306	0.000	Rejected
H0(8): it is untrue that the site map of e-service portal was quite informative and helpful	3.69	3.80	3.77	3.72	13.586	0.000	Rejected
H0(9): it is untrue that the e-service portal supported multilingual content	3.56	3.86	3.66	3.61	11.380	0.000	Rejected
H0(10): it is untrue that the user's dashboard provided a quick glimpse of all useful actionable tools and information	3.60	3.77	3.85	3.66	12.072	0.000	Rejected

Source: Author's work

As per the findings, all null hypotheses proposed in the above table were rejected, indicating that the respondents were satisfied with respect to the selected quality parameters.

To find out whether there was any significant difference among the perceptions of respondents of Chandigarh, Mohali, and Panchkula, further, statistical analysis was carried. The outcome of the analysis in this regard is presented below:

Table 3: Comparing citizen's experience towards quality of e-service delivery mechanism

DEPENDENT VARIABLE	(I). CITY	(J). CITY	MEAN DIFFERENCE (I-J)	SIG.
Browse_long	Chandigarh	Panchkula	-.166	.562
		Mohali	.098	.842
	Panchkula	Chandigarh	.166	.562
		Mohali	.264	.453
	Mohali	Chandigarh	-.098	.842
		Panchkula	-.264	.453
FAQ_Ext	Chandigarh	Panchkula	-.245	.277
		Mohali	.041	.969
	Panchkula	Chandigarh	.245	.277
		Mohali	.285	.383
	Mohali	Chandigarh	-.041	.969
		Panchkula	-.285	.383
Easy_find	Chandigarh	Panchkula	-.242	.242
		Mohali	-.104	.797
	Panchkula	Chandigarh	.242	.242
		Mohali	.138	.775
	Mohali	Chandigarh	.104	.797
		Panchkula	-.138	.775
Right_interface	Chandigarh	Panchkula	-.167	.538
		Mohali	-.097	.835
	Panchkula	Chandigarh	.167	.538
		Mohali	.070	.942
	Mohali	Chandigarh	.097	.835
		Panchkula	-.070	.942
Work_flow	Chandigarh	Panchkula	-.139	.580
		Mohali	-.086	.835
	Panchkula	Chandigarh	.139	.580
		Mohali	.053	.958
	Mohali	Chandigarh	.086	.835
		Panchkula	-.053	.958

DEPENDENT VARIABLE	(I). CITY	(J). CITY	MEAN DIFFERENCE (I-J)	SIG.
Helpline_services	Chandigarh	Panchkula	-.384	.057
		Mohali	-.498*	.016
	Panchkula	Chandigarh	.384	.057
		Mohali	-.115	.867
	Mohali	Chandigarh	.498*	.016
		Panchkula	.115	.867
Interactive_features	Chandigarh	Panchkula	-.191	.516
		Mohali	.030	.986
	Panchkula	Chandigarh	.191	.516
		Mohali	.222	.615
	Mohali	Chandigarh	-.030	.986
		Panchkula	-.222	.615
Site_map	Chandigarh	Panchkula	-.110	.751
		Mohali	-.072	.899
	Panchkula	Chandigarh	.110	.751
		Mohali	.038	.982
	Mohali	Chandigarh	.072	.899
		Panchkula	-.0.38	.982
Multilingual	Chandigarh	Panchkula	-.298	.131
		Mohali	-.101	.817
	Panchkula	Chandigarh	.298	.131
		Mohali	.198	.612
	Mohali	Chandigarh	.101	.817
		Panchkula	-.198	.612
Useful_tools	Chandigarh	Panchkula	-.166	.534
		Mohali	-.250	.297
	Panchkula	Chandigarh	.166	.534
		Mohali	-.083	.917
	Mohali	Chandigarh	.250	.297
		Panchkula	.083	.917

Source: Computed by Authors

****- the mean difference is significant at 0.05 level***

The above table reveals that there was no significant difference among the experience of respondent of select cities except with respect to one of the parameters, i.e., Q6 namely, "e-service portals were supported by dynamic helpline services", wherein there were significant differences between perceptions of Chandigarh and Mohali respondents. It was found that Mohali respondents (mean=3.94) were having significant higher perceptions than Chandigarh respondents (mean=3.44). For all other perception statements, there were no significant differences among tri-city respondents.

4.3 Preference to mobile applications over web-based e-services

The online portal of e-services can be accessed through website of the concerned department or through a customised mobile application. Respondents were asked about their preference for mobile applications over web-based e-services in a questionnaire. The respondents were given two option such as “yes” or “no” and the responses were coded in the SPSS in which “yes” was assigned as “1” and “no” was assigned as “2”. The frequency of respondents was calculated and given in the table below:

Table 4: Preference to mobile applications over web-based e-services

Preference to mobile applications over web-based e-services	Chandigarh	Panchkula	Mohali	Overall
Yes	85.1%	78.6%	72.3%	82.6%
No	14.9%	21.4%	27.7%	17.4%
Total	100.00%	100.00%	100.00%	100.00%

Source: Computed by Authors based on the primary data

The above table presents findings relating to citizen's preference to mobile applications over web-based e-services; indicating that an overwhelming majority of the respondents of tri-city (overall 82.6%) preferred mobile applications over web-based e-services However, a few respondents (17.4%) did not prefer mobile applications over web-based e-services. While making a city wise comparison, it can be observed that maximum percentage of residents of Chandigarh (85.1%) preferred mobile application, followed by Panchkula (78.6%) and then Mohali (72.3%). Mobile applications are probably preferred due to their ease of use, affordability, and low-cost wireless mobile internet access, making them a popular choice over web-based services. Chandigarh residents show higher preference for mobile applications, indicating greater access to smartphones and mobile data compared to residents of Panchkula and Mohali.

4.4 Reference to online mode of payment over cash/cheque

The Indian government advocated digital transactions in the post-demonetization era to make India a cashless economy. Many entrepreneurs founded e-payments start-ups in India by taking advantage of the favourable climate and digital ecosystem that the government had developed. A Unified Payment Interface (UPI) has also been introduced by the government to help advance and fortify the "Digital India" initiative. One of the essential

components of a strong and active e-Government system is thought to be a safe and dependable digital payment environment. Therefore, responses of citizens were sought through questionnaire, in which they were asked to provide information about their preferences to online payment over Cash/Cheques. The respondents were given two options such as "yes" and "no" and the responses were coded in the SPSS in which "yes" was assigned "1" and "no" was assigned "2". The frequency of respondents is:

Table 5: Preference to online mode of payment over cash/cheque

Preference to online mode of payment over cash/cheque	Chandigarh	Panchkula	Mohali	Overall
Yes	91.8%	98.2%	87.2%	92.2%
No	8.2%	1.8%	12.8%	7.8%
Total	100.00%	100.00%	100.00%	100.00%

Source: Computed by Authors

The above table presents findings relating to citizen's preference to online mode of payment over Cash/Cheque; indicating that a large majority of the respondents (overall 92.2 percent) preferred online mode of payment over Cash/Cheque. City wise analysis reveals that about 98% of respondents of Panchkula preferred online payment mode, followed by Chandigarh with 91.8% and then Mohali with 87.2%. The overwhelmingly large percentage of respondents preferring online payment mode indicates a strong and positive perception of respondents towards security and reliability of the digital payment system. Online payment offers convenience and speed, but respondent's choice depends on personal biases, ability, and willingness to use alternative payment methods. To further examine it, age wise profile of those respondents who did not prefer online payment mode was analysed. It was observed that substantial majority of respondents, i.e., 96.7% of those who did not prefer online mode of payment fall in the age bracket of above 50 years. It implies that age does affect the choice or preference for online mode, presumably due to personal inhibitions or past inertia, which can be established through separate relevant studies.

4.5 preference to a specific type of online payment mode

Users are now exposed to a variety of online payment methods, such as Net Banking, Debit/Credit Cards, Mobile Wallet, and UPI, thanks to the introduction of e-payment start-ups, payment gateway networks, and the Government of India's Unified Payment Interface (UPI). Given this context, it was deemed relevant to document the residents' comments on their preference for a particular online payment method. As a result, the respondents were asked to specify which online payment method they preferred. The respondents were given five options such as net banking, debit card, credit card, mobile wallet and UPI and the responses were coded in the SPSS in which code ranging from "1" to "5" were assigned. The frequency of respondents was calculated and given in the table below:

Table 6: Preference to a specific type of online payment mode

	Chandigarh	Panchkula	Mohali	Overall
Net banking	29.9%	33.9%	44.7%	32.3%
Debit card	12.5%	5.4%	27.7%	13.3%
Credit card	4.3%	8.9%	4.3%	4.9%
Mobile wallet	28.8%	35.7%	4.3%	26.8%
UPI	24.6%	16.1%	19.1%	22.7%
Total	100.0%	100.0%	100.0%	100.0%

Source: Author's work

The above table reflects the findings relating to citizen's preference to a specific type of online payment mode; indicating that about one-third of respondents (32%) preferred net banking; followed by mobile wallet (26%); UPI (22%); and debit card (14%). It was surprising to note that credit card was least preferred (about 5%) by the tri-city respondents for making online payments.

4.6 Improvement in quality of governance:

According to the idea of e-governance, citizens' overall quality of government can be improved using online digital interfaces and information and communication tools. Therefore, it is crucial to investigate if the use of e-government tools has improved individuals' perceptions of the overall quality of governance. A binary/dichotomous question was framed to record the citizens' responses in this regard because the goal was to document and capture the citizens' overall assessment of the quality of governance as an overarching poser that will reflect upon their perception of improvement in the governance. The respondents were given two options such as “yes” and “no” and the responses were coded in the SPSS in which “yes” was assigned “1” and “no” was assigned “2”. The frequency of respondents was calculated and given in the table below:

Table 7: Improvement in quality of e-governance

Do you think the quality of Governance in the city has improved?	Chandigarh	Panchkula	Mohali	Overall
Yes	91.1%	94.6%	74.5%	89.6%
No	8.9%	5.4%	25.5%	10.4%
Total	100.00%	100.00%	100.00%	100.00%

Source: Author's Computation

The above table presents findings relating to citizen's perceptions towards improvement in the quality of Governance. It can be observed that substantial majority of the respondents (89.6%) thought that the quality of Governance has improved in their respective cities with the intervention of Information and communication tools as well as online digital interfaces.

5. Conclusion

Research shows residents are satisfied with the speed, simplicity, user-friendliness, and accessibility of e-services through online portals, as well as the speed of data upload or download.

The analysis also reveals that the respondents were satisfied with respect to the selected ten (Q1 to Q10) quality parameters and there was no significant difference among the perceptions of respondent of select cities except with respect to one parameter. An overwhelming majority of the respondents preferred mobile applications over web-based e-services and online payment mode over cash/cheque. Among the online payment modes, one-third of respondents preferred net banking; followed by mobile wallet, UPI, debit card, and the credit card was least preferred mode. Substantial majority of the respondents believes that the quality of Governance has improved in their respective cities with the intervention of Information and communication tools as well as online digital interfaces.

The policy suggestions that can further scale up customer's satisfaction and experience level are as follows:

- Older consumers still favour conventional payment methods like debit and credit cards, but younger users tend to favour UPI because of its convenience. The payment system's usability and security are issues that older generations are worried about (Sakhiya, Lakhtariya & Vidani, 2024). To make the endeavour more user-friendly, age must be taken into consideration as a significant important component in technology adoption. Tailored educational initiatives are also required to raise awareness.
- Employees receive little consideration during the firm-level digital transformation process. Nonetheless, enhancing digital literacy is critical to the development of human capital (Cetindamar, Abedin & Shirahada, 2021). The digital literacy among the employees can be enhanced through providing tailored training and support, assessing their current skill set and fostering a digital-friendly environment at workplace.
- Cash is no longer the primary means of trade in the current digital era. People prefer to use bank websites and mobile applications for transactions. For increased consumer satisfaction, banks should work to streamline and expedite the online payment process.

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