
Gender difference in the behavioural acceptance of electronic voting machines (EVM) in the electoral process of Bangladesh

Md. Abu Sayem*

Department of Local Government and Urban Development,
Jatiya Kabi Kazi Nazrul Islam University,
Trishal, Mymensingh, 2200, Bangladesh
ORCID: 0000-0001-6690-0982
Email: abusayemknu24@jkkniu.edu.bd
*Corresponding author

Maruf Hasan Rumi

Department of Public Administration,
University of Dhaka,
Dhaka, 1000, Bangladesh
Email: marufhasanrumi@du.ac.bd

Md. Limon Bhuiyan

Department of Sociology,
University of Dhaka Bangladesh,
Dhaka, 1000, Bangladesh
Email: mdlimon-2017013411@soc.du.ac.bd

Abstract: This study aims to explore the gender difference in the acceptance of electronic voting machines (EVM) in Bangladesh's electoral process. This study followed the explanatory research design using quantitative research approach. The independent variables were developed from Unified Theory of Acceptance and Use of Technology (UTAUT) and technology acceptance model (TAM). The primary data was collected following questionnaire schedule and five-point Likert scale was utilised to design the questionnaire. The study highlights a notable discrepancy in the adoption of EVM between male and female citizens. Women exhibit a higher level of positivity in comparison to men in this aspect. Another key observation from the study is that performance expectancy had the greatest impact in distinguishing between gender groups. However, trust in technology and effort expectancy variables did not have any significant effect on behavioural acceptance in respect of responders' gender.

Keywords: EVM; electronic voting machines; electoral culture; gender lens; voting behaviour; technology acceptance; Bangladesh.

Reference to this paper should be made as follows: Sayem, M.A., Rumi, M.H. and Bhuiyan, M.L. (2025) 'Gender difference in the behavioural acceptance of electronic voting machines (EVM) in the electoral process of Bangladesh', *Int. J. Electronic Governance*, Vol. 17, No. 4, pp.469–484.

Biographical notes: Md. Abu Sayem is a Lecturer of the Department of Local Government and Urban Development, Jatiya Kabi Kazi Nazrul Islam University, Bangladesh. He has great strong interest in the fields of E-governance, gender studies, political economy, public health and public policy. In his illustrious career, he worked as a distinguished lecturer of Public Administration at BSMRSTU, Research Fellow at the Johns Hopkins Bloomberg School of Public Health. He has published a number of articles and book chapter from different journals like SAGE, Taylor and Francis, and Scopus indexed journals.

Maruf Hasan Rumi is an Assistant Professor of the Department of Public Administration, University of Dhaka. He is a passionate learner and dedicated scholar in the field of public policy development, geopolitics, e-governance, public service delivery, public value, entrepreneurship and business development, gender issues.

Md. Limon Bhuiyan is an independent researcher, completed Bachelor and Master's degree from the Department of Sociology, University of Dhaka. He is enthusiastic learner with a documented history of working on the different private sectors and several government institutions. Skilled in social policy, social media, gerontology, social safety net programs, gender, public health, and sociology.

1 Introduction

Voting is the lifeblood of democratic countries, where voters can cast their ballots to choose the preferred representatives in elections (Cheeseman and Klaas, 2024). It is a vital component of democracies, offering voters consistent opportunity to articulate their preferences and validate governmental authority (Kumar et al., 2016). Following independence, Bangladesh experienced extensive electoral fraud perpetrated by ruling parties, an accurate reflection of the people's political preferences, while the military regime's unconstitutional seizure of power in the 1980s further eroded public trust in the electoral system (Rashiduzzaman, 1997). Later, joint movements launched by opposition parties against the military rule, demanding its resignation that ensured a free and fair election under a non-partisan caretaker government restored trust, followed by three more elections with increased voter turnout and winners' vote shares (Khan, 2018). However, the general election procedure in Bangladesh relies on a manual, paper-based voting system which increases the chances of illicit attempts to manipulate election result (Verma, 2005; Hasan et al., 2010).

On the other hand, in the developing countries like Bangladesh, political violences during elections are prevalent due to the lack of trust in electoral processes (Birch et al., 2020). As a result, the country has implemented an electronic voting system using electronic voting machines (EVMs) to improve voter engagement, expedite ballot counting, and allocate seats (Sarker et al., 2016). Moreover, EVMs eradicate the need for millions of printed ballot papers by utilising a single balloting unit for several voters, hence conserving substantial resources on paper, printing, shipping, storage, and distribution. For examples, Brazil and India introduced their national and local government elections and were able to reduce the election costs, gaining citizens' trust in the process (McCormack, 2016). A study has found that after adopting EVM in Brazil

facilitated the government to conduct accurate counting voting, and reduced the invalid voters from 40% to 7.6% (Avgerou et al., 2013). EVMs can ensure the efficiency of the electoral process, including fast results and an error-free polling process (Ali et al., 2024). Therefore, the adoption of EVMs in the developing countries is very crucial to ensure free, fair, and transparent elections as suffering from poor execution, persistent rigging and fraud, and a pronounced lack of transparency that resulted in political deadlock, street protests, and violence which undermine citizens' trust in elected leaders and negatively impact civic participation and trust in democracy too (Haq and Ali, 2022).

However, sociocultural factors significantly influence people's behavioural intentions and trust in EVMs, as sociocultural diversity affects public trust in the technology (Gefen et al., 2005). Therefore, gender plays a crucial role in the acceptance of innovative technology like EVMs as the introduction of technology is perpetually and historically situated as well as influenced by the social setting (Wajcman, 2010). In global north, women's rates of adoption of technologies are still low in contrast to men as their thoughts are mainly shaped by social and cultural background (Kassa et al., 2013). In addition, the developing countries like Bangladesh has robust patriarchal attitudes that are linked to high levels of male authority over women, causing them to adopt traditional attitudes and conform to patriarchal ideologies (Brownridge, 2002; Sultana, 2010). Thus, women are not taken in decision making process in the election that led towards mistrust on technologies by them (Galligan and Buckley, 2023). Consequently, understanding such gender differences in the acceptances and uses of innovative technologies are essential as the users' characteristics play a significant role in the assessment of new technologies (Dwivedi et al., 2019; Kapser et al., 2021). However, there is a lack of studies in Bangladesh conducted specifically focusing on the gender perspective on the acceptance of EVMs. The primary objective of this study is to investigate the differences in the adoption and utilisation of EVMs between men and women in Bangladesh.

2 Literature review

Elections are effective means to transfer power in a peaceful manner within a democratic framework that allows people to select their representatives and voice to form the government (Kiani and Sartipi, 2016). The history of national elections over the last 2500 years ensures that people have the right to vote and enjoy political freedom (Emadi, 2006; Kiss, 2019). However, prevalent electoral malpractices, which erode public trust and services, intricately link the outcomes of elections to the current government (Bogaards, 2007; Rikwith et al., 2021). In addition, excessive voting, ballot paper loss, environmental damage caused by paper consumption, and a delayed results calculation process are familiar scenarios (Ranjan, 2023). To minimise these, the use of technology in elections has become increasingly common, ranging from biometric voting machines to more advanced EVMs (Agarwal et al., 2020; Elven and Al-Muqorrobin, 2020; Heiberg et al., 2011). An EVM is a simple computerised electronic device used instead of paper ballots and boxes to keep track of votes that aims to create a safe, trustworthy voting environment (Kumar and Begum, 2012; Ahmad et al., 2021).

Many countries, like Brazil, Belgium, the Netherlands, India, and various USA states, have widely used EVMs for over a decade (Oostveen, 2010; McCormack, 2016). Nevertheless, this transition has some challenges, as the success and utilisation of such initiatives depend on people's acceptance of innovative technologies (Carter and

Bélanger and Carter, 2005; Kud, 2023; Pawade et al., 2020). Furthermore, the process of acceptance is dependent on different social, cultural, and demographic factors that make demands and provide feedback (Dhamija and Perrig, 2000; Greenhalgh et al., 2004).

Gender is a crucial factor in determining the intention to accept modern technologies, as men are more technologically adept than women due to cultural influences and behavioural intentions (Goswami and Dutta, 2015). They are not as open and optimistic as men when it comes to embracing and employing new technology, as they lack decision-making power and confidence due to certain sociocultural, educational, and technical obstacles (Reinen and Plomp, 1994; Wood and Li, 2005; Shashaani and Khalili, 2001). Women are also less likely to accept such innovation, and if they do, they typically use it to a lesser extent (Li et al., 2008). Moreover, time limits, gender roles, financial constraints, and a lack of information and skills are the most significant barriers preventing them from using and accessing them (Rola-Rubzen et al., 2020). However, in recent years, the gender gap in the use of technologies has decreased as a result of women's increased exposure to and use of innovative technologies in both personal and professional lives (Li et al., 2008; Ray et al., 1999).

The interaction with these innovations is transforming their life standard, providing them with the opportunity to strategically capitalise on their submissive status in society or to regain a certain level of autonomy (Sultana et al., 2018). Furthermore, engaging with modern technologies enables them to share and express their expertise, concerns, and experiences, thereby generating opportunities for further development (Malhotra et al., 2018). However, developing countries like Bangladesh are confronted with substantial obstacles in implementing institutional initiatives to mitigate gender disparities (Goswami and Dutta, 2015). The most crucial accomplishments in recent years have been the restoration of females to school and the reduction of gender disparity (Mamoon et al., 2021). Moreover, women are making substantial progress in the fields of public administration and politics, securing positions of authority (Ahad and Gunter, 2017). Hence, the chance of accepting and adopting innovative technology increases, which also enhances the knowledge and attitudes of women (Salahuddin et al., 2014). Bangladesh, an electoral republic, is committed to the integration of democracy into all aspects of governance. It initially implemented EVM voting as a consequence of the substantial increase in technology-related interactions among the populace (Powell et al., 2012). The success and effectiveness of such initiatives hinge on people's acceptance of innovative technologies, a factor that gender significantly influences (Carter and Bélanger and Carter, 2005; Kud, 2023; Pawade et al., 2020).

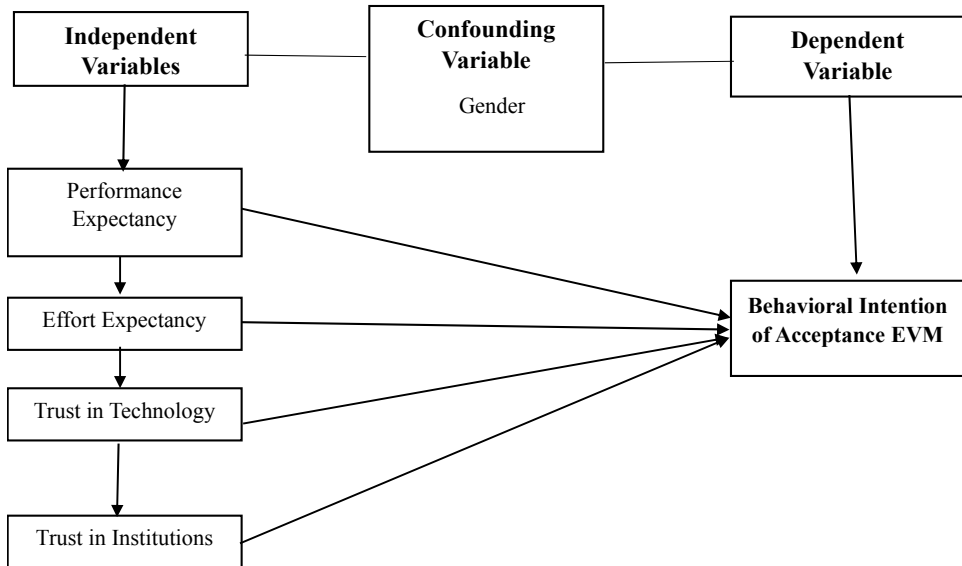
However, Sayem (2025) emphasised overall behavioural acceptance of EVM and found influential factors of acceptance including performance expectancy, trust in institutions, and effort expectancy. Sundar and Sreenivasan (2015) emphasised EVM's effect on trust in democratic institutions and identified interactivity and recordability as negative predictors of trust. Chauhan et al. (2018) looked at how Indian citizens felt about EVM and used the UTAUT model to measure their acceptance. They found that age and gender were important moderating variables that had a strong relationship with the intention to use EVM. Shukla et al. (2024) showed how Indian voters felt about blockchain-based e-voting and found a significant relationship between gender, age, and professional status. Ahmed et al. (2021) talked about the benefits of developing EVM in Bangladesh and found that it provides low-cost, safe, and easy-to-use facilities. However, throughout the world, very few studies have found gender interference in the EVM voting system, and no study has been found in Bangladesh emphasising gender differences in

the election process after the adoption of EVM. This study will address this gap and focus on gender differences in terms of EVM's acceptance to conduct free and fair elections in Bangladesh.

3 Conceptual framework

Technology has become a buzzword in both developed and developing countries, and it is not confined to science but social science. After the Industrial Revolution, the use of technology increased tremendously, and scholars showed the demand for understanding users' perception toward technology acceptance (Rumi et al., 2021). For this circumstance, a number of theories or models have developed, including the technology acceptance model (TAM) (Davis, 1989); the theory of reasoned action (TRA) (Fishbein and Ajzen, 1975); the unified theory of acceptance and use of technology (UTAUT) (Venkatesh et al., 2003); and the innovation diffusion theory (IDA) (Moore and Benbasat, 1991) to identify the major factors using new technologies in service delivery process. The strong reliability and confidentiality have influenced the technology in the election system to conduct free and fair elections (Yao and Murphy, 2007). In addition, a study found that citizens showed high interest in delegating their votes using technology if they seemed more dependable, trustworthy, and maintained privacy (Avgerou, 2013).

Figure 1 Conceptual framework (Sayem, 2025)



Davis (1989) identified two influential factors, including perceived ease of use and perceived usefulness in the TAM toward behavioural acceptance of technology. On the other hand, the UTAUT model developed several indicators, such as effort expectancy, performance expectancy, and social conditions to accept the new technology in the service delivery process (Venkatesh et al., 2003). Specifically, Menash (2020) developed

performance expectancy, trust in technology, and effort expectancy toward the behavioural intention of the electronic voting system, but effort expectancy was not associated with using technology. In addition, several factors, including perceived security, trust in technology, performance expectations, and social impact, have found positive associations with using the EVM in the electoral system (Chauhan, 2018). In contrast, citizens' trust will be decreased and demotivated to use technology due to less protection and confidentiality. However, technology acceptance has differed based on gender perspective (Hess, and Valacich, 2008). Figure 1 showed that four constructive hypotheses, such as performance expectancy, effort expectancy, trust in technology, and trust in institutions, to assess the gender differences toward behavioural acceptance of EVM (Duyck et al., 2010; Lian, 2015).

4 Methods

4.1 Study design

The study employed a cross-sectional research design with an explanatory method. This design is more effective for social research because it gathers all observable data simultaneously, enabling comparisons and analyses across various democratic variables such as age, gender, education level, or location (Setia, 2016; Cummings et al., 2018). Coffé and Bolzendahl (2010), and Rumi et al. (2021) used a cross-sectional research design for the similar studies.

4.2 Settings and sampling

The study utilised both primary and secondary data to form its findings. The primary data was collected with a structured questionnaire survey, as it has become a prominent method of collecting data in social science research that helps to collect a wide range of information from huge respondents (Roopa and Rani, 2012; Croasmun and Ostrom, 2011). The study employed a purposive sample method to get responses from participants who at least voted once using EVM in national or local level elections in their lifetime. This method aims to target specific characteristics of a population that are of interest in order to effectively address research concerns (Rai and Thapa, 2015). Although this method is not suitable for generalising to the population, it is excellent for studying specific cultural domains with experienced experts and gathering information on developing or new topics (Acharya et al., 2013).

A power analysis test was done by researchers to determine sample size and found to take minimum of 132 samples with an effect size of 0.15 at 95% power and a significant value of 0.05. However, 150 responses were collected to minimise the risk of uncertain error, but ultimately had to reach out to 200 respondents. Because respondents felt it was a sensitive issue that could impact their personal lives, the non-response rate was about 30%. However, in individual-level research, one-half of the surveys had a sample size of 100 to 200 (Fowler, 2004). The response rate was 75% and the duration of data collection from each respondent was 10–15 min. Table 1 presents the socio-demographic information of the respondents. Dhaka city served as the study area, hosting the last

EVM-based Dhaka South and North City Corporation election in 2020 (Bangladesh Election Commission, 2022). However, the secondary data were accumulated using an inductive document analysis technique from books, journal papers, and reports from government organisations.

4.3 Instrument and data collection

The data were collected using a structured questionnaire developed by the researcher based on the conceptual framework of Sayem (2025), for behavioural intention to use EVM. This model has four indicators, such as performance expectancy, trust in technology, effort expectancy, and trust in institutions. The questionnaire was designed under two sections. Section 1 had 8 questions about socio-demographic information, while Section 2 had 15 questions regarding the conceptual framework for this study. A 5-point Likert scale, where 1 = strongly disagree and 5 = strongly agree, to measure the items. The researcher conducted a pilot study, collecting data from 30 respondents. After analysing the pilot study data, the researchers collected primary data. The questionnaire was developed in English first and then translated into Bengali to make it more understandable for the respondents. Data were collected by appointed data enumerators in the different areas of Dhaka South and North City Corporation. All participants were informed about research objectives and obtained written consent before collecting data. The researchers affirmed that the study had not used any AI tools to write any part of the manuscript.

4.4 Statistical methods

The researcher used Statistical Package for the Social Sciences (SPSS) version 25 to analyse the quantitative data. The study used diverse types of analysis techniques, including descriptive analysis and inferential statistics. Descriptive analysis was used to summarise the socio-demographic status to explore the research objectives from different lens. Principal component analysis (PCA) was used to measure the unidimensional of model, conducted discriminant analysis to compare gender groups (male and female), and an independent sample t test was used to compare sample means and determine the factor independently for measuring respondents' EVM acceptance under conceptual framework.

5 Results

Table 1 shows the demographic information of the respondents. The table reveals that the proportion of female (39.3%) is slightly lower than that of male (60.7%). Most of the respondents are between 18 and 35 years old, and most of them are highly educated (62.7%), whereas only 7.3% are non-literate. Moreover, the study reveals that more than half of the respondents (64%) cast their first vote from 2010 to present that means they are mostly involved in the EVM system.

Table 1 Demographic profile of the respondents

	Variables	Percentage	Gender	
			Male (%)	Female (%)
Gender	Male	60.7		
	Female	39.3		
Age of respondents	18 to 25	46.0	56.0	83.1
	25 to 35	22.0	12.1	6.8
	35 to 45	11.3	17.6	10.2
	45 to above	20.7	14.3	0.0
Educational status	Non-literate	7.3	11.0	1.7
	Primary Education	6.7	8.8	3.4
	Secondary Education	15.3	22.0	5.1
	Higher Secondary Education	8.0	4.4	13.6
	Higher Education	62.7	53.8	76.3
First casting vote	1971–1990	4.7	28.6	8.5
	1990–2000	16.0	15.4	15.3
	2000–2010	15.3	14.3	5.1
	2010–Present	64.0	41.8	71.2

Table 2 displays the descriptive statistics of variables and factor loading, which are used to measure the behavioural acceptance of EVM usage. The mean score of each item, ranging from 2.73 to 3.75, indicates that citizens have a positive perception of using EVMs for voting. The factor analysis (PCA) result shows that it roughly explained the 79.20 variance under Eigenvalue = 20.68 and factor loading between 0.685 and 0.830. The result of Kaiser-Meyer-Olkin and Bartlett's Test for sphericity indicated that PCA was statistically fit for this investigation (0.925), and sampling adequacy was also statistically significant ($P < 0.001$).

A discriminant function was estimated to differentiate between male and female groups. From Table 3, the canonical correlation associated with this function is 0.384. Squaring this canonical correlation gives 0.1474, indicating that the selected model explains 14.74% of the variation in gender groups. The Wilks' lambda (λ) statistic, used to test the significance of the function, is found to be 0.852. This value corresponds to a chi-square (X^2) of 72.590 with 5 degrees of freedom and a significance level of 0.000 ($P < 0.05$). These findings indicate that the model is statistically fit to effectively explain gender differences in EVM behavioural acceptance. Moreover, the table highlights performance expectancy as the most influential factor in differentiating between gender groups, compared to trust in technology, effort expectancy, and trust in institutions (less value means more differentiate between groups).

Table 4 presents the results of the independent sample t-test, which compares the mean differences of indicators based on gender group separately. The result of F statistics shows that the effect on performance expectancy ($P < 0.05$), trust in institutions ($P < 0.05$), and intention to use ($P < 0.05$) are significant, whereas trust in technology ($P > 0.05$) and effort expectancy ($P > 0.05$) are not found to be significant. The mean score of indicators based on gender groups; female is between 3.39 and 4.02, while male is between 2.69 and 3.35. The mean scores of behavioural acceptances of EVM have

found the statistically significant female score to be 3.90, while male is 3.21. Moreover, it applies to those female voters who possess more positive notions about the behavioural acceptance of EVM than their male counterparts.

Table 2 Descriptive statistics and factor loadings of items measuring citizens' acceptance of EVM usage

<i>Dimension</i>	<i>Items</i>	<i>Factor loadings</i>	<i>Mean</i>	<i>Std. deviation</i>	<i>Min – Max</i>
<i>Performance expectancy</i>					
	1. Using the EVM system ensures a smoother voting process	0.772	3.62	1.003	1–5
	2. The EVM system makes it easier to cast a vote compared to using ballot papers	0.680	3.71	1.208	1–5
	3. The EVM system ensures that only eligible voters can access the voting process	0.789	3.50	1.165	1–5
	4. The EVM system guarantees that I can vote for my desired candidate	0.830	3.59	1.175	1–5
<i>Trust in technology</i>					
	1. The EVM system can secure all of my personal data	0.717	3.41	1.283	1–5
	2. The EVM system ensures my privacy during election	0.718	3.39	1.119	1–5
	3. International experiences have brought good reputation to use EVM	0.709	3.59	1.093	1–5
<i>Effort expectancy</i>					
	1. The EVM system is easier for me to use than the manual voting system	0.714	3.75	1.003	1–5
	2. I can quickly learn to operate the EVM system during an election	0.726	3.54	1.208	1–5
	3. I think the EVM system enables to prevent the fake votes	0.822	3.23	1.165	1–5
	4. I have the necessary skills to use the EVM system in an election	0.706	3.61	1.175	1–5

Table 2 Descriptive statistics and factor loadings of items measuring citizens' acceptance of EVM usage (continued)

<i>Dimension</i>	<i>Items</i>	<i>Factor loadings</i>	<i>Mean</i>	<i>Std. deviation</i>	<i>Min – Max</i>
<i>Trust in institution</i>					
	1. I have full trust in Election Commission to conduct free and fair elections using EVM	0.820	2.73	1.283	1–5
	2. The existing regulatory framework instils my trust in the use of the EVM system	0.665	3.09	1.119	1–5
	3. The roles of field administration (UNO, Magistrate, Presiding Officer) during election in EVM are satisfactory to me	0.779	3.07	1.309	1–5
	4. EVM system is an effective tool to ensure free and fair election in Bangladesh	0.760	3.35	1.093	1–5

Table 3 Discriminant analysis

<i>Variables</i>	<i>Number of items</i>	<i>Coefficient α</i>	<i>Wilks' λ</i>	<i>P Value</i>
Performance expectancy	4	0.90	0.880	0.000
Trust in technology	4	0.80	0.928	0.001
Effort expectancy	3	0.86	0.944	0.004
Trust in institution	4	0.89	0.903	0.000

Table 4 Mean difference of EVM's acceptance by gender

	<i>Gender</i>	<i>Mean</i>	<i>Std. error</i>	<i>F statistics</i>	<i>P value</i>	<i>Hypothesis test result</i>
Performance expectancy	Male	3.34	0.100	5.006	0.027	Accepted
	Female	4.02	0.110			
Trust in technology	Male	3.16	0.092	0.083	0.774	Rejected
	Female	3.92	0.237			
Effort expectancy	Male	3.35	0.102	2.577	0.111	Rejected
	Female	3.81	0.115			
Trust in institution	Male	2.69	0.118	6.202	0.014	Accepted

6 Discussion

The high-power distance societal structure in Bangladesh opens the scope for discrimination based on individuals' gender identity, family heritage, religion, caste, and class position (Azam, 2023). Despite the Constitution of the People's Republic of Bangladesh, the supreme law of the land, guaranteeing equal opportunity for all the citizens, this history of oppression over hundreds of years eventually creates a massive backlash in women's minds (Rahman, 2018). But in recent times, women have come a long way by educating themselves, getting involved in earning activities, fighting for their rights, and equally participating with men in politics and nation-building activities (Sahu and Yadav, 2018). So, women are now in a more balanced position in terms of social, economic, and political positions than ever before. This study tried to shed light on a crucial issue centred on the minds of policymakers, which is how citizens are perceiving change through the technology adaptation of the voting procedure using a gender lens and found that there is a significant difference in adopting EVM among male and female citizens. Chouhan et al. (2018) also found similar findings while conducting a study on acceptance of EVM in India that gender has a strong moderating effect on citizens perception. Moreover, In South Korea, a substantial variance in e-participation was found where males were influenced by perceived instrumental value and females were driven by intrinsic value (Kim and Lee, 2019). Notably, women voters exhibit a preference for technological changes in voting techniques over their other counterparts. As election-related violence and electoral fraud were significantly reduced after introducing the EVM in local elections, women felt safer, and a notable increase in voter turnout was experienced in India (Sisir et al., 2017). Feranita et al. (2024) found that intellectual and financial capacity development are the most crucial factors that have made women more adaptable to technology in recent times. However, political awareness among female voters is still significantly lower than that of their male counterparts (Khan and Ara, 2023).

Huntington (2006) found that during election days, due to partisan politics, mistrust among candidates, and the absence of the rule of law, citizens experience frequent news of political violence for occupying the vote centres and the theft of ballot boxes and papers. Miscreants even torture the general voters and polling agents with fraudulent ballots, which creates a fearful environment in the election area, especially for women voters. The use of EVM will limit such possibilities and reduce the cost to the government of running an election (Sayem, 2025). The reason women prefer EVM is to avoid election hassles like manipulation of voter lists, vote purchasing, intimidation of voters, and ballot stuffing that result in election violence (Abandah et al., 2014). Echavarren (2023) also found a deep connection between women and the environment, as both work as our protectors in times of danger. EVM is an environment friendly machine that reduces paper use during the election, which is a motivating factor for citizens who are concerned about the environment.

Another crucial finding of the study is that it did not find any significant differences based on gender in the trust in technology and effort expectancy variables. That means both men and women agree to the point that they appreciate integrating technology into the service delivery process. Yuan and Ma (2022) and Na et al. (2021) also revealed similar findings that gender identity is not an issue regarding the acceptance of technology while receiving services. Bangladesh has successfully transitioned to the digital era and achieved the status of a developing country by implementing the

Sustainable Development Goals 2030 (Pal and Sarker, 2023). The integration of electronic systems across all levels of government sectors is at the heart of these initiatives. It cut down on the time-cost-visit to get a service and increased the transparency of the entire process and the designated officials. So, which is undoubtedly an enormous success of the EVM. This study also reveals significant differences in voters' performance expectancy, trust in institutions, and intention to use variables based on their gender identity. Compared to men, women voters have a more optimistic outlook on these indicators. Galais and Blais (2019) as well as McDermott and Jones (2022) also showed that women demonstrate a stronger sense of civic duty compared to men and have greater trust in government institutions. The Election Commission's record in holding free and fair elections, its way of interacting with citizens, and its ability to convince citizens about the EVM are some of the crucial factors that have created such a difference in the results (Avgerou et al., 2019). EVM makes the voting process more accessible for women and empowers them to choose their candidate. Christensen and Læg Reid (2005) found that a positive experience getting services from public institutions also leads to greater trust in government. Government's recent efforts to redesign its service in a more gender friendly way might be a good reason for women to have positive feedback on the above-mentioned indicators (Nahar et al., 2023).

7 Conclusion and policy implication

The main purpose of the study is to identify the factors that contribute to the gender differences in the acceptance of EVM in the electoral system of Bangladesh. The study demonstrated that gender plays a significant role and difference in terms behavioural acceptance of EVM. Female voters that women electors exhibit a greater degree of enthusiasm in the acceptance of EVM in the election system. However, this study has some limitations too. The quantitative design of the study renders it incapable of capturing the subjective experiences of the participants and thereby lacking in-depth understanding. Additionally, the sample size 150 is not a sufficient number to draw a comprehensive conclusion based on the statistical data found in this study. Nevertheless, these results help policymakers design new guidelines for successfully using EVM in elections by the acceptance of both male and female voters. Firstly, strong endorsement from the country's leading technical positions as well as recognition from international technical institutions for the fairness and efficiency of EVM might have a strong impact on the voters' mind on its acceptability. Secondly, consensus from major political parties on EVM impartial role in the local and national elections will boost voters' confidence on this technology. However, massive publicity and awareness program through the Ministry of Information on EVM overall operation manual and its effectiveness in local and national media will create a solid support group for EVM among all the voters in respect of their identity.

Funding

The authors did not receive any financial supports to conduct this research.

Conflict of interest

The authors have declared no conflicts of interest.

References

- Abandah, G.A., Darabkh, K.A., Ammari, T. and Qunsul, O. (2014) 'Secure national electronic voting system', *J. Inf. Sci. Eng.*, Vol. 30, No. 5, pp.1339–1364, <https://doi.org/10.6688/JISE.2014.30.5.4>
- Acharya, A.S., Prakash, A., Saxena, P. and Nigam, A. (2013) 'Sampling: why and how of it', *Indian Journal of Medical Specialties*, Vol. 4, No. 2, pp.330–333, <http://dx.doi.org/10.7713/ijms.2013.0032>
- Agarwal, S., Haider, A., Jamwal, A., Dev, P. and Chandel, R. (2020) 'Biometric based secured remote electronic voting system', *2020 7th International Conference on Smart Structures and Systems (ICSSS)*, IEEE, pp.1–5, <https://doi.org/10.1109/ICSSS49621.2020.9202212>
- Ahad, L.R. and Gunter, H. (2017) 'Women in leader roles within higher education in Bangladesh', *Management in Education*, Vol. 31, No. 3, pp.135–140, <https://doi.org/10.1177/0892020617721147>
- Ali, B., Ali, H., Rehman, K.U., Ishaq, M.M. and Ali, W. (2024) 'Technology in elections: unveiling the potential and challenges of elections with EVMS in Pakistan', *Journal of Namibian Studies: History Politics Culture*, Vol. 40, pp.340–358, <http://dx.doi.org/10.59670/58crf445>
- Bélanger, F. and Carter, L. (2008) 'Trust and risk in e-government adoption', *The Journal of Strategic Information Systems*, Vol. 17, No. 2, pp.165–176, <https://doi.org/10.1016/j.jsis.2007.12.002>
- Birch, S., Daxecker, U. and Höglund, K. (2020) 'Electoral violence: an introduction', *Journal of Peace Research*, Vol. 57, No. 1, pp.3–14, <https://doi.org/10.1177/0022343319889657>
- Bogaards, M. (2007) 'Elections, election outcomes, and democracy in Southern Africa', *Democratization*, Vol. 14, No. 1, pp.73–91, <http://dx.doi.org/10.1080/13510340601024306>
- Brownridge, D.A. (2002) 'Cultural variation in male partner violence against women: a comparison of Québec with the rest of Canada', *Violence Against Women*, Vol. 8, No. 1, pp.87–115, <https://psycnet.apa.org/doi/10.1177/10778010222182955>
- Carter, L. and Bélanger, F. (2005) 'The utilization of e-government services: citizen trust, innovation and acceptance factors', *Information Systems Journal*, Vol. 15, No. 1, pp.5–25, <http://dx.doi.org/10.1111/j.1365-2575.2005.00183.x>
- Cheeseman, N. and Klaas, B. (2024) *How to Rig an Election*, Yale University Press, <http://dx.doi.org/10.4018/978-1-6684-7756-4.ch008>
- Coffé, H. and Bolzendahl, C. (2010) 'Same game, different rules? gender differences in political participation', *Sex Roles*, Vol. 62, pp.318–333, <https://doi.org/10.1007/s11199-009-9729-y>
- Croasmun, J.T. and Ostrom, L. (2011) 'Using Likert-type scales in the social sciences', *Journal of Adult Education*, Vol. 40, No. 1, pp.19–22, <http://www.mpaee.org/publications.htm>
- Cummings, J., Lee, G., Ritter, A. and Zhong, K. (2018) 'Alzheimer's disease drug development pipeline: 2018', *Alzheimer's and Dementia: Translational Research and Clinical Interventions*, Vol. 4, pp.195–214, <https://doi.org/10.1016/j.trci.2018.03.009>
- Dhamija, R. and Perrig, A. (2000) 'Deja {Vu-a} user study: using images for authentication', *9th USENIX Security Symposium (USENIX Security 00)* http://www.usenix.org/events/sec2000/full_papers/dhamija/dhamija_html/index.html
- Dwivedi, Y.K., Rana, N.P., Jeyaraj, A., Clement, M. and Williams, M.D. (2019) 'Re-examining the unified theory of acceptance and use of technology (UTAUT): towards a revised theoretical model', *Information Systems Frontiers*, Vol. 21, pp.719–734, <https://link.springer.com/article/10.1007/s10796-017-9774-y>

- Elven, T.M.A. and Al-Muqorrobin, S.A. (2020) 'Consolidating Indonesia's fragile elections through E-voting: lessons learned from India and the Philippines', *Indonesian Comparative Law Review*, Vol. 3, No. 1, pp.63–80, <http://dx.doi.org/10.18196/iclr.v3i1.11298>
- Fowler, C. (2004) *The Archaeology of Personhood: An Anthropological Approach*, Routledge, https://www.routledge.com/The-Archaeology-of-Personhood-An-Anthropological-Approach/Fowler/p/book/9780415317221?srsltid=AfmBOooNfP.6UmmrHAKxd5GTnWh6tL_Ak0JjfXbqaiyYT91xzjeOuNtSD
- Galais, C. and Blais, A. (2019) 'Is there a gender gap in the sense of duty to vote?', *Societies*, Vol. 9, No. 4, p.78, <https://doi.org/10.3390/soc9040078>
- Galligan, Y. and Buckley, F. (2023) 'Women in politics', *Politics in the Republic of Ireland*. Routledge, pp.253–279.
- Gefen, D., Rose, G.M., Warkentin, M. and Pavlou, P.A. (2005) 'Cultural diversity and trust in IT adoption: a comparison of potential e-voters in the USA and South Africa', *Journal of Global Information Management (JGIM)*, Vol. 13, No. 1, pp.54–78.
- Goswami, A. and Dutta, S. (2015) 'Gender differences in technology usage—a literature review', *Open Journal of Business and Management*, Vol. 4, No. 1, pp.51–59, <http://dx.doi.org/10.4236/ojbm.2016.41006>
- Greenhalgh, T., Robert, G., Macfarlane, F., Bate, P. and Kyriakidou, O. (2004) 'Diffusion of innovations in service organizations: systematic review and recommendations', *The Milbank Quarterly*, Vol. 82, No. 4, pp.581–629, <https://doi.org/10.1111/j.0887-378x.2004.00325.x>
- Haq, H.B.A.S.T. and Ali, S.T. (2022) 'Electronic voting machines for Pakistan: opportunities, challenges, and the way forward', *Proceedings of the 1st RASTA Conference*, March, Islamabad, Pakistan, pp.27–29.
- Hasan, M.S., Al Mahmood, A. and Farhan, Q. (2010) 'A roadmap towards the implementation of an efficient online voting system in Bangladesh', *2010 International Conference on Computational Intelligence and Software Engineering*, IEEE, pp.1–4, <http://dx.doi.org/10.1109/CISE.2010.5676848>
- Heiberg, S., Laud, P. and Willemson, J. (2011) 'The application of i-voting for Estonian parliamentary elections of 2011', *International Conference on E-voting and Identity*, Springer Berlin Heidelberg, Berlin, Heidelberg, pp.208–223, http://dx.doi.org/10.1007/978-3-642-32747-6_13
- Kapser, S., Abdelrahman, M. and Bernecker, T. (2021) 'Autonomous delivery vehicles to fight the spread of covid-19—how do men and women differ in their acceptance?', *Transportation Research Part A: Policy and Practice*, Vol. 148, pp.183–198, <https://doi.org/10.1016/j.tra.2021.02.020>
- Kassa, Y., Kakrippai, R.S. and Legesse, B. (2013) 'Determinants of adoption of improved maize varieties for male headed and female headed households in west Harerghe zone, Ethiopia', *International Journal of Economic Behavior and Organization*, Vol. 1, No. 4, pp.33–38, <http://dx.doi.org/10.11648/j.ijebo.20130104.11>
- Khan, M.S. (2018) *Electoral Behaviour in Bangladesh: 1991-2008*, Doctoral dissertation, Deakin University.
- Khan, M.M.R. and Ara, F. (2023) 'Female candidates and the Bangladesh parliamentary elections: Why are so few women running?', *World Affairs*, Vol. 186, No. 2, pp.414–441.
- Kiani, A. and Sartipi, H. (2016) 'Functions of election in a democratic system', *International Research Journal of Interdisciplinary and Multidisciplinary Studies, IRJIMS*, Vol. 2, No. 9, pp.20–35, DOI: 10.6084/m9.figshare.729054.
- Kim, S. and Lee, J. (2019) 'Gender and e-participation in local governance: citizen e-participation values and social ties', *International Journal of Public Administration*, Vol. 42, No. 13, pp.1073–1083, <https://doi.org/10.1080/01900692.2019.1575669>
- Kiss, L.N. (2019) 'Ballot is stronger than bullet! but what about E-voting?', *Publicationes Universitatis Miskolcensis. Sectio Juridica et Politica*, Vol. 37, No. 2, pp.195–207, <https://www.proquest.com/docview/2491619282?sourcetype=Scholarly%20Journals>

- Kud, A. (2023) 'Decentralized information platforms in public governance: reconstruction of the modern democracy or comfort blinding?', *International Journal of Public Administration*, Vol. 46, No. 3, pp.195–221, <https://doi.org/10.1080/01900692.2021.1993905>
- Kumar, S.D., Vamsikrishna, P., Tyagi, A., Bommisetty, D. and Kandala, H.B. (2016) 'Theoretical analysis of voting systems', *2016 International Conference on Communication and Electronics Systems (ICCES)*, October, IEEE, Vietnam, pp.1–5, <https://doi.org/10.1109/CESYS.2016.7889932>
- Li, S., Glass, R. and Records, H. (2008) 'The influence of gender on new technology adoption and use—mobile commerce', *Journal of Internet Commerce*, Vol. 7, No. 2, pp.270–289, <http://dx.doi.org/10.1080/15332860802067748>
- Li, X., Hess, T.J. and Valacich, J.S. (2008) 'Why do we trust new technology? A study of initial trust formation with organizational information systems', *The Journal of Strategic Information Systems*, Vol. 17, No. 1, pp.39–71, <https://doi.org/10.1016/j.jsis.2008.01.001>
- Malhotra, A., Crocker, M.E., Willes, L., Kelly, C., Lynch, S. and Benjafield, A.V. (2018) 'Patient engagement using new technology to improve adherence to positive airway pressure therapy: a retrospective analysis', *Chest*, Vol. 153, No. 4, pp.843–850, <https://doi.org/10.1016/j.chest.2017.11.005>
- Mamoon, Z.R., Taru, R.D. and Atikur, M. (2021) 'Young woman education and imminent impacts: a case study of Bangladesh', *International Journal of Advances in Engineering and Management*, Vol. 3, No. 5, pp.347–355, <http://dx.doi.org/10.35629/5252-0305347355>
- McCormack, C.B. (2016) *Democracy Rebooted: The Future of Technology in Elections*, <https://www.atlanticcouncil.org/in-depth-research-reports/report/democracy-rebooted-the-future-of-technology-in-elections-report/>
- McDermott, M.L. and Jones, D.R. (2022) 'Gender, sex, and trust in government', *Politics and Gender*, Vol. 18, No. 2, pp.297–320, DOI: 10.1017/S1743923X20000720.
- Na, T.K., Lee, S.H. and Yang, J.Y. (2021) 'Moderating effect of gender on the relationship between technology readiness index and consumers' continuous use intention of self-service restaurant kiosks', *Information*, Vol. 12, No. 7, p.280, <https://doi.org/10.3390/info12070280>
- Oostveen, A.M. (2010) 'Outsourcing democracy: losing control of e-Voting in the Netherlands', *Policy and Internet*, Vol. 2, No. 4, pp.201–220, <http://dx.doi.org/10.2202/1944-2866.1065>
- Pawade, D., Sakhapara, A., Badgujar, A., Adepu, D. and Andrade, M. (2020) 'Secure online voting system using biometric and blockchain', *Data Management, Analytics, and Innovation: Proceedings of ICDMAI 2019*, Volume 1, Springer Singapore, pp.93–110, http://dx.doi.org/10.1007/978-981-32-9949-8_7
- Powell, A., Williams, C.K., Bock, D.B., Doellman, T. and Allen, J. (2012) 'e-voting intent: a comparison of young and elderly voters', *Government Information Quarterly*, Vol. 29, No. 3, pp.361–372, <https://doi.org/10.1016/j.giq.2012.01.003>
- Rai, N. and Thapa, B. (2015) 'A study on purposive sampling method in research', *Kathmandu: Kathmandu School of Law*, Vol. 5, No. 1, pp.8–15, <https://doi.org/10.4236/ojbm.2019.72031>
- Ranjan, N. (2023) 'Enhancing voting security and efficiency: an electronic voting machine (EVM) system integrated with biometric identifiers', *Journal of Computers, Mechanical and Management*, Vol. 2, No. 3, pp.9–15, <http://dx.doi.org/10.57159/gadl.jcmm.2.3.23065>
- Rashiduzzaman, M. (1997) 'Political unrest and democracy in Bangladesh', *Asian Survey*, Vol. 37, No. 3, pp.254–268, <https://doi.org/10.2307/2645662>
- Ray, C.M., Sormunen, C. and Harris, T.M. (1999) 'Men's and women's attitudes toward computer technology: a comparison', *Office Systems Research Journal*, Vol. 17, pp.1–8, <https://www.proquest.com/docview/219817009?sourcetype=Scholarly%20Journals>
- Reinen, I.J. and Plomp, T. (1994) *Gender and Computer Use: Another Area of Inequity?*, AERA Annual Meeting 1994: Learning Across Contexts: Work, School, and Play, <http://dx.doi.org/10.3102/0034654307309919>

- Rikwith, S.L., Saiteja, D. and Jayaraman, R. (2021) 'Enhancement of electronic voting machine performance using fingerprint and face recognition', *2021 2nd International Conference on Smart Electronics and Communication (ICOSEC)*, IEEE, India, pp.757–763, <https://doi.org/10.1109/ICOSEC51865.2021.9591895>
- Roopa, S. and Rani, M.S. (2012) 'Questionnaire designing for a survey', *Journal of Indian Orthodontic Society*, Vol. 46, 4_suppl1, pp.273–277, <http://dx.doi.org/10.5005/jp-journals-10021-1104>
- Rumi, M.H., Bala, S., Shah, A.M., Sayem, M.A. and Abedin, M.M. (2021) 'Future tradeoff under fourth industrial revolution in Bangladesh: a study on RMG sector', *International Journal of Social, Political and Economic Research*, Vol. 8, No. 1, pp.198–215, <https://doi.org/10.46291/IJOSPERvol8iss1pp.198-215>
- Salahuddin, M., Khatun, R. and Bilkis, S. (2014) 'Present situation of female education in Bangladesh: a comparative analysis of last decade', *BPDM Journal of Research*, Vol. 2, No. 1, p.221, <https://ssrn.com/abstract=3372022>
- Sarker, M.M., Shah, M.A.I., Akhund, T.M.N.U. and Uddin, M.S. (2016) 'An approach of automated electronic voting management system for Bangladesh using biometric fingerprint', *International Journal of Advanced Engineering Research and Science*, Vol. 3, No. 11, p.236907, <https://dx.doi.org/10.22161/ijaers/3.11.11>
- Sayem, M.A. (2025) 'Citizens' Behavioral acceptance of electronic voting machine (EVM) in the electoral culture of Bangladesh', *Journal of Asian and African Studies*, <https://doi.org/10.1177/00219096231179654>
- Setia, M.S. (2016) 'Methodology series module 3: cross-sectional studies', *Indian Journal of Dermatology*, Vol. 61, No. 3, pp.261–264, <https://doi.org/10.4103/0019-5154.182410>
- Shashaani, L. and Khalili, A. (2001) 'Gender and computers: similarities and differences in Iranian college students' attitudes toward computers', *Computers and Education*, Vol. 37, Nos. 3–4, pp.363–375, [https://doi.org/10.1016/S0360-1315\(01\)00059-8](https://doi.org/10.1016/S0360-1315(01)00059-8)
- Sisir, D., Mudit, K. and Shamika, R. (2017) *The Impact of Electronic Voting Machines on Electoral Frauds, Democracy and Development*, Delhi, China, <https://www.brookings.edu/articles/working-paper-using-technology-to-strengthen-democracy/>
- Sultana, A.M. (2010) 'Patriarchy and women's gender ideology: a socio-cultural perspective', *Journal of Social Sciences*, Vol. 6, No. 1, pp.123–126, <https://doi.org/10.3844/jssp.2010.123.126>
- Sultana, S., Guimbretière, F., Sengers, P. and Dell, N. (2018) 'Design within a patriarchal society: opportunities and challenges in designing for rural women in Bangladesh', *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems*, pp.1–13, <http://dx.doi.org/10.1145/3173574.3174110>
- Verma, A. (2005) 'Policing elections in India', *India Review*, Vol. 4, Nos. 3–4, pp.354–376, <https://doi.org/10.1080/14736480500302217>
- Wajcman, J. (2010) 'Feminist theories of technology', *Cambridge Journal of Economics*, Vol. 34, No. 1, pp.143–152, <https://doi.org/10.1093/cje/ben057>
- Wood, W. and Li, S. (2005) 'The empirical analysis of technology camel', *Issues in Information Systems*, Vol. 6, No. 2, pp.154–160, https://doi.org/10.48009/2_iis_2005_154-160
- Yuan, H. and Ma, D. (2022) 'Gender differences in the relationship between interpersonal trust and innovative behavior: the mediating effects of affective organizational commitment and knowledge-sharing', *Behavioral Sciences*, Vol. 12, No. 5, p.145, <https://doi.org/10.3390/bs12050145>