

Policy design: Perspectives of innovation from Digital Bangladesh

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Research Article

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Abstract

Despite recording high-levels of corruption persistently, some governments in least developed countries have recently achieved impressive online transformation level, through electronic or e-Governance implementation. What explains the digital transformation of these governments? In particular, how did such governments with little or no knowledge on digital governance policies, embark upon the e-Governance path? The article analyzes how Bangladesh, a least developed country, is experimenting with design thinking policies for e-Governance implementation. It combines survey data from a design thinking led empathy training program with secondary literature and interviews with top-level bureaucrats and representatives from international donor agencies. The results support the thesis regarding the importance of design thinking policies and strategies in motivating public sector managers to engage in digital transformation efforts. We discuss the policy implications for practitioners and scholars working in the area of designing policies such as capacity building training programs, for public sector managers to implement citizen-centric innovations.

1. Introduction

All 193 United Nations (UN) member states today have some form of electronic or e-Government presence through online government websites and national portals (UNDESA, 2018). The level of e-Government advancement, however, varies between high-income developed and low-income developing countries (OECD, 2017; World Bank, 2016). In the high-income older democracies, e-Government adoption has reached a “very high” online service transformation level (UNDESA, 2020), where citizens are increasingly collaborating in co-designing public policies (Osborne, Radnor, & Strokosch, 2016). On the other hand, many of the world’s low- and low-middle-income economies, also known as least developed countries (LDCs), hover between low and medium levels of e-Government transformation (UNDESA, 2018, 2020).

While there may be a positive correlation between the level of e-Government advancement and the income status of a country, financial resources and sophisticated infrastructure are not the only factors driving e-Government adoption (Heeks, 2002). Often, a strong and strategic political leadership can help a government achieve higher levels of e-Government. This has in fact been the case in Bangladesh. Along with Bhutan and Cambodia, the country was identified as one of three LDC leaders by the latest *e-Government Development Index* report (UNDESA, 2020). The report singled out two drivers of digital transformation in Bangladesh: top-level political will expressed through the “Digital Bangladesh” or Vision 2021 agenda, and large-scale capacity building training programs to drive e-Government.

Drawing upon the Digital Bangladesh experience with e-Government implementation, the article argues that digital transformation can be driven by public sector managers with support from design thinking (DT) institutions, also known as innovation hubs (Howlett, 2014). In particular, the article examines Aspire to Innovate (a2i), the e-Government innovation hub of the Bangladesh government. According to the policy advisor of a2i, who is also a member of the prime minister’s Digital Bangladesh Task Force, “The

purpose of a2i is to lead the e-Government under Digital Bangladesh, with a focus on taking services to citizens' doorsteps. The a2i's success lies in learning from past projects and experiences in providing a risk-free space for bureaucrats when exploring and pursuing new ways for reducing citizens' sufferings as service delivery recipients" (Anir Chowdhury, a2i).

There is, however, little systematic evidence of how LDC governments are leveraging the use of information and communication technology (ICT) through DT policies and strategies, for motivating public sector entrepreneurs to become more responsive to citizens' needs. The published scholarship on the behavioral aspects of public administration change through e-Governance in the context of Bangladesh, or any other LDC, is still very nascent (Haque, Wal, & Berg, 2021). The goal of this study is to fill this research gap by exploring the nexus between e-Government and administrative behavior.

To analyze the impact of DT from a policy science perspective, we draw upon the Empathy Training Program (ETP) which was implemented by the Cabinet Division, Ministry of Public Administration (MoPA), and the a2i in Bangladesh between 2015 and 2018. To do so, a structured survey was developed and administered over seven months (July 2019 to January 2020) via online and email questionnaires in English and Bengali. The purpose of the survey was to measure the impact of the ETP on changing bureaucrats' to adopt technology for responding to citizens' needs. A total of 440 bureaucrats responded to the survey, of which 263 (59.8 percent) reported having implemented an innovation following training. This makes the study representative of behavioral traits driving digital transformation.

The article combines the survey findings with views from top-level Digital Bangladesh executives and representatives from international donor agencies, coupled with an analysis of the literature public policy, entrepreneurship and innovation, to investigate two interrelated research questions:

- What drives e-Governance in LDCs like Bangladesh?
- How must the behavior of bureaucrats change to implement e-Governance type of innovations in service delivery?

A contemporary perspective on the public policy and administration reform models is presented in the following discussion. An analysis of specific behavioral change and e-Governance initiatives is presented thereafter, along with a description of a2i's ETP. Thereafter, survey design and findings are presented in the context of the literature on administrative behavior and its relationship with digital transformation. In so doing, we highlight the importance of behaviors such as empathic understanding and the entrepreneurial abilities of bureaucrats. We conclude with a discussion of the implications of our findings for future research and current practice.

2. Policy And Administration Reform Models

2.1. New Public Management (NPM)

The shift from the Weberian-colonial to a modern New Public Management (NPM) philosophy became evident in developing nations starting from the 1980s and early 1990s (Robinson, 2015; Zafarullah & Sarker, 2016). The NPM model rests on the premise of importing neoliberal ideas and private-sector management in reforming the public sector's operational procedures (Hood, 1991). It succeeded in countries which had a certain level of economic development, maturity of the political system, and bureaucratic impartiality in treating citizens with fairness (Zafarullah & Huque, 2001).

However, NPM reform efforts did not lead to change in postcolonial LDCs like Bangladesh, where there was no clear separation in the relationship between bureaucracy and political structures (Zafarullah, 2007). Bangladesh saw very few NPM related adoption of managerial practices, in contrast to other developing countries in South East Asia (Samaratunge et al., 2008; Zafarullah & Sarker, 2016). For instance, Bangladesh did not have the support of political leadership supporting public administration reforms until the launch of Digital Bangladesh as a national vision in late 2008.

2.2. Digital-era/enhanced governance (DEG) through design principles

Emerging models of e-Government are increasingly recognized and represented under digital-era or enhanced governance (DEG) reforms (Dunleavy & Margetts, 2015), where top-level bureaucrats adopt the role of an institutional entrepreneur (e.g., displaying leadership and mobilizing support), for driving forward innovation (Tassabehji, Hackney, & Popovič, 2016). DEG scholars recommended establishing “design principles” to make bureaucrats use e-Governance as a means for becoming more responsive to citizens' needs (Dunleavy, Margetts, Bastow, & Tinkler, 2006). Design principles are fundamental shifting operations from “government's own organizational experience” to “society's experience of government” (Dunleavy & Margetts, 2015, p. 23).

Simon (1997, p. 130) argued that a design approach can help administrators to “experience the world in more and richer ways”. Research studies have not yet examined how the DEG model may have shaped the process of designing human-centered training programs in a postcolonial LDC like Bangladesh. This analysis is important to contextualize the process of e-Governance implementation for understanding how the public administration system needed to evolve from being colonial and centralized, toward becoming more creative and responsive to better serve citizens (UNDP, 2007).

2.3. Design thinking (DT) strategies

DT strategies, as part of the public value creation reform agenda, migrated into the political and governance fields typically as part of innovation agendas, and as specialized innovation labs and hubs to leverage behavioral science for generating better public value outcomes (Howlett, 2014). The point of departure of DT rests on the premise that public sector managers can be nudged to behave and think in certain ways, to implement innovations (Allio, 2014). Nudge-based DT is cheaper to implement than undertaking heavy NPM or DEG type of investments, but it requires strong political support (Schubert, 2017).

The a2i can be conceptualized as a DT institution within the Bangladesh government. Although it started initially with funding from international donors, the most substantial financial contributions to a2i today comes from the Bangladesh government (Rahman, Aminuzzaman, & Ahmed, 2019). A report by UNDP's Independent Evaluation Office (IEO), analyzing investments of UNDP between 2012 and 2018, singled out the role of a2i in providing significant leverage to the government's Digital Bangladesh efforts (UNDP, 2019). The a2i embraced DT strategies starting from 2009 onward for building capacity of bureaucrats in becoming responsive to citizens' needs using ICT, according to Dr. Abdul Mannan, project director of a2i and additional secretary of MoPA.

The a2i today operates from the Cabinet Division and ICT Division of the government. Through DT type of training programs, the a2i aimed to *nudge bureaucrats* to use technology for serving citizens in new ways. This is strikingly different from developed countries' DT institutions such as the Behavioral Insights Team (BIT), as the latter focuses on budgetary efficiency and nudging citizens' behavior towards making more healthy, financially informed decisions (Thaler & Sunstein, 2008). To investigate our first research question, i.e., what drives e-Government adoption by public administration in LDCs like Bangladesh, an analysis of how different training programs were implemented to make bureaucrats understand "society's experience of the government".

To sum up, there are two major strands of literature which have shaped the discourse on public policy and administration reforms. On the one hand, traditional Weberian and NPM reform models have taken an inside-out view of government and focused on improving the inner capabilities of government organizations. On the other hand, contemporary DEG and nudge-based DT reform models, have taken an outside-in view, requiring bureaucrats to leave the comfort of their offices, engage in social interaction to develop an understanding of citizens' needs before designing solutions for improving the quality of public services (Allio, 2014).

3. Behavioral Change Policy Interventions

3.1. Managing at the Top (MATT) training: The first behavioral change initiative

The Managing at the Top (MATT) training initiative (1999–2002, 2006–2013) was pushed by successive governments, despite political hostility and instability. MATT was financially supported and launched in 1999 by UK's now defunct Department for International Development (DFID). MATT set the precedent for bureaucrats at the ministry level to leave their bureaus, (Jacobs, 2009; Ullah, 2018), but it lacked the tools for enabling bureaucrats to empathize and understand service delivery challenges encountered by citizens.

For the top-level bureaucrats, MATT was a "shocking" experience and "confirmed the way in which the Bangladesh Civil Service (BCS) was isolated from the needs of the people" (Jacobs, 2009, p. 224). Scholars have not explored the spillover effects of MATT into other training programs, which are

supporting the implementation of e-Governance. The discussion on Quick Wins and ETP in Sect. 3.3 and 3.4, respectively, demonstrate how learnings from MATT were applied and tailored for equipping bureaucrats with the skill to use technology in service delivery processes.

3.2. Enhancing the Capacity of Public Service, and Improving Public Service and Total Quality Management (IPS-TQM) projects

The “Enhancing the Capacity of Public Service Training” project, funded by the JICA and implemented by BPATC from 2007 to 2010, helped to shape the process of e-Governance from citizens’ perspective at field-level. A follow-up of the initiative was launched in 2013 – the “Improving Public Services through Total Quality Management” (IPS-TQM) – for five years (2013–2018). The key objective of these trainings was to improve frontline public services through TQM tools and methods (BPATC & JICA, 2017).

BPATC piloted TQM trainings in sub-district and made field-level bureaucrats undertake visits to understand citizens’ problems. An evaluation of the IPS-TQM project underlined such actions as the key motivation for the successful implementation of several small improvements plans (SIPs) (BPATC & JICA, 2017). A successful example of an SIP under the IPS-TQM project was an internet-based, citizen-friendly police service. An assistant police commissioner understood that citizens faced problems in accessing contact information regarding their local police stations. To solve this problem, he opened a Facebook page where citizens under his jurisdiction could contact him directly about any law and enforcement matter. In less than 2 months, the page had close to 20,000 followers. Further, the page prompted software engineers to then develop a mobile app which provided citizens with the contacts of their nearest police station. This idea was tested and implemented with a2i’s support but only to a limited scale, as it was confined to Dhaka, the capital, and not scaled up to other areas in Bangladesh.

Lessons from JICA’s projects were particularly useful for a2i in establishing a structured process of innovation in stages. The TQM method in particular provided the a2i with a stock of knowledge in designing a specific innovation toolkit for bureaucrats to understand the public value of using technology. Similar to the TQM, the innovation toolkit was designed with the specific objective of improving the quality of public services to citizens.

3.3. Innovation toolkit for Quick Wins

A retired principal secretary to prime minister, Mr. Nojibur Rahman, highlighted the role of a2i in orchestrating a series of Quick Wins workshop which laid the foundation for bureaucrats to lead e-Government change. Under Quick Wins training, the business process re-engineering (BPR) technique, as used in the private sector, was modified to the Bangladesh public sector context and rebranded as “service process simplification” (SPS). This was because “SPS resonated better with the bureaucratic values of serving citizens, relative to the BPR terminology of increasing business profits and designing products” (Anir Chowdhury, a2i). Nevertheless, the purpose of the SPS method was similar to that of BPR.

Specifically, it was used as a process map technique to improve efficiency in service delivery management and implementation. The SPS is about sketching the flow from the start of a citizen's application for a service to its final discharge by the concerned bureau.

By recasting the TQM approach from a citizen's perspective, a2i pioneered a framework and methodology for innovation termed "TCV", denoting time, cost and number of visits that citizens had to undertake to access government information and public services. The TCV method of innovation helped to understand the public value of improving government processes for service delivery recipients through digital transformation. These TCV parameters, therefore, facilitated efficiency in the implementation of Quick Wins by binding the innovation process to citizens' "pain", and focusing on achieving particular ends (e.g., reducing time and costs to the citizen).

Simon (1997, p. 52) argued for exploring ways to represent the problem situation in new ways and concluded that "only then can their [administrators] attention shift to problem-solving." The use of TCV in SPS in addressing service delivery problems was introduced through the Quick Wins and formalized by the *Innovation Team* gazette in 2013 (Cabinet Division, 2013). As an innovation toolkit, TCV demonstrated the value to bureaucrats of using technology and SPS showed them how to leverage existing organizational capabilities, without having to resort to large-scale e-government infrastructural investments.

A notable achievement of the Quick Wins has been the National Portal of Bangladesh (www.bangladesh.gov.bd). This project was led by Dr. Abdul Mannan after he was deputed to the a2i in PMO in 2012. According to Dr. Mannan, citizens faced challenges in finding reliable information about services and service delivery personnel, and the documents, forms required for accessing public services. The National Portal, which began life in 2009 as one site, expanded to 64 district headquarters by late 2012, and to 40,000 offices by 2015. By 2020, all employees of the national government could use the portal in their daily work (UNDESA, 2020).

Another hallmark achievement of the Quick Wins has been the creation of Union Digital Centers (UDCs). These are one-stop information and service centers serving the needs of rural Bangladeshi citizens, 70 per cent of whom live in villages (Bhatnagar, 2014). As part of Quick Wins exercise, the Local Government Division (LGD) undertook the responsibility to introduce two UDCs in 2007, which expanded to 30 locations in 2008, then replicated to 100 locations in 2009, and finally scaled to all 4,545 rural government institutions within a year after the launch of Digital Bangladesh – by the end of 2010! According to a national census, UDCs are providing a wide range of services to 3.96 million rural citizens each month (BBS, 2014), who used to previously spend significant time and incur high costs in accessing simple services like birth registration certificates, land records, etc. As a result of UDCs, travel distance reduced from an average of 35 km to reach the district headquarters, to only 3 km to reach the center and waiting time has been reduced from "uncertainty" to a few hours or a couple of days maximum (Zaman, 2015).

3.4. Empathy training for field-level bureaucrats

Given the success of Quick Wins at the ministry level, the initiative was extended as “Innovation Forums” at the field-level starting from 2012 through a series of “Workshops in Public Service Innovation”. These workshops came to be informally known as “Empathy Training” and the ETP was formally launched in 2015, combining lessons from Quick Wins and the preceding training initiatives. The ETP’s three-staged training process draws inspiration from the DT model: empathize, define or ideate, and implement (d.school, 2010). The purpose of the ETP was to nudge bureaucrats to acquire a deeper understanding of how citizens, as service delivery recipients, experience government services.

3.4.1. Stage I: Empathy based ideas generation and innovation plan

The ETP begins with five-days of training at the Divisional Commissioner’s office (there are eight administrative divisions in Bangladesh). During the first day of the training program, bureaucrats are introduced to empathy, TCV, SPS and perspective-difference concepts. For generating empathy, the ETP requires field-level bureaucrats responsible for service delivery to assume a “secret-shopper” role and spend time with citizens in gaining a genuine understanding of their sufferings. The empathy component is integral to ETP’s objective of generating ideas which enables bureaucrats to gain an outside-in understanding of citizens’ needs. This takes place on the second and third days when participants visit the offices of another department and also their own department but in a different location, to observe the real scenario of the service delivery process.

Over the last two days, participants finalize a SPS innovation plan. Their new ideas are turned into prototypes using sketches which allow flexibility in interpreting problems based on TCV parameters. These SPS sketches are useful in locking-in progress at least in terms of problem identification (Boyer, Cook, & Steinberg, 2011). The five-day training ends with a SPS innovation plan for implementation in their offices.

3.4.2. Stage II: Implementation of SPS plan

The ETP’s second stage begins with the implementation process of the SPS innovation plan in the offices. The ETP participants are instructed by the Cabinet Division and MoPA to organize cascading workshops to build momentum for internal collaboration. ETP participants receive feedback from their supervisors, colleagues and citizens, and garner organizational support for the implementation of their SPS innovation plan. It is important to note that although the idea for SPS may come from an individual bureaucrat, the design of a SPS innovation plan is often a collaborative effort involving different desks within the same office, and it requires more than one bureaucrat for implementation.

3.4.3. Stage III: Replication, diffusion and sharing the story of innovation

In the third, and final stage, bureaucrats of successfully implemented SPS innovation plans are invited to Dhaka, the Capital city, for a three-day workshop, organized by the Cabinet Division, MoPA, PMO and

relevant ministries. Over three days, these bureaucrats are trained on how to best capture their learning experience and innovation journey. This is the final stage of the cycle under the dominant DT model – sharing the story.

3.4.4. Successful examples of ETP

Three cases of service delivery innovation are presented in Box 1 to shed light on the type of innovations being implemented as a result of ETP. One case relates to the problems faced by fish farmers in accessing information on diseases, culture methods and production related issues. A bureaucrat developed a “Fish Advice” mobile app which is now being accessed by fish farmers to overcome these challenges. In the other case, a bureaucrat transformed the paper-based registration system for cooperatives by introducing an online platform. This has significantly reduced dependence on middlemen and sped up the registration process. In the third case, a field-level bureaucrat printed very important person or VIP cards for the poor households in his area, to encourage them to visit the sub-district health complex and access medical care.

Box 1: TCV-SPS innovations under ETP

Case 1: Fish Advice App

Public sector entrepreneur: Sadhan Chandra Sarker

Designation: Senior Sub-district Fisheries Officer

Problem: Bangladesh represents around 7 per cent of the world's inland fish production. However, a lack of awareness and availability of accessible government fishery information, makes it difficult for fish farmers to find solutions to issues like diseases, fish culture methods and other problems relating to fish production.

TCV-SPS Innovation: As part of the ETP, Sadhan brainstormed various ideas and designed a mobile app as a solution. The goal was to create an easily accessible centralized solution hub for the fish-farmers with visual guidelines. Initially, the project was piloted through 1,200 farmers in 2015. The a2i and Department of Fisheries played a significant role from training to providing the necessary funding and technical support, enabling the project to be scaled up across Bangladesh.

Case 2: Online registration for cooperatives

Public sector entrepreneur: Mamun Kabir

Designation: Sub-district Cooperatives Officer

Problem: The mission of the Department of Cooperatives is to reduce poverty and improve socio-economic conditions of citizens by promoting through cooperative based activities. However, cooperative society registration process is complex and requires help of middlemen for information and services, that is actually free of charge.

TCV-SPS Innovation: Mamun designed an online application to streamline the registration for establishing a cooperative. Following the successful piloting in 2015, the process was replicated with financial support from the Department in 7 sub-districts. Due to this intervention, the steps needed to receive the cooperative registration certificate dropped by 50 per cent, and required paperwork fell by over 75 per cent. According to Mamun, the TCV based innovation has led to a 74 per cent reduction in time, 74 per cent reduction in cost, and 58 per cent reduction in visits.

Case 3: VIP cards for the poor

Public sector entrepreneur: Abdullah Al Mamun

Designation: Sub-district health officer

Problem: Although health facilities are available at the sub-district all over Bangladesh, the poor are reluctant to access health services. This is because the rural poor are not comfortable in conversing with the health officers who are well-dressed and groomed, and this makes them feel nervous and uneasy at the health complex.

TCV-SPS Innovation: This innovation motivated Abdullah to design and print VIP cards to make the rural citizens feel important. A VIP card was designed and distributed to the poor, and it was told that if they visited the health complex with the VIP card, they would be given VIP treatment. As a result of this VIP card, number of patients visiting the upazila health complex increased from 12 to 40 per day.

Source: Author's compilation based on interviews.

4. Data, Methods And Results

4.1. Data collection and survey design

To investigate the second research question, i.e., how must the behavior of bureaucrats change to implement e-Governance type of innovations in service delivery, a structured survey instrument was developed and administered over seven months between July 2019 to January 2020, via online and email

questionnaires in English and Bangla, using Qualtrics. A deliberate strategy was adopted to generate insights from respondents belonging to the rural, field-level public administration.

There are three parts of the ETP survey. The first part of the survey covers basic social and demographic factors such as gender, age and place of work. The second and third parts constitute the individual-level behavioral and organizational-level environmental change model, respectively. These two parts combine three research works – a culture of innovation framework (Rao & Weintraub, 2013), administrative culture (Jamil, 2002), and, empathy (Norman, Banerjee, Prabhu & Yunus, 2020). A multiple-choice question format was used and the behavioral survey statements were randomized to overcome order bias. Survey respondents rated each of the 30 behavioral elements on a scale of 1 to 5, where 1 = strongly disagree, 2 = somewhat disagree, 3 = neither agree nor disagree, 4 = somewhat agree, and, 5 = strongly agree.

To analyze the results for the Bangladesh bureaucracy, we calculate an average for each survey statement (element), an average for each component (average of the three elements), and finally the average for each building block (the average for the five components). The mean scores of the components and the two overarching building blocks, represent the bureaucracy's overall score, called the "Innovation Quotient" (Rao & Weintraub, 2013). The most important value of the Innovation Quotient assessment is its ability to rank the components that support innovation. This offers policymakers an easy-to-understand scorecard to zero in on the strengths and weaknesses of the organization's culture of innovation.

4.2. Results

Table 1 presents the demography and administrative characteristics of the respondents, and the success rate of innovation implementation according to specific category, in column 5. An overwhelming majority of the respondents are male (316 or 72 percent of the sample), the total innovations male bureaucrats reported to have implemented an innovation. The largest group of respondents belong to the 32–41 years age group (184 or 42 percent of the sample), followed by the next age group of participants aged 42–51 years (147 or 33 percent of the random sample). Respondents in these two groups together recorded the highest successful rate of innovation, 78 percent. The most senior age category of 52–59 years and the youngest age category of 25–31 years, reported the lowest rate of successful innovations, 11 percent.

The tenure variable indicates that 264 respondents (60 percent of the respondents) were incumbent bureaucrats, with at least 10 or more years of experience. This group of bureaucrats reported the highest rate of successful innovations, 63 percent. The entrant level bureaucrats reported the lowest rate of successful innovation, 8 percent and this is not surprising given their unfamiliarity with the bureaucratic environment.

A majority of the 356 respondents (81 percent of the total response) had a postgraduate degree, with 285 male and 71 female respondents. This group of bureaucrats reported the highest rate of successful innovation, 84 percent. For the type of education, three categories were used, and 216 respondents (49 percent) reported to have a background in humanities and social science (anthropology, archaeology,

economics, geography, history, law, political science, psychology and sociology). Bureaucrats with a background in humanities and social science reported accounted for a majority of successful innovations, 52 percent.

Of the 440 respondents, 150 reported as working at the national level, and 290 respondents at the field-level, service delivery front. For the national level, 16 bureaucrats from the ministry level responded to the ETP survey. This category of bureaucrats reported the lowest rate of innovations, 2 percent, and this is expected given the rational guiding that service related innovations needed to take place at the field-level, and not at the ministry level (Lipsky, 2010; Simon, 1997). The low turnout is not surprising given that the ETP focused on service delivery process innovation at the field-level, more than policy level innovation.

At the field-level administration, of the 290 respondents, 272 belong to the sub-district and district level. These street-level bureaucrats are engaged in direct interactions with citizens and the findings are representative of these frontline bureaucrats behavior, who face a higher degree of formal (e.g., political and administrative) and informal (e.g., public shame and embarrassment) pressures, than other bureaucrats in providing services to citizens (Hossain, 2009). The field-level bureaucrats at the rural level reported the highest rate of successful innovation, 65 percent, while the urban level reported 3 percent.

Table 1
Demography and administrative characteristics (response in total percent)

Indicators (1)	Male (n = 361) (2)	Female (n = 79) (3)	Total respondents (n = 440) (4)	Successful innovation (n = 270) (5)
Age (years)				
25–31	51 (14.13)	15 (18.99)	66 (15.00)	30 (11.11)
32–41	143 (39.61)	41 (51.90)	184 (41.82)	118 (43.7)
42–51	130 (36.01)	17 (21.52)	147 (33.41)	92 (34.07)
52–59	37 (10.25)	6 (7.59)	43 (9.77)	30 (11.11)
Tenure (years)				
1 to 3	35 (9.70)	7 (8.86)	42 (9.55)	24 (8.89)
4 to 9	98 (27.15)	36 (45.57)	134 (30.45)	76 (28.15)
10 or more	228 (63.15)	36 (45.57)	264 (60.00)	170 (62.96)
Education: Level				
PhD	16 (4.43)	2 (2.53)	18 (4.09)	12 (4.44)
Postgraduate	285 (78.95)	71 (89.87)	356 (80.91)	226 (83.7)
Undergraduate	60 (16.62)	6 (7.59)	66 (15.00)	32 (11.85)
Education: Type				
Humanities and social science	176 (48.75)	40 (50.63)	216 (49.09)	139 (51.48)
Natural science	124 (34.35)	24 (30.38)	148 (33.64)	92 (34.07)
Applied science	61 (16.90)	15 (18.99)	76 (17.27)	39 (14.44)
Hierarchy (place of work)				
National	125 (34.63)	25 (31.65)	150 (34.09)	87 (32.22)
Ministry	12 (3.32)	4 (5.06)	16 (3.64)	5 (1.85)
Directorate	41 (11.36)	9 (11.39)	50 (11.36)	29 (10.74)
Division	40 (11.08)	8 (10.13)	48 (10.91)	29 (10.74)

Indicators (1)	Male (n = 361) (2)	Female (n = 79) (3)	Total respondents (n = 440) (4)	Successful innovation (n = 270) (5)
Full- and semi-autonomous bodies	32 (8.86)	4 (5.06)	36 (8.18)	24 (8.89)
Field-level (urban and rural)	236 (65.37)	54 (68.35)	290 (65.91)	183 (67.78)
<i>Urban: City Corporation and municipality</i>	14 (3.88)	4 (5.06)	18 (4.99)	8 (2.96)
<i>Rural: Upazila and Zila</i>	222 (61.50)	50 (63.29)	272 (61.82)	175 (64.81)
Upazila (sub-district)	136 (37.67)	39 (49.37)	175 (39.77)	114 (42.22)
Zila (district)	86 (23.82)	11 (13.92)	97 (22.05)	61 (22.59)

Table 2 presents the individual and organizational level characteristics for analyzing the implementation of e-Governance from a behavioral perspective. A mean value of 4 or more in column (4) and column (5) indicates a positive change in the bureaucrats' behavior, while a score lower than 2 indicates those elements and components which are hindering e-Governance implementation. A score between 2 and 3 indicates that these components/elements are yet to make a positive influence on e-Governance type of innovation.

The Innovation Quotient, i.e., the individual and organizational blocks, reported mean scores of 3.84 and 3.7, respectively. Under the individual-level block, entrepreneurship component recorded the highest mean score of 4.45 and the lowest standard deviation of 0.52, followed by cognitive empathy, 4.3 and emotional empathy, 4.11. The two remaining components – citizens' relations, and creative action and learning – recorded mean scores of 3.27 and 3.08 respectively, with creative action and learning reporting a lower standard deviation of 0.68 than other two components.

Under the individual-level block's entrepreneurship component, in column (4), respondents most "strongly agreed" with the failure ok element which reported the highest mean score of 4.73, with the lowest standard deviation across. The hunger element reported a mean score of 4.47, followed by willingness to take risks, 4.16. For cognitive empathy, perspective-taking recorded a mean score of 4.54, followed by fairness, 4.5. Two elements under emotional empathy recorded scores greater than 4 – compassion and concern, 4.47 and 4.73, respectively. With a mean score of 3.91, respondents were very close to the "agree" threshold on experimentation element, which indicates ETP participants freedom to experiment with new ideas based on TCV parameters.

For the organizational-level block, internal collaboration recorded the highest mean score of 4.22, followed by organizational energy, 4.19. The remaining three components – resources, external collaboration, and power and hierarchy – recorded mean scores of 3.67, 3.29 and 3.12, respectively. All

three elements under the internal collaboration component reported mean scores greater than 4 – collaboration within offices, 4.41, between subordinates and supervisors, 4.2, and with other field-level offices and departments, 4.06.

For the energy component, bureaucrats' ability to deal with ambiguities because of TCV, recorded a mean score of 4.3, followed by supervisors' ability to influence, 4.18, and inspire, 4.09, their subordinates to implement e-Governance based service delivery innovation. Bureaucrats were very close to the "agree" threshold in terms of viewing their responsibility for public service delivery innovation, which reported a mean score of 3.9, and with rewards for innovation, 3.86.

Being analytical and the hierarchical distance, in terms of getting approval for implementing e-Governance innovation, reported the lowest mean scores of 1.92 and 1.97, respectively. Although bureaucrats are empathic of citizens' needs, the egalitarian element scored 2.29, indicating the paternalistic nature of the public administration. In other words, bureaucrats do not think that citizens are able to make the best decisions on their own. Nevertheless, the non-elitism element reported a mean score of 3.49, indicating an incremental change towards citizen-centric behaviors.

Innovation is about catalyzing and creating new behaviors and structures, because bureaucratic contexts and culture inform change and innovation patterns (Klein, Mahoney, Mcgahan, & Pitelis, 2010). During the training, bureaucrats were "encouraged to step into the shoes of the people they serve, and in the process come up with powerful new ideas to deliver more effective public services using e-Governance" (Carmody, Hosain, & Shams, 2018). Bureaucrats in Bangladesh who are successfully driving forward e-Governance can be characterized as emotionally charged public sector entrepreneurs who are: (a) eager to explore innovation opportunities, not afraid of failure and willing to take risks, (b) perceptive of citizens' needs, (c) able to engage in a collaborative manner with their colleagues and other departments, (d) successful in dealing with ambiguities by using TCV parameters, and (e) inspired and supported by their supervisors.

Table 2
Administrative behavioral aspects of the culture of innovation (n = 440)

Component (1)	Element (2)	Survey Statement (3)	Element mean value (SD) (4)	Component mean value (SD) (5)
Block I: Individual behavior (mean = 3.84, standard deviation = 0.37)				
Entrepreneurship	Hunger	I have a desire to explore new TCV based innovation opportunities	4.47 (0.76)	4.45 (0.52)
	Failure ok	Failure is a learning opportunity	4.73 (0.55)	
	Risk	I am comfortable taking risks when pursuing TCV opportunities	4.16 (0.90)	
Creative action and learning	Action-oriented*	Our methods enable using TCV method to serve citizens in new ways	3.4 (1.31)	3.08 (0.68)
	Analytical*	I prefer taking action than doing heavy analysis	1.92 (1.09)	
	Experiment	I have freedom to pursue TCV based opportunities	3.91 (1.09)	
Cognitive empathy	Perspective-taking	I try to consider everybody's opinion before I make a decision	4.54 (0.67)	4.3 (0.59)
	Other-perspective	When I'm upset at someone, I usually try to put myself in their shoes	3.85 (1.26)	
	Fairness	I try to look at the two sides to every question	4.5 (0.72)	
Emotional empathy	Compassion	Other people's misfortunes usually disturb me a great deal	4.47 (0.76)	4.11 (0.76)
	Concern	I have tender, concerned feelings for people less fortunate than me	4.73 (0.55)	
	Contagion	I become nervous if others around me are nervous	3.13 (1.4)	
Citizens relation	Egalitarian*	Citizens understand their best interests in the long-run	2.34 (1.17)	3.27 (0.76)
	Success	Our service delivery recipients, view us as an innovative organization	3.73 (1.09)	
	Non-elitist	Administrative duties are better performed if we are closer to citizens	3.73 (1.44)	

Component (1)	Element (2)	Survey Statement (3)	Element mean value (SD) (4)	Component mean value (SD) (5)
Block II: Organizational environment (mean = 3.7, standard deviation = 0.48)				
Power and hierarchy	Autonomy	I can take risks without worrying too much about rules, administrative hierarchy	3.41 (1.31)	3.12 (0.70)
	Responsibility	We are responsible for innovation in public service delivery	3.99 (1.12)	
	Distance*	All innovation implementation do not require approval of top officials	1.97 (1.09)	
Energy	Influence	Our supervisors can use appropriate strategies to help us navigate around organizational obstacles	4.18 (0.88)	4.19 (0.64)
	Inspire	Our supervisors inspire us with a vision for experimenting with TCV based opportunities	4.09 (0.91)	
	Ambiguity	Our approach to innovation is focused because of TCV	4.30 (0.89)	
Resources	Money	We have budgetary support to implement our innovation pilot	3.36 (1.38)	3.67 (0.83)
	Growth	We can rapidly allocate resources to scale up innovations that show public value creation promise	3.79 (1.13)	
	Reward	We are rewarded for successful implementation of innovations	3.86 (1.19)	
External collaboration	NGOs	We rely on partnership with local NGOs	2.96 (1.27)	3.29 (0.91)
	Private sector	We rely on partnership with private sector actors	3.41 (1.16)	
	International agencies	We rely on partnership with international agencies	3.50 (1.12)	
Internal collaboration	Field-level	We rely on collaboration with other field-level offices, departments	4.06 (1.04)	4.22 (0.67)
	Teamwork	Subordinates and supervisors work well together in teams to implement an innovation pilot	4.2 (0.99)	
	Others*	We can collaborate with others to test an idea pilot by implementing it within our own offices	4.41 (0.85)	

Component (1)	Element (2)	Survey Statement (3)	Element mean value (SD) (4)	Component mean value (SD) (5)
<i>*Reversed statements</i>				

5. Conclusion

The article offers policy implications for behavioral change training programs more generally. An article of faith among policymakers in developing countries is that training programs are a waste of time and should be discouraged. In contrast, the findings demonstrate the benefits of DT-led strategies for bureaucrats to drive forward e-Governance implementation. The study suggests that policymakers should be implementing programs such as ETP and encouraging bureaucrats to become more collaborative, empathic and behave as entrepreneurs, when implementing citizen-centric innovations.

This article makes four contributions to the policy science literature. First, it analyzes how some bureaucrats are more successful than others in driving forward digital transformation. By analyzing the nexus of DT-led strategies and e-government from an LDC perspective, the present article contributes to policy studies from a new, behavioral, perspective. Third, the survey is a first step toward generating insights about the determinants of successful innovation through DT strategies. Fourth, it demonstrates the process of digital governance through an examination of DT-led strategy, i.e., the ETP.

The idea of DT-led ETP was the result of a process of evolution, as depicted in Fig. 1. In particular, the article looks at the process of behavioral change which started with MATT in 1999. Then, in 2007, TQM concepts for service delivery improvements were introduced through training for field-level bureaucrats. A series of capacity building trainings known as Quick Wins between 2008 and 2012, drew upon the design and objectives of MATT and TQM. In 2015, the ETP was formally inaugurated by a2i which took lessons from Quick Wins and previous training initiatives. It established a structured process facilitating interactions between field-level bureaucrats and citizens, and the implementation of e-government type of innovations for accelerating service delivery to citizens.

Although the findings are general in scope for many LDCs, the empirical context is limited to a single country, i.e., Bangladesh. Moreover, the field-level Bangladesh public administration context provides an institutional setting which might be unique in several ways. Thus, the findings should be applied with caution to other contexts or other hierarchies (e.g., ministerial level policy innovations and scaling up processes). Future policy studies may consider exploring how governments in other LDCs are embarking upon administrative change for digital transformation. The exploration of behavioral constructs will provide a richer understanding of the behavior of bureaucrats in relation to e-Governance implementation. This article is an early attempt to do precisely this by demonstrating how DT-led strategies can nudge bureaucrats in the implementation process of citizen-centric e-Governance innovations.

Declarations

Competing interests: The authors declare no competing interests.

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Figures

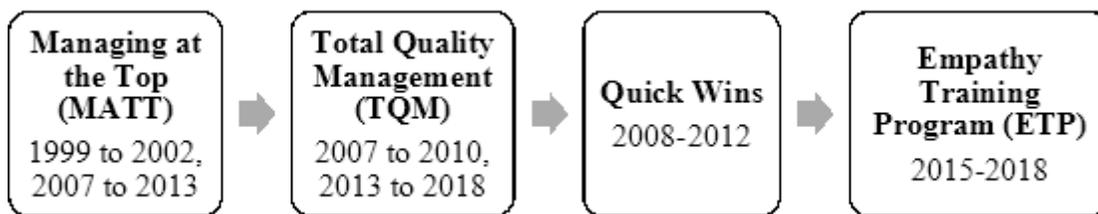


Figure 1

Evolution of administrative behavioral change training initiatives