TECHNOLOGICAL TRANSFORMATION IN THE DELIVERY OF PUBLIC SERVICES: A STUDY OF PUBLIC GOVERNANCE IN THE EMERGING MARKET

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Abstract

The State of Haryana offers more than 650 services/schemes through its unique one-stop SARAL portal. While exploring the SARAL performance, determined using a mathematical equation SARAL portal, it has been observed that the districts' performance is asymmetrical in the technological impact of governance in the state. To study this research problem, the objective was to trace the factors responsible for this asymmetrical technological transformation in the state. To meet the research objective, the authors selected the Karnal, Jind, and Nuh districts, considering the top, middle, and bottom performers in SARAL score indicators by using a purposive sampling technique. This quantitative research has been analytical and empirical based on the secondary data. The study has found that not only technical but there are other significant factors viz., social, political, administrative, awareness, and economic factors influence the technological transformation in public service delivery. The findings may help the government policymakers in reengineering the technological development policy in the state so as to move towards fulfilling the spirit of Article 38 of the Indian Constitution and Sustainable Development Goal (SDG) 16 prescribed by the United Nations (UN). Further research can supplement this study by collecting primary data from the service providers and the service recipients.

Keywords: Development Policy, Technological Impact, Digital Divide, Government Policy, Public Service Delivery, Governance

Authors' individual contribution: Conceptualization — N.; Methodology — N.; Writing — N.; Supervision — R.S.

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1. INTRODUCTION

"E-governance is in essence, the application of information and communications technology to government functioning in order to create 'Simple, Moral, Accountable, Responsive and Transparent' (SMART) governance" (Second Administrative Reforms Commission [ARC], 2008, p. 1).

In the early days of computerization, citizens had to visit the concerned department service counters to get the desired services. Different department service counters were distributed across the city, and individuals had to travel vast distances between them. Citizens used to wait a long time since there were few counters for the number of persons seeking services. Further, there was no transparency in detailing the departmental procedure to get a service neither the applicant could trace the status of his request made for obtaining the service. The crowded facilities, shabby atmosphere, discourteous staff and chronic absenteeism, demands for satisfaction, inefficiency, long lines, stalling officials, procedural difficulties, and other related issues irritated the service

recipient. Therefore, visiting a government department for any service was a scary event. The bad experience of getting services was happening across the nation and the state of Haryana was no exception to it. The same was in practice in the different districts of the state.

Citizens' awareness and improved experiences with the commercial sector increased the demand for better government services. The rise of information and communication technology (ICT) has fueled this desire and e-governance emerged as a paradigm and much necessitated change in public administration, which revolutionised the way of delivering public services. Most advanced nations, including the UK, Australia, Canada, New Zealand, and the USA, have implemented market-based policies. This new approach has been called "managerialism", "new public management", "market-based public administration", "the post-bureaucratic paradigm", or "entrepreneurial government" (Pillay et al., 2023). The basic features were belief in market principles, limited expenses, simplification of procedures, combating corruption, infusing transparency, and reducing the role of the state.

In India, the emergence of the concept of digital governance in the delivery of public services started way back in the 1980s and gained momentum during the 1990s as the country had to transform its method of delivery due to pressure from international agencies during the 1990s financial crisis. In 2006, the National E-Governance Plan (NeGP) was launched by the government of India to make basic services available to the common man in his locality in a transparent, efficient, and reliable manner. NeGP 2.0 was launched in 2014 to boost the plan further to bring transformation and ensure a digitally empowered Indian society. Later on, an umbrella program, "Digital India", was launched in 2016 in which e-Kranti, i.e., electronic delivery of services, stands as one of the nine pillars of the program (Sharma, 2023). The vision of e-Kranti (https://www.meity.gov.in/content/e-kranti) is: "Transforming e-Governance for transforming governance", and its mission is: "To ensure a Government-wide transformation by delivering Government services electronically to the citizens through integrated and interoperable systems via multiple modes while ensuring efficiency, transparency, and reliability of such services at affordable costs" (Ministry of Electronics & Information Technology, n.d., para. 2).

In line with the initiatives, the central government took from time to time, the Haryana government initiated the e-Disha (electronic delivery of integrated services to all) project in March 2006. Initially started in the Kaithal district, it was extended to all the districts of the state. The objectives of this project are:

- enhancing transparency, maximizing citizen interaction;
- enabling online transaction and feedback mechanisms;
- reducing the cost of service delivery;
- providing a one-stop technological solution for a maximum number of services offered by the state in an efficient, effective, and integrated manner.

The efforts of the state resulted in securing the top position in the group "A" states in the citizen-centric governance parameter of the Good Governance Index, 2021, issued by the government of India (Department of Administrative Reforms & Public Grievances, 2021). The e-Disha project which was later on revamped as SARAL (simple, all-inclusive, real-time, action-oriented and long-lasting portal) offers more than 650 services/schemes through a one-stop online portal. The service seekers can directly apply for the desired service or they may visit the SARAL *seva kendras* to apply for the services, where the government-approved personnel sit with the computerized system to assist the service seekers. These services are offered across all 22 districts of the state but SARAL performance indicators reveal that there is an asymmetrical impact of technology-enabled delivery of public services in these districts.

The literature review reveals that most of the studies have been conducted regarding the success or failures of e-governance and related projects in various states. In Haryana, studies related to e-Disha and SARAL platforms and their comparative evaluations with those of other states have also been conducted, adding much knowledge to this research field. To the best of our knowledge, there is a methodology-based research gap in the literature as the studies have not been conducted with regard to the asymmetrical performance of districts of the state with regard to delivery of public services through digital mode through single window online SARAL portal[1] of the state of Haryana.

Every research moves on the ladder based on any problem found in the universe. This study is also not an exception. While exploring the SARAL performance dashboard, it has been found that there is uneven technological transformation amongst the districts regarding the delivery of public services online. The performance of top districts like Karnal and Panipat is far better than that of least-scoring districts like Charkhi Dadri and Nuh. While the districts like Jind and Jhajjar find the middle position. The research problem has been to ascertain:

RQ: Why there is uneven technological transformation amongst the districts of the state of Haryana with regard to the delivery of public services through the SARAL portal?

After identifying this research problem, the authors have chosen Karnal, Jind, and Nuh districts, i.e., the top, middle, and bottom performer districts, to study the said problem.

By selecting Karnal district, Jind district, and Nuh district as purposive samples out of a universe of 22 districts, the purpose of the study is to trace the factors that result in asymmetrical technological transformation in the state of Haryana with regard to the delivery of public services SARAL portal. This study aims to find those factors so that government policymakers can focus on the same while reengineering digital initiatives in the future for the development of the disadvantaged/vulnerable section of society.

In this technological advancement age in which governments are using ICT-based infrastructure for the delivery of public services, this study finds its relevance. Indian society is a mixed bowl of caste, creed, and culture and the same is reflected in the state of Haryana. The high rate of illiteracy, slow internet penetration rate, and the deepening digital

[1] https://saralharyana.gov.in

divide especially amongst the population living in rural areas and far-flung areas act as speed breakers to the ICT-based delivery system. The factors responsible for asymmetrical technological impact in the state need to be addressed at an early date. The policy gaps to be found in this piece of research may not only be helpful and relevant to the state of Haryana but also sub-national and cross-national as well.

The structure of the paper is as follows. Section 2 reviews the relevant literature. Section 3 analyses the methodology that has been used to conduct this research on technological impact in the delivery of public services in the emerging market. Section 4 proceeds with the results of this research and discussions. The last Section 5 concludes the paper.

2. LITERATURE REVIEW

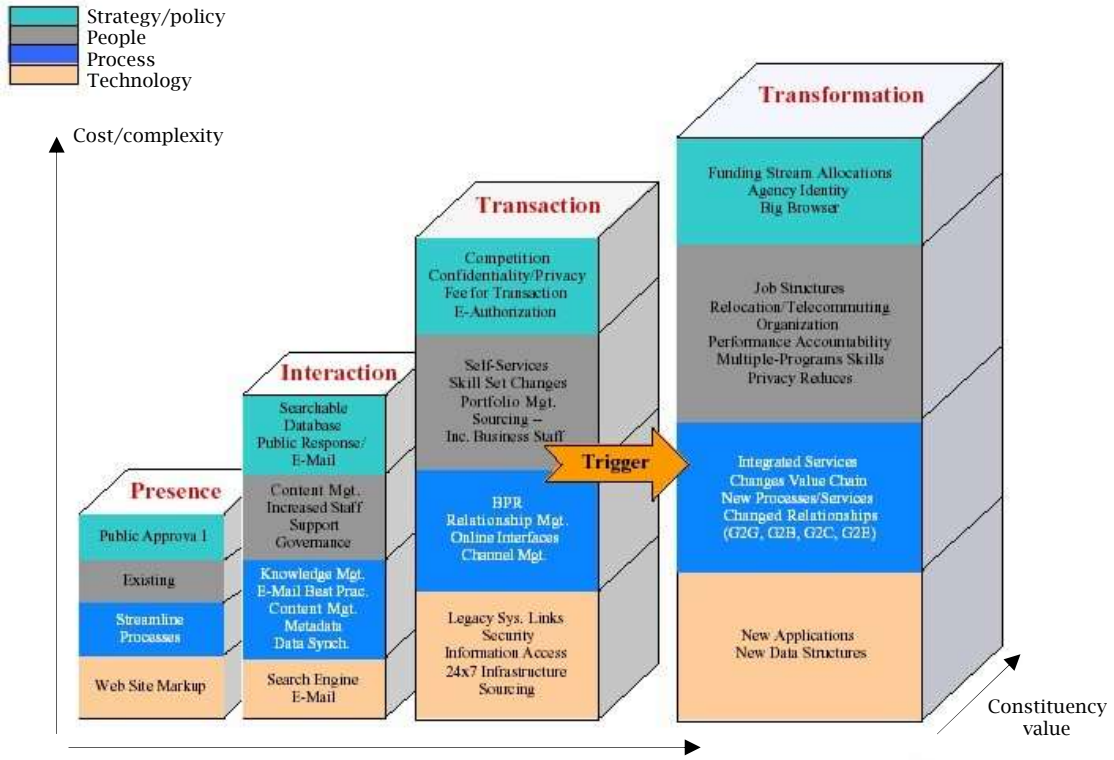
Collating, compiling, and summarizing the prior research on an issue presents an in-depth understanding of that particular topic apart from assisting in the forgoing learning process. It is a significant step in our academic career that enables us to understand the topic analytically (Denney & Tewksbury, 2013). It has been categorised into systematic, semi-systematic, and narrative/ integrative types. The present research follows the integrative approach of literature review as an integrative review approach is much more useful when the purpose is not just to review the existing articles but to understand and combine the perspectives of the authors (Snyder, 2019).

United Nations (UN) e-government survey 2020 on the future of digital government reported that: "Optimizing and maximizing the use of government data will make public institutions more productive, accountable and inclusive, in line with the principles reflected in SDG 16. Data-centric government will also help build public trust and strengthen trustworthiness" (United Nations Department of Economic and Social Affairs [UNDESA], 2020, p. 174).

Heeks, while analyzing e-governance in the Indian context, stated that the Indian governance system is slowly moving from the era of information technology (IT) to ICT and then to information society (IS). The governments are diffusing technological measures while delivering governance to the citizens (Sumanjeet, 2006).

Gartner's research study conceptualizes four phases of the e-government model to evaluate the government's digital government initiatives and lays out a prominent roadmap for the same Figure 1 (Baum & Maio, 2000). Transformation is the highest phase in which projects are mature enough to reinvent the government's existing processes and functions.

Figure 1. Gartner's four-phase e-governance model



Source: Adapted from Baum and Maio (2000).

Voogd's (2007) study throws light on requirements for implementing e-service delivery modules, challenges therein, IT infrastructure, organisational culture and the process of implementing e-services at the local level.

Chander and Kush (2012), in their paper, share a comparative evaluation of the performance of e-Disha and SUWIDHA online portals of Haryana and Punjab respectively. After experimenting with the metrics, the researchers concluded that the e-Disha portal needs to learn from the SUWIDHA

portal of Punjab as the Punjab portal is much more informative, updated and customer-friendly.

Garg and Kush (2015) have reviewed the e-Disha project of Haryana, which was launched in 2006 to provide a one-stop solution to the state's service recipients. The authors expressed that launching this project results in procedural simplification, better customer satisfaction and a check on petty corruption prevailing in the state.

Kundu (2024) concludes that there is a need to develop a mobile-based SARAL App so that the younger generation may find seamless ways to reach the Haryana government to get delivery of public services. He also indicated that soft skill training of staff is missing in the state, which needs to be deployed so that behaviour management issues of the staff, i.e., the service providers, may be targeted. He asserted that technological developments and the electronic delivery of public services are leading to an innovative shift in Indian governance in which the client claims service delivery as a matter of right.

Vir and Bansal (2008), while outlining the citizen-centric governance in Haryana, conclude that these web-based initiatives taken under e-Disha *ekal seva kendra* intend to offer transactional services where the common man interacts with the government through a unified, integrated web-enabled system.

A review of the existing important literature in the field of research under reference has been indicated in Table 1.

Table 1. Important literature on ICT-based governance (Part 1)

No.	*Paper description*	*Author and year*	*The gist of the study*
1	Gartner's four phases of e-government model	Baum and Maio (2000)	The study followed a comparative analysis technique and developed a four-stage e-government maturity model in which the stakeholders measure the progress. The findings of the research help to evaluate the progress of e-government in any state.
2	E-DISHA *ekal seva kendra* — Citizen centric e-governance	Vir and Bansal (2008)	This qualitative and descriptive study expressed how the unique service delivery concept evolved by taking into consideration the challenges that emerged in the state of Haryana. The research focused on the e-Disha online system and stressed the challenges in this one-stop online platform.
3	Conceptualising the process of e-governance: The e-Seva experience in Hyderabad	Babu and Prasad (2009)	In this study, the researchers had done a primary survey of various e-Seva online centres to visualize the impact of online service delivery mechanism in Hyderabad in terms of reliance, citizen satisfaction and corruption. The article concludes that the transformation of caste, class, ethnic and gender relations in the social structures is significant to determine who is able to access any technology and use it beneficially in the field of e-governance.
4	E-governance for improved public sector service delivery in India, Ethiopia and Fiji	Singh et al. (2010)	The research is a quantitative study based on primary data collected from more than 900 respondents from India, Ethiopia, and Fiji with regard to citizen perception and poor service. The research objectives have been accomplished using the Principal-Agent theory. It was a surprise to note that the red-tape procedure, the various forms of corruption, opaque bureaucracy and lack of transparency still find a place in various formats which were missing in Ethiopia and Fiji.
5	Critical factors for successful implementation of e-governance programs: A case study of HUDA	Goel et al. (2012)	This exploratory case study of the Haryana Urban Development Authority (HUDA) throws light on the success of the e-governance program and how HUDA addressed the challenges therein. It highlighted that the business process reengineering (BPR) exercise should be taken seriously before aligning with IT platforms.
6	Performance analysis using metrics of two e-government portal services	Chander and Kush (2012)	The authors studied a comparative analysis of the e-Disha portal of Haryana and the SUWIDHA portal of Punjab across various metrics. The study reveals that the missing of basic information on the web portal of Haryana is acting as a barrier to technological transformation in the state.
7	E-governance success factors: An analysis of e-governance initiatives of ten major states of India	Singh Kalsi and Kiran (2013)	The authors studied the e-governance policy framework of 10 states of India and conducted in-person of senior officials with structured questionnaires. The findings expressed the policy gaps and suggested certain factors such as capacity building, common standards, security guidelines, quality, completeness, depth and spread of services, coordination, mindset, etc. which need immediate attention from the governments.
8	Improved service delivery and cost-effective framework for e-governance in India	Kumar et al. (2013)	To address the issues of accessibility and effectiveness in the applicability of e-governance services, this paper suggests technological involvements like virtualization, consolidation and cloud computing.
9	Public service delivery: Role of ICT in improving governance and development impact	Bhatnagar (2014)	The researchers here studied the role of ICT in creating development impact and enhancing good governance. The study has been done involving e-banking, unique identification programmes, land records, education, citizen engagement, farmers and fishers, mobile banking etc. It highlights that though transparency and accountability have increased the issues relating to discretion, petty corruption still finds its way to acting as a blockade to technological transformation in governance.
10	E-Disha: An analytical review	Garg and Kush (2015)	The authors have done analytical research on the e-Disha portal of Haryana and focused on suggesting the merits and limitations of the electronic public delivery of services. It stressed that a low rate of internet penetration, missing citizen participation, high rate of illiteracy, and less investment in infrastructure and the language are the factors which act as hindrances to technological transformation in governance.

Table 1. Important literature on ICT-based governance (Part 2)

No.	*Paper description*	*Author and year*	*The gist of the study*
11	Status of user-centric e-governance practices in North India	Jindal et al. (2016)	Here, the study has been made on five Indian states — Chhattisgarh, Haryana, Himachal Pradesh, Punjab, and Uttarakhand with regard to the impact of e-governance on the welfare of people especially the downtrodden and vulnerable section of society. The resistance of people to adopt new governance measures and the language are among the top reasons for the asymmetrical impact of e-governance on Indian society.
12	Right to Service Acts in India — Fundamental governance reforms or an exercise in political rhetoric?: A case study of Delhi administration	Garg (2017)	Garg made a qualitative study about the Home Delivery Model of the Delhi government. It has been expressed that this is a novel and revolutionary step of the government packed with in-built constraints for the delivery of public services at home to the people. Here, people no longer need to apply for services at online portals but the same can be done through telephonic calls. By doing so, the issues relating to digital illiteracy can be addressed by the government.
13	Effective and secure e-governance model of Haryana	Singh et al. (2019)	This descriptive study measured the progress of e-governance in Haryana based on Gartner's four phases of the e-governance model. It highlights that education and e-learning can act as saviours to the black holes of education and poverty in India. Further, knowledge sharing and technical-friendly online portals can overcome the obstacles of the path of e-governance.
14	E-governance: Learning from Karnataka	Vaddiraju and Manasi (2019)	In three case studies related to land management in rural and urban areas and Bengaluru traffic management, the aim of the researchers was to explore whether e-governance in Karnataka has improved the welfare function of the state. The study expresses that economic inequality, lack of privacy laws and lack of regulation are acting as hindrances to the e-governance development in the state.
15	Journey towards a citizen-centric public service delivery system: Antyodaya Saral, a case study from Haryana	Khasnabis et al. (2021)	Based on primary data, this study explores the citizen's experiences of public service delivery and makes suggestions for better accessibility and availability of the services to the people at large. The study is based on the Antodaya SARAL online portal which has been revamped by the state of Haryana.
16	The future of digital government	UNDESA (2022b)	The report suggests that the digital-first approach of the e-government should orient towards "inclusion by design" or "inclusion by default" strategies so as to recognize the exclusion and embrace diversity. Targeted policies and dedicated budgetary and other resources should be employed for vulnerable members of society and disadvantaged populations so as to avoid the asymmetrical impact of technology on the vulnerable section of society.
17	UN e-government development index	UNDESA (2022a)	The survey reveals that digital transformation is enabling accelerating the realization of 2030 Sustainable Development Goals (SDGs) and ensuring that no one is left behind offline in this digital age.
18	Digital inclusion towards e-governance: Challenges and issues	Refat et al. (2023)	Through semi-structured interviews, a qualitative research approach has been employed in this exploratory study. As indicated in the BBC research, 21% of the British population is still unable to access digital facilities due to digital skills and other related causes. Access to internet devices and good internet speed is the first step for digital inclusion for the disadvantaged section of society. The study explores the challenges of digital inclusion and proposes a framework for the same.
19	E-public service delivery as an innovative paradigm-shift in Indian governance system: An analysis of Haryana state model	Kundu (2024)	The author makes an analytical study of the SARAL portal of Haryana and suggests that the government should develop a SARAL App in alignment with the online SARAL portal to minimize the distance between the service seeker and the service providers. Spreading awareness amongst the people and training the service provider staff can smoothen the digital transformation and the path of e-governance.
20	E-governance as good governance? Evidence from 15 West African countries	Akpan-Obong et al. (2023)	The study creates an advanced understanding of the co-related concept of development and governance. It provides empirical evidence of the opportunities and hindrances in the implementation of ICTs, especially in geopolitical contexts of limited resources. The researchers help the policymakers by providing quantitative data understanding which good governance can find its way through the path of ICTs.

3. RESEARCH METHODOLOGY

While research methods comprise the tools and techniques, the research methodology stands for an approach to conduct the research and solve the research troubles (Mishra & Alok, 2017).

This research is analytical and empirical research primarily based on quantitative analysis of data with regard to the asymmetrical performance of districts of Haryana state in terms of technological transformation and the related performance in the delivery of public services through the SARAL platform. The research, being a descriptive type of nature based on secondary data, does not construct any hypothesis. The study has used secondary data accessed from Census 2011, Economic Survey, UN and other reports, surveys, indices, websites and other related sources. Haryana state is divided into 22 districts. The top performing districts in terms of technological delivery of public services are Karnal, Panipat, Kaithal and Ambala, while Sirsa, Mahendergarh, Bhiwani, Charkhi Dadri and Nuh remain at the bottom position. The middle position in the SARAL performance dashboard belongs to the districts like Jind and Jhajjar.

To study the research problem, the researchers have chosen Karnal, Jind and Nuh, i.e., top, middle and bottom districts, to study what factors are responsible for asymmetrical technological transformation in the state in terms of delivery of public services through online mode. These districts have been chosen as non-probability-based deliberative purposive sampling out of the universe of 22 districts as these districts may indicate the factors due to which there is an uneven technological transformation in the state using the same online platform, i.e. SARAL, and covered under the same grievance redressal mechanism under the provisions of Right to Service Act, 2014. Further, choosing the top, middle and bottom performing district for the study may provide an overall overview of the region and the results may not only be helpful for the state but also sub-national and cross-national as well.

Alternatively, this research could have been done by including more districts of the state. This research could also be done with a collection of primary data from the service seekers and service providers.

4. RESULTS AND DISCUSSIONS

The government of Haryana has made more than 650 public schemes and services online to be delivered through the SARAL portal developed with the help of the National Informatics Centre (NIC), the government of India. This portal can be used by a service seeker or the Common Service Centre workplaces like e-Disha *kendras* and Atal *seva kendras*. e-Disha centres are located and managed by the government of Haryana through its set up at mini-secretariats, tehsils, deputy Commissioner offices and other public places. Atal *seva kendras* are completed privately owned and privately managed online service delivery centres, though the licence or permission is given by the government of Haryana.

Government of Haryana from time to time, notifies various services to be included under the provisions of the Haryana Right to Service Act, 2014, through gazette notification. However, more than 90% of the services available on the SARAL portal have been covered under right-to-service (RTS) provisions.

The SARAL portal performance dashboard indicates the performance of all districts by taking into consideration the following:

- number of applications received;
- number of applications dealt with within the time limit framed under the provisions of the Right to Service Act, 2014, of the government of Haryana;
- number of applications which are pending beyond the time frame.

As accessed from the SARAL portal, Table 2 portrays the data with regard to the performance of the districts.

The last column in Table 2 indicates the districts' overall performance by using a well-prescribed Eq. (1). As expressed, Karnal and Nuh are the top-most and bottom-most districts in terms of performance in the delivery of online services to the public within a prescribed time period.

Table 2. Performance of districts

District	*Total application received*	*Total application completed*	*Number of applications received (recently)*	*Total completed application recently*	*Application pending outside (to date)*	*Antyodya SARAL score*
Karnal	3836993	3823608	160916	163758	2025	9.7
Panipat	3629949	3610921	178918	183041	2326	9.7
Kaithal	3032664	3007892	123542	125476	3050	9.6
Ambala	3091430	3082278	123882	126911	1876	9.6
Yamunanagar	3003746	2992745	130618	134029	2373	9.6
Panchkula	1347641	1341911	61886	63863	1356	9.5
Kurukshetra	2419510	2413150	69845	71845	1521	9.5
Rohtak	2988389	2973846	112743	115632	3987	9.4
Gurugram	5980519	5961651	233716	245946	4403	9.3
Sonipat	3607132	3589756	140652	145739	5335	9.3
Jhajjar	2587018	2575831	95461	97743	4443	9.3
Jind	3458791	3421768	141348	144498	8976	9.2
Rewari	2808762	2796356	101080	102948	7383	9.2
Faridabad	4710769	4676909	204149	213611	7964	9.2
Haryana HQ	257254	256072	6109	6184	592	9
Hisar	5232207	5157890	236653	241930	21499	9
Palwal	2135388	2121367	74385	78365	4892	8.9
Fatehabad	2555129	2532402	90873	93106	8531	9
Sirsa	2942881	2917782	96965	99659	11420	8.7
Mahendergarh	2507111	2489272	81796	84035	9545	8.8
Bhiwani	3485381	3429048	136977	139661	26165	8.3
Charkhi Dadri	1231429	1216584	44187	45473	10503	7.9
Nuh	2212458	2175098	79980	82586	19459	7.9

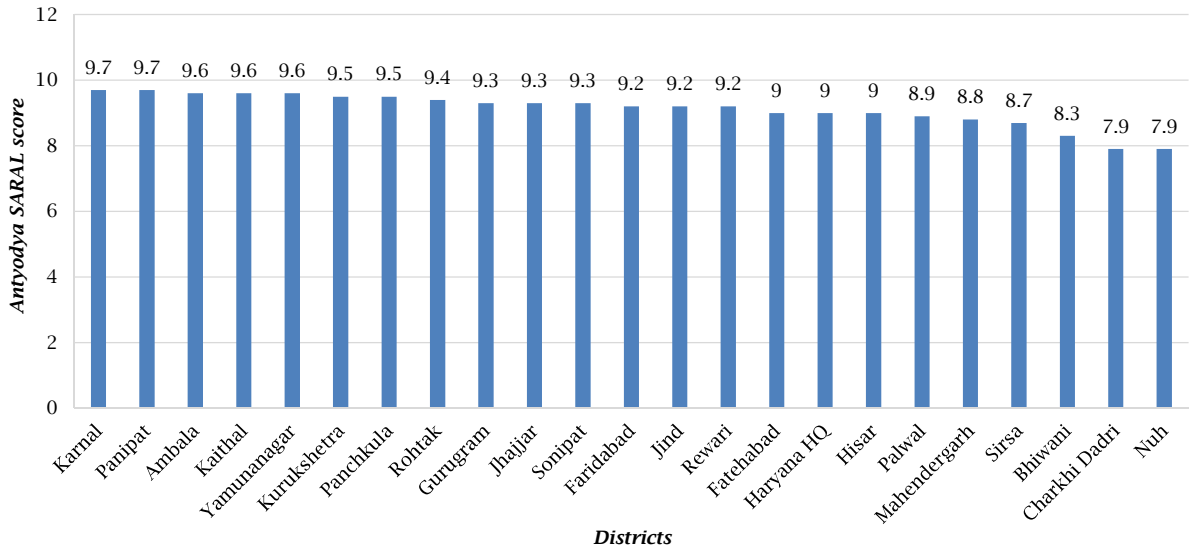
Source: SARAL portal (https://saralharyana.gov.in/).

SARAL performance equation:

$$RTS\ score = 10 * \frac{Aplications\ completed\ within\ RTS\ recently}{Aplications\ completed\ within\ recently + Aplications\ pending\ outside\ RTS} \quad (1)$$

where, "recently" refers to the time period of application submission taken into account; for departments with schemes/services of RTS timelines less than or equal to 45 days, "recently" is 3 months; for departments with schemes/services of RTS timelines more than 45 days, "recently" is 6 months.

Figure 2. Antyodya SARAL visitor dashboard score



Source: Authors' elaboration.

The reasons for this uneven and asymmetrical technological performance can be attributed to a number of factors which may relate to either the service provider or the service recipient or both.

Factors identified for asymmetrical technological transformation.

4.1. Social factors

Despite being in close proximity to the national capital territory, the mud-houses of Meos (ethnic community in Mewat region) in the region speak volumes of the status of development district Nuh (erstwhile Mewat), which was declared the most backward district of India by 'NITI Aayog' in 2018. Demographic factors such as access to basic infrastructural facilities, including health, housing, sanitation, electricity, etc., determine the standard of living of any region, be it urban or rural.

As per the 2011 census, the government of India, Karnal district has a 2520 square km area comprising about 15 lac population while Nuh has a 1507 square km area populated with about 10 lac people. In Karnal district, 69.79% of the population belongs to rural areas, while in Nuh, the rural population is 88.61%, which is about 20% more population (Department of Economic and Statistical Affairs, 2022). The rural factor comes with a package of backwardness in terms of technology, infrastructure, electricity, poor internet/broadband connectivity and other related development issues.

Census 2011 reports that Jind district contributes to 71.44% literacy rate with male and female literacy at 80.81 and 60.76 respectively. The huge gap in literacy amongst the different sexes of the district expresses a dismal position in the state. Further, Jind with more than 300 villages adds to the technological backwardness due to internet penetration and other related issues.

While analyzing the factors from the service recipient side causing asymmetrical technological performance in the delivery of services in different districts of the state, the literacy rate can be stated to be a major barrier. As available in the census, the literacy rate in Karnal is 74.73% which is approximately equal to the state literacy rate, while the literacy rate in Nuh is very dismal i.e. 56.10% and Jind finds mid-place with 71.44% literacy rate. With this sorry state of literacy in Nuh, how can an individual understand the technical requirements to get public services through online platforms developed by the state? The literacy rate of Karnal, Jind and Nuh districts clearly shows direct relations with the performance of these districts on the SARAL portal of delivery of public services in the state.

Social causes can be one of the prominent causes resulting in the lagging of the district in terms of performance in the online delivery of public services.

4.2. Administrative factors

Transparency in providing information in the public domain can be a possible cause of asymmetrical technological transformation in the state. The district websites of Karnal, Jind and Nuh express a wide gap in making available the information in the public domain. While in Karnal the district website is very informative Jind shows the middle position and the Nuh district website is not user-friendly.

Awareness campaigns by the Right to Service Commission, Haryana, in southern districts of the state like Nuh are lacking, as seen from the news information on the Commission website[2]. A sensitisation program needs to be conducted in the least-performing districts so that the staff may work more efficiently and transparently in line with the state's motto of good governance.

It has been observed that the same scheme provided through the same portal under the same department offers different results in Karnal, Jind and Nuh in terms of performance in the delivery of services. For example:

- Issuance of income certificate (for education purposes) SARAL performance score is 7.5 in Nuh, 7.8 in Jind and 7.9 in Karnal.

[2] https://haryana-rtsc.gov.in/media-corner-description-all1

• Issuing minority community certificate score is 4.2 in Nuh, 4.6 in Jind and 5.6 in Karnal.

• Issuance of income certificate (for other than education purposes) score is 6.8 in Nuh, 7.1 in Jind and 7.4 in Karnal SARAL portal.

The related performance of these three districts on the SARAL portal directly correlates with the administrative factors that may be related to basic infrastructure services available in these districts e.g. internet speed, electricity, obsolete computer systems etc. or the working ecosystem of the staff.

4.3. Awareness factors

The annual report of the Haryana Right to Service Commission 2021–2022 clearly indicates that the least number of complaints have been filed by the people of Nuh through the grievance redressal mechanism. It expresses that people are either ignorant, or they don't trust the grievance redressal mechanism, or they finally search for middlemen rather than making complaints against the officials. This ignorance defeats the very purpose of the setting of the Commission in Haryana, as the Commission was set up with a clear mandate to embolden the grievance redressal mechanism, which was earlier lacking in the concept of citizen charters.

On the other side, the websites of districts Jind and Karnal as reported earlier are informative and user-friendly to enable to creation of awareness amongst the masses about the grievance redressal mechanisms and the related procedures.

Therefore, the ignorance of the people needs to be addressed with mass public campaigns through electronic, print and social media to address the uneven technological transformation in the state.

4.4. Political factors

The lack of state-funded universities in the Nuh district, in spite of dismal educational standards, indicates the lack of political will. On the other hand, some districts have high standards of education, and the government is still investing in setting up universities and colleges. In Karnal, there are two universities/higher education institutions while the Jind has one and the Nuh district has none.

A limited number of schools and missing separate schools for girls in the Nuh district act as push buttons for further backwardness of the district compared to other districts of the state. As per data for 2020–2021, only 15.83% percentage of schools had at least one computer lab in Nuh, while in Karnal, the ratio was 35.97%.

When the students do not learn about technical know-how during their formative stage, how can a technological transformation be in the state? Further, the number of higher education institutions/ universities in these three districts shows that political will in terms of educational investments is resulting in the performance of the districts in e-governance on the SARAL performance indicators.

4.5. Economic factors

As reported in the statistical abstract of Haryana 2021–2022, total employment in the organised sector covering both public and private is 50623 in Karnal, which is approximately five times that of Nuh, which stands for just 10889. Number of registered working factories in Karnal, Jind and Nuh are 606, 208 and 41, respectively. The number of workers in these factories is 38491, 16462 and 3715 respectively. Similarly, the income and expenditure statements of local bodies also express the drastic difference between the three districts (Department of Economic and Statistical Affairs, 2022).

If we consider the agriculture sector, there is no issue of irrigation in Karnal, while Nuh district is a drought-prone region. Here, also Jind finds the middle place in terms of irrigation and water connectivity to the farming community. The people in Nuh have been waiting for the last 40 years for the construction of the proposed Mewat canal.

The economic conditions can be one of the potential causes of the gap in the technological transformation of the state.

4.6. Implications

The state of Haryana is still moving in the third phase, i.e., "transaction" of Gartner's four-phase e-governance model (Baum & Maio, 2000) and hard, dedicated, personalized efforts are required. This study highlights that there exist social, political, economic, administrative and educational awareness issues which are considerably acting as blockades to the technological transformation of the state in terms of the delivery of public services online. The application of blockchain technology to bridge these societal issues in electronic governance (Atzori, 2017) is still a hypothetical concept in developing countries. The study supports the idea expressed in a study of 15 West African countries (Akpan-Obong et al., 2023) that some of these issues can be addressed in a shorter time frame, like sensitization of staff, developing informative websites, electricity issues, internet penetration and awareness. Other issues related to social and economic causes need to be implemented with a long-term strategy by the government with the tool of political will. Further, without a strong grievance redressal mechanism under the aegis of the Haryana Right to Service Act, 2014, the delivery of public services in a prescribed time frame may be a distant vision. The issue of the digital divide is an emerging form of inequality not only in developing countries but also in developed countries like the UK (Refat et al., 2023), thus, the deepening digital divide due to technological transformation in the state needs to be addressed instantly before it acts as a thick dividing line of digital exclusion for disadvantaged/vulnerable section of the society. The idea of "no one to leave behind" proposed in the report "The future of digital government" (UNDESA, 2022b) is still a dream run for developing countries like India.

The reengineering of the policies for making the technological impact inclusive of disadvantaged people in the state may also be a little step in reaching the goal of the welfare state as mandated under Article 38 of the Indian Constitution. Needless to say, the study also contributes little to the SDG 16 mandated by the UN.

5. CONCLUSION

Though Haryana state is amongst the leading states of the country in terms of technological transformation in the delivery of public services but the SARAL portal reveals that the transformation has been asymmetrical in nature. The objective of the study was to find the factors which were responsible for asymmetrical technological transformation in the districts of the state of Haryana. For this objective, three districts, i.e., Karnal, Jind and Nuh were selected based on purposive sampling as these districts are top, middle and bottom-most performing in terms of technological performance for delivery of public services. The study of the problem has indicated that not only technical but also a number of social, economic, political, administrative, technological and educational awareness factors are significantly playing a role in asymmetrical technological transformation in the state.

Like every study, this study also has its limitations. The researcher has chosen to study the performance of only three districts in terms of technological transformation in the delivery of public services in Haryana through a comparative perspective. More number of districts could be included as part of the study. Also, the study is limited to only secondary sources. Future studies in this direction can be supplemented with the use of primary data, which can present a much more realistic position to be placed before the state functionaries so that loopholes in the technological system of delivery of public services may be addressed in the direction of delivering good governance.

REFERENCES

Akpan-Obong, P. I., Trinh, M. P., Ayo, C. K., & Oni, A. (2023). E-governance as good governance? Evidence from 15 West African countries. *Information Technology for Development, 29*(2–3), 256–275. https://doi.org/10.1080/02681102.2022.2123770

Babu, D. R. S., & Prasad, S. (2009). Conceptualising the process of e-governance: The e-Seva experience in Hyderabad. *Indian Journal of Public Administration, 55*(2), 165–186. https://doi.org/10.1177/0019556120090201

Baum, C., & Maio, A. D. (2000). *Gartner's four phases of e-government model*. Gartner Group.

Bhatnagar, S. C. (2014). *Public service delivery: Role of information and communication technology in improving governance and development impact* (ADB Economics Working Paper No. 391). Asian Development Bank (ADB). https://doi.org/10.2139/ssrn.2479689

Chander, S., & Kush, A. (2012). Performance analysis using metrics of two e-government portal services. *The International Journal of Computer Science & Applications, 1*(4). 32–40. https://issuu.com/tijcsajournaltijcsa/docs/june12issue-5

Denney, A. S., & Tewksbury, R. (2013). How to write a literature review. *Journal of Criminal Justice Education, 24*(2), 218–234. https://doi.org/10.1080/10511253.2012.730617

Department of Administrative Reforms & Public Grievances. (2021). *Good Governance Index (GGI) 2020–21*. Government of India. https://darpg.gov.in/sites/default/files/GGI_Report_22.12.2021.pdf

Department of Economic and Statistical Affairs. (2022). *State statistical abstract of Haryana 2021–22*. Department of Economic and Statistical Analysis Haryana. https://esaharyana.gov.in/document/state-statistical-abstract-of-haryana-2021-22/

Garg, M. (2017). Right to Service Acts in India — Fundamental governance reforms or an exercise in political rhetoric?: A case study of Delhi administration. *Indian Journal of Public Administration, 63*(4), 537–556. https://doi.org/10.1177/0019556117726707

Garg, N., & Kush, A. (2015). E-Disha: An analytical review. *International Journal of Advanced Engineering Research and Science, 2*(2), 21–24. https://surl.li/tsvoxu

Goel, S., Dwivedi, R., & Sherry, A. M. (2012). Critical factors for successful implementation of e-governance programs: A case study of HUDA. *Global Journal of Flexible Systems Management, 13*, 233–244. https://doi.org/10.1007/s40171-013-0021-1

Jindal, N., Sehrawat, A., & Medury, Y. (2016). Status of user-centric e-governance practices in North India. *Prabandhan: Indian Journal of Management, 9*(4), 18–29. https://doi.org/10.17010/pijom/2016/v9i4/90769

Khasnabis, S., Rajmohan, S., Maheshwari, S., & Shelke, A. (2021). Journey towards a citizen-centric public service delivery system: Antyodaya Saral, a case study from Haryana. *Journal of Governance & Public Policy, 11*(1), 1–28. https://www.ipeindia.org/wp-content/uploads/2021/10/IPE-JoGPP-Jan-Jun-2021.pdf

Kumar, P., Kumar, D., & Kumar, N. (2013). Improved service delivery and cost effective framework for e-governance in India. *International Journal of Computer Applications, 74*(2), 20–23. https://doi.org/10.5120/12858-9577

Kundu, R. K. (2024). E-public service delivery as an innovative paradigm-shift in Indian governance system: An analysis of Haryana state model. *Indian Journal of Public Administration*, *70*(1), 9–24. https://doi.org/10.1177/00195561231204902

Ministry of Electronics & Information Technology. (n.d.). *e-Kranti*. https://www.meity.gov.in/content/e-kranti

Mishra, S. B., & Alok, S. (2017). *Handbook of research methodology: A compendium for scholars & researchers*. Educreation Publishing.

Pillay, P., Zondi, S., Reddy, P., & Jones, C. (2023). *The nexus between poverty and corruption: Quo vadis*? Cambridge Scholars Publishing.

Refat, N., Patwary, M., & Rahman, M. A. (2023). Digital inclusion towards e-governance: Challenges and issues. In S. Hayes, M. Jopling, S. Connor, & M. Johnson (Eds.), *Human data interaction, disadvantage and skills in the community: Enabling cross-sector environments for postdigital inclusion* (pp. 135–150). Springer. https://doi.org/10.1007/978-3-031-31875-7_8

Second Administrative Reforms Commission (ARC). (2008). *Promoting e-governance: The SMART way forward* (Eleventh Report). Government of India. https://darpg.gov.in/sites/default/files/promoting_egov11.pdf

Sharma, P. (2023). An understanding of e-governance and its applicability in India. *Dynamics of Public Administration, 40*(1), 87–93. https://doi.org/10.5958/0976-0733.2023.00006.8

Singh Kalsi, N., & Kiran, R. (2013). E-governance success factors: An analysis of e-governance initiatives of ten major states of India. *International Journal of Public Sector Management, 26*(4), 320–336. https://doi.org/10.1108/IJPSM-08-2011-0101

Singh, G., Pathak, R. D., Naz, R., & Belwal, R. (2010). E-governance for improved public sector service delivery in India, Ethiopia and Fiji. *International Journal of Public Sector Management, 23*(3), 254–275. https://doi.org/10.1108/09513551011032473

Singh, J., Keswani, B., & Chaturvedi, A. (2019). Effective and secure e-governance model of Haryana. *International Journal of Engineering and Advanced Technology, 8*(6), 881–883. https://doi.org/10.35940/ijeat.F1166.0886S19

Snyder, H. (2019). Literature review as a research methodology: An overview and guidelines. *Journal of Business Research, 104*, 333–339. https://doi.org/10.1016/j.jbusres.2019.07.039

Sumanjeet. (2006). E-governance: An overview in the Indian context. *The Indian Journal of Political Science, 67*(4), 857–866. https://www.jstor.org/stable/41856269

United Nations Department of Economic and Social Affairs (UNDESA). (2022a). UN e-government development index (EGDI). Caribbean Telecommunications Union (CTU). https://ctu.int/wp-content/uploads/2022/12/Carribean-ICT-workshop_March-28-2023_AK.pdf

United Nations Department of Economic and Social Affairs. (UNDESA). (2022b). *United Nations e-government survey 2022: The future of digital government*. United Nations. https://surl.li/uwlnjr

United Nations Department of Economic and Social Affairs. (UNDESA). (2020). E-*government survey 2020: Digital government in the decade of action for sustainable development. With addendum on COVID-19 response*. https://shorturl.at/LYADZ

Vaddiraju, A. K., & Manasi, S. (2019). E-governance: Learning from Karnataka. *Indian Journal of Public Administration, 65*(2), 416–429. https://doi.org/10.1177/0019556119844582

Vir, D., & Bansal, G. (2008). *E-DISHA ekal seva kendra — Citizen centric e-governance* [E-DISHA single service centre — Citizen centric e-governance]. Computer Society of India (CSI). https://surl.li/ivhupy

Voogd, M. (2007). *E-service delivery: A manual for delivery e-services as a local government in the digital information society*. VNG International. https://surl.li/ytlzmr