

Determinants of spoiled and rejected ballots in Ghana's presidential elections: Explaining the impairment on voter participation

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ABSTRACT

This paper examines the determinants and electoral effects of rejected ballots in Ghana's presidential elections from 1992 to 2024, introducing the concept of voter impairment to theorise how rejected ballots undermine democratic participation. Integrating protest voting theory and ballot complexity theory. It analysed gazetted electoral data from the Electoral Commission of Ghana across nine election cycles (N = 9), combined with illiteracy and poverty data from the Ghana Statistical Service. Correlation analysis reveals that the number of presidential candidates on the ballot exhibits the strongest positive association with rejected ballots ($r = 0.778$, $p = 0.014$), followed by registered voters ($r = 0.658$, $p = 0.054$), while illiteracy ($r = 0.533$, $p = 0.139$) and turnout ratio ($r = 0.563$, $p = 0.115$) show moderate associations. Notably, poverty incidence demonstrates a negative correlation with rejected ballots ($r = -0.631$, $p = 0.089$), challenging assumptions about socioeconomic disadvantage as a primary driver. Trend analysis shows rejected ballots have consistently exceeded the combined valid votes of all minor candidates in elections since 2000, including the 2024 election, where 239,109 rejected ballots (2.1% of votes cast) surpassed the total of ten minor candidates and contributed to the 2000 and 2008 presidential run-offs. The paper concludes that rejected ballots reflect both protest voting (intentional dissatisfaction) and ballot complexity (accidental error), with the number of candidates emerging as the dominant predictor. The paper advances voter impairment as an analytical framework distinguishing inadvertent errors, deliberate protest, and administrative failures. It recommends reducing ballot complexity through access requirements, targeting voter education for low-literacy populations, and further study using district-level data to test causal relationships.

Keywords: Democracy, Elections, Participation, Protest Vote, Rejected Ballot, Spoiled Ballot, Voter Impairment, Ghana

I. INTRODUCTION

Democracy is a universal value that establishes a governance system that guarantees the choice and rights of citizens (Huntington, 1991; Bratton & Van de Walle, 1997; Bukari, 2025). Specifically, electoral democracy allows for periodic accountability from duty bearers on behalf of the governed through the ritual of voting (Ayee, 2001; Dahl, 2005). Electoral democracy permits eligible citizens to periodically vote and be voted for in competitive, free, transparent, and fair national elections. Democracy, in this regard, is seen as providing an institutional method and procedure for arriving at a political decision through a competitive struggle for the citizenry's votes (Dahl, 1971; Huntington, 1993). Indeed, this makes citizens more important in a democracy and draws much attention to their needs and common interests (Schumpeter, 1947; Osei & Bukari, 2026). The responsive character of democracy to the needs of the people is as important as the procedure used to arrive at addressing them.

Electoral democracy allows the electorate to provide direction for the manner in which the state is governed, directly or indirectly, via strict oversight over democratically elected representatives and the regular demand for accountability (Dahl, 2005; Huntington, 1993; Bratton & Van de Walle, 1997; Gyimah-Boadi, 2009; Osei & Bukari, 2026). Electoral democracy, therefore, offers citizens the opportunity to participate in the democratic process, and adequate provisions should be put in place to guarantee this right. Political participation is an "integral ingredient of every political system since it provides the opportunity for citizens to effect government policies by influencing the selection of people who make those policies (Verba et al, 1995; Geys, 2006). In other words, political participation is about voice and equality, but remains a voluntary activity (Dahl, 1971; Diamond, 1997; Bukari, 2022).

Procedural democracy emphasises the processes that enable people to participate in the decision-making process and to run for public office (Schumpeter, 1947). Thus, it focuses on how decisions are made. Procedural democratic theory sets forth principles and assumptions that describe and guide the decision-making process (Schumpeter, 1947; Huntington, 1993). These principles address three distinct questions: Who should participate in decision-making? How many times does the participant need to participate? What is the effect of the participation on the outcome? The principle of Universal Adult Suffrage allows for broader participation in the process of voting and therefore expects an effect on the outcome of the participation process. Therefore, every vote in an election should be ‘counted equally’ to achieve ‘political equality’ (Schumpeter, 1947). Political equality leads to a political majority where a significant number of those participating make decisions on matters through the act of voting. But, “where participants are divided over more than two alternatives, and none receives a simple majority, the principle usually defaults to the plurality rule, under which the group does what most participants want” (Janda et al., 2000, p.34). Substantively, democratic governments implement good policies required for national development, respect and tolerate diversity and divergent opinions, and provide for the collective welfare and well-being of the people (Dahl, 1971; Huntington, 1993; Bukari et al., 2024). Arguably, the procedure and substance of democracy constitute its selling point, irrespective of its imperfections. It guarantees citizens' participation, the rule of law, political, economic, and social rights; freedom of speech and associational life, among others (Mumuni et al., 2026).

The literature on political participation has traditionally been restricted to voting (Huntington, 1993; Linz & Stepan, 1996; Dahl, 2005; Diamond, 1993, 1997). Participation in voting affords citizens in a democracy an opportunity to communicate their concerns and preferences to government officials and to put pressure on them to respond. Yet, this opportunity is often abused or wasted by the electorate through spoiled or rejected ballots in elections (Gyampo, 2009; Anaman & Bukari, 2019a; Anaman & Bukari, 2021). Although Ghana's democracy is growing towards consolidation, the voting process is still an issue that the average voter in Ghana has to grapple with. This has led to the incidence of a high number of spoiled or rejected ballots in all elections under the Fourth Republic in the country. Undoubtedly, the issue of spoiled or rejected ballots has become one of the key electoral challenges in Ghana's electoral process, and potentially undermines the country's quest for perfect democratic consolidation (Linz & Stepan, 1996; Anaman & Bukari, 2021). Clearly, high numbers of spoiled ballots affect the democratic choice of who becomes President or Member of Parliament of the Republic of Ghana (Gyampo, 2009; Anaman & Bukari, 2019b; Anaman & Bukari, 2021).

Indeed, according to the Electoral Commission of Ghana records, the number of rejected ballots recorded in Ghanaian elections is unprecedentedly higher since the return to democratic elections in 1992, both in terms of percentages and in terms of figures. Many scholars and political analysts are of the view that the Rejected Ballot can adequately be referred to as the ‘Third Party’ in the presidential elections in Ghana since the first election of the Fourth Republic in 1992, as it often placed third in the electoral contest, as in the cases of the 2008 and 2012 presidential elections (Gyampo, 2009; Anaman & Bukari, 2019b; Anaman & Bukari, 2021). Since her return to the democratic electoral process in 1992, available studies on Ghana's democratic development, except a few, have focused on explaining democratic institutions and electoral outcomes in the country (Gyimah-Boadi, 2009; Ayee, 2017; Bukari, 2023). Though many lessons can be drawn from these studies, the phenomenon of rejected ballots has not received much scholarly attention.

This study seeks to highlight academic debate around this significant electoral issue and answer the following research questions: What issues influence the increasing phenomenon of spoiled and rejected ballots in national elections in the country? How do they differ over time, and what can be done about it? The paper contributes to the literature on elections by identifying factors that lead to the problem of spoiled and rejected ballots, which sometimes decides the outcome of elections, and which is a source of post-election violence in some countries in Africa. The paper also interrogates the corresponding impairment of this phenomenon on voter participation. The rest of the paper is organised as follows: the immediate section after the introduction examines the theoretical framework of analysis, followed by the methodology, findings or results, discussion of the results and implications for voter participation, conclusion, and recommendations.

1.2 Research Objectives

- i. To identify and analyse the determinants or issues contributing to the rising rate of spoiled and rejected ballots in the democratic elections.
- ii. To examine how the prevalence and nature of these issues have changed across different election cycles over time.

II. LITERATURE REVIEW

2.1 Theoretical Review

This study is guided by a theoretical framework that synthesises two complementary approaches to understanding the spoiled and rejected ballots: protest voting theory and ballot complexity theory. These frameworks

generate distinct and testable hypotheses about the determinants of spoiled and rejected ballots in Ghana's presidential elections.

2.1.1 Protest Voting Theory

Protest voting theory conceptualises spoiled ballots as an intentional signal of voter dissatisfaction with the available options, typically interpreted as a rational act of dissent when all viable candidates or parties are deemed unacceptable (Lacy & Christenson, 2016). From this perspective, voters who deliberately spoil their ballots are not acting irrationally or carelessly; rather, they are strategically expressing political discontent within the formal electoral process. As Schelker and Schneider (2017) argue, “purposive vote spoiling can be seen as constituting a new form of protest voting, voters using their vote to register that they find none of the options on offer to be acceptable.” This framework yields specific hypotheses for the Ghanaian case. If purposeful protest drives spoiling, then spoiled vote rates should correlate positively with measures of political distrust, systemic dissatisfaction, or the presence of radical anti-establishment options, while remaining relatively insensitive to controls for ballot complexity. Furthermore, persistent spoil rates across different electoral contexts in distrustful populations would signal purposeful protest rather than accidental error (Lacy & Christenson, 2016).

2.1.2 Ballot Complexity Theory

Ballot complexity theory challenges the assumption that voting is a cognitively unproblematic process. This literature demonstrates that the number of candidates, the design of the ballot paper, and the cognitive burden of information processing systematically increase the likelihood of unintentional errors (Mares & Zhu, 2015). When voters face multiparty contests with numerous candidates, the probability of mis-marking, over-voting, or leaving ambiguous marks rises irrespective of political discontent (Bratton & Van de Walle, 1997). From this perspective, observed spoiled votes may reflect two theoretically distinct phenomena: (1) purposeful spoiling, a strategic or expressive act of protest against the political system or specific elites (Bukari & Arah, 2025), and (2) accidental spoiling, a mechanical byproduct of ballot complexity interacting with limited cognitive resources, time pressure, or low literacy (Mares & Zhu, 2015). Ballot complexity theory generates the hypothesis that the number of candidates per electoral contest (ballot size) should be a strong predictor of spoiled vote rates, with diminishing marginal effects as voters' cognitive capacity (e.g., education levels) increases (Anaman & Bukari, 2021; Bukari & Arah, 2025).

2.2 Empirical Review

2.2.1 Issues Contributing to Spoiled and Rejected Ballots in Democratic Elections

A substantial body of global literature examines the causes, trends, and implications of spoiled and rejected ballots in democratic elections. Scholars generally distinguish between intentional invalid voting as a form of political protest and unintentional ballot spoilage caused by voter error or administrative deficiencies (Anaman & Bukari, 2021). One major strand of literature argues that many invalid votes are deliberate expressions of political dissatisfaction. Cohen (2024) demonstrates that blank and spoiled ballots in Latin America are frequently intentional acts used by citizens to protest against low-quality political candidates while still participating in democratic processes. Similarly, Schur (2017) argued that spoiled ballots increased in regions where citizens perceived limited electoral legitimacy and weak candidate alternatives. Politically disengaged and distrustful voters were more likely to cast invalid ballots as a form of symbolic resistance (Alidu & Bukari, 2020).

Electoral system complexity and ballot design also play a major role in generating unintentional invalid votes. Evidence from Poland and the United States further shows that complex ballots disproportionately affect less educated and elderly voters. In the United States, flawed ballot designs during the 2018 Florida Senate election contributed to widespread voter confusion and mistrust (Bukari & Arah, 2025). Likewise, the 2007 Scottish elections demonstrated the practical consequences of poor ballot design, where the number of spoiled ballots exceeded victory margins in several constituencies. (Alidu & Bukari, 2020). Studies also highlighted the importance of electoral administration in ballot rejection. Studies on U.S. mail-in voting found that signature verification procedures frequently resulted in valid ballots being wrongly rejected due to mismatched signatures (Cohen, 2024). Studies show that some elections introduced forensic approaches to distinguish tallying irregularities caused by human error from deliberate fraud. Similarly, studies on competitive elections indicate that closely contested races may increase opportunities for administrative manipulation and ballot rejection (Bukari & Arah, 2025).

Across Africa, studies reveal that spoiled and rejected ballots are shaped by protest voting, voter illiteracy, administrative failures, electoral manipulation, and weak civic education systems (Anaman & Bukari, 2021). In East Africa, protest voting has become an important theme in electoral studies. In Kenya, legal and political debates emerged after the 2013 elections, when more than 100,000 spoiled ballots were excluded from the presidential tally. Analysts argued that intentionally spoiled ballots represented a legitimate democratic protest against unpopular candidates. Administrative irregularities have also received considerable scholarly attention. Elections in Africa revealed discrepancies between official invalid ballot figures and opposition tally sheets, suggesting possible data manipulation

or aggregation errors (Ayee, 2001). The African Union has similarly raised concerns about rising rates of invalid ballots across the continent. In Liberia's 2023 elections, invalid votes reached 5.89 per cent, significantly above the global average of 4.3 per cent, reflecting broader concerns about electoral administration and voter understanding. African studies also emphasise intervention strategies to reduce invalid ballots (Anaman & Bukari, 2019b). Studies in Bogotá, Colombia, often referenced in African electoral reform discussions, showed that user-friendly ballot designs reduced rejected ballots by approximately 38 per cent (Cohen, 2024). African electoral reform advocates have consequently called for simplified ballot layouts, multilingual voter education, and stronger electoral management systems.

The Ghanaian literature provides an extensive analysis of the socio-economic, political, and institutional drivers of spoiled and rejected ballots (Bukari, 2022). Studies consistently identify voter illiteracy, administrative manipulation, and weak civic education as major contributors. For instance, Anaman and Bukari (2019b), using district-level data from Ghana's 2000 and 2012 presidential elections, found a significant negative relationship between literacy rates and spoiled ballots. Districts with lower literacy levels recorded higher proportions of invalid votes, suggesting that inadequate voter education remains a major cause of ballot spoilage. Their study further demonstrated how ethnic political alignment influences voting behavior, particularly among dominant ethnic groups associated with the NPP and NDC. Beyond voter error, Ghanaian studies also examine electoral manipulation through ballot rejection. Ichino and Schündeln (2012) investigated 'miscounting' in Ghana's 2008 and 2012 parliamentary elections and found that ballot rejections were positively associated with constituencies where incumbents had held power for extended periods. The study argues that incumbents fearing electoral defeat may influence election officials to selectively reject ballots, representing a subtle form of electoral manipulation. Historical electoral data in Ghana demonstrate that rejected ballots have become a persistent electoral phenomenon. Rejected ballots increased from 149,813 in the 1992 elections to 313,379 in the 2020 elections before declining slightly to 239,109 in 2024. In the 2020 presidential election, rejected ballots outperformed ten out of the twelve presidential candidates, effectively becoming a 'third political force.' A 2024 trend analysis attributed rising rejected ballot rates partly to increasing numbers of presidential candidates and registered voters (Bukari, 2023).

2.2.2 Prevalence and Nature of Spoiled and Rejected Ballots in Democratic Elections

The prevalence and nature of spoiled and rejected ballots have changed significantly across democratic elections over time, influenced by electoral reforms, voter education, ballot design, literacy levels, and political behaviour (Ayee, 2017; Anaman & Bukari, 2021). Empirical studies suggest that rejected ballots can arise either from voter error (unintentional invalid voting) or as a deliberate form of political protest or intentional invalid voting (Ayee, 2007). Early studies on invalid voting emphasised administrative and voter-related factors. Using data from Western democracies, Bukari and Arah (2025) found that rejected ballots were more common among populations with lower educational attainment and in elections characterised by complex voting procedures. Schur (2017) demonstrated that invalid voting rates declined over time in countries that implemented comprehensive voter education programmes and simplified ballot structures. Studies from Latin America indicate that invalid voting has increasingly become a political tool rather than merely an electoral error. Cohen (2024) analysed elections across several Latin American countries and found that spoiled ballots often reflect voter dissatisfaction with political parties and democratic institutions. The study observed fluctuations in invalid voting rates over time, corresponding with political crises and declining trust in government. Some studies from Europe also reveal similar trends. Alidu and Bukari (2020) found that countries adopting electronic voting systems experienced significant reductions in rejected ballots due to the elimination of common marking errors. However, they noted that protest voting through intentionally spoiled ballots persisted despite technological improvements. Recent global trends indicate that invalid voting has fluctuated over time across different democracies. Spoiled ballots rose significantly following electoral reforms introducing proportional representation. Ireland also recorded historically high spoiled ballot rates in the presidential election compared to earlier elections (Anaman & Bukari 2021).

In Africa, empirical evidence suggests that rejected ballots have historically been higher than in many established democracies due to literacy challenges and electoral administration weaknesses. Examining elections in sub-Saharan Africa, Gray and Caul (2000) and Hayden (2010) found that ballot rejection rates tended to decrease over successive elections as electoral commissions improved voter education and election management procedures. Nevertheless, spikes in invalid voting were observed during highly competitive elections, indicating that some voters intentionally spoiled ballots to express political dissatisfaction.

Ghana has experienced notable variations in spoiled and rejected ballots since the return to constitutional rule in 1992. Studies consistently indicate that rejected ballots have been a recurring feature of Ghanaian elections, occasionally exceeding the margin of victory between leading candidates (Anaman & Bukari, 2021). Using electoral data from Ghana's presidential and parliamentary elections, Ayee (2017) and Bukari (2022) found that rejected ballots generally declined between 1992 and 2004 due to improvements in voter education and electoral administration. However, the study noted periodic increases associated with changes in voting procedures and heightened electoral competition. Empirical work by Anaman and Bukari (2019b) revealed that rejected ballots in Ghana were strongly

associated with rural residency, lower educational levels, and first-time voters. The study further demonstrated that electoral reforms introduced by the Electoral Commission of Ghana contributed to reducing ballot rejection rates over time. More recent analyses of Ghana's elections indicate that rejected ballots remain politically significant. According to official electoral statistics, the number of rejected ballots has fluctuated across election cycles, ranging from relatively low levels in some elections to substantial figures in closely contested races. Studies by Gyampo (2009) suggest that while voter education has reduced accidental ballot spoilage, a portion of rejected ballots may reflect voter protest against perceived failures of political parties and candidates (Bukari & Arah, 2025).

The empirical evidence demonstrates that spoiled and rejected ballots have evolved from being viewed primarily as indicators of voter incompetence to being recognised as complex political phenomena reflecting both administrative deficiencies and citizen dissatisfaction. While many democracies have experienced declining rates of rejected ballots due to electoral reforms and voter education, fluctuations continue to occur in response to political competition, institutional trust, and socioeconomic conditions. In Ghana and other African democracies, rejected ballots remain an important indicator of electoral quality and democratic participation.

III. METHODOLOGY

3.1 Study Design and Data Sources

The paper employed a correlational study design to examine the relationships among the study variables, guided by the study questions and the available data (Babbie, 2004). The paper conducts a trend analysis of rejected ballots and their effect on presidential elections. It also employed correlation matrix analysis to describe the strength and direction of the relationship between spoiled or rejected ballots and the determinants in Ghanaian elections. The correlation matrix was used because the variables to be correlated are more than two.

The data for the analysis were generated from the gazetted presidential results of the Electoral Commission of Ghana from 1992 to 2024, and the Ghana Statistical Service. The 2024 general elections were the ninth election in the Fourth Republic, increasing the total number of election cycles analysed to nine ($N = 9$). The Electoral Commission of Ghana has data on the number of rejected ballots for each election, the number of registered voters, the number of candidates, the number of polling stations, valid votes, total votes cast, and turnout percentage. Additionally, the study gathered annual data from the Ghana Statistical Service on the illiteracy levels/rate and the poverty incidence of the country. All the data are continuous variables.

Using this data, a trend analysis of rejected ballots was conducted from the 1992 to 2024 elections and captured the gap between registered votes and votes cast. The difference between registered votes and total votes cast became the rejected ballots. This trend analysis showed the effect of rejected ballots on presidential national election outcomes over the years. A correlation analysis was also conducted to establish the relationship between spoiled or rejected ballots, valid votes, turnout ratio, and illiteracy rate. This was used to determine the strength of the relationship between these variables. The analysis also determined whether an increase in one variable would tend to increase or decrease the other variables. Table 1 shows the definitions of variables used for the analysis.

Table 1

Definition of Variables

Variables	Definitions
Rejected Ballots	National presidential rejected ballots
Registered Votes	Total number of national registered voters
Valid Votes	Total number of valid votes cast
Votes Cast	Total number of votes cast in the election
Polling Stations	Total number of polling stations registered for the elections
Candidates	Number of candidates (including independent candidates) contesting the elections
NPP Position on Ballot	Position of the NPP candidate on the ballots
NDC Position on Ballot	Position of the NDC candidate on the ballots
Turnout Ratio	Percentage turnout of voters

3.2 Methodological Limitations and Acknowledged Constraints

Some important methodological limitations that constrain the scope and generalisability of the findings have been acknowledged. The correlation matrix uses nine election cycles (1992-2024). With $N = 9$, the reported correlation coefficients face some constraints. First, statistical significance cannot be reliably established with conventional p-values, though, where reported, $p < 0.05$ is considered indicative. Also, outliers (e.g., the 2016 drop in rejected ballots) exert disproportionate influence on calculated coefficients, and the assumption of bivariate normality cannot be verified with such a small sample.

IV. FINDINGS & DISCUSSION

4.1 Summary of Empirical Literature Review

The literature on spoiled and rejected ballots demonstrates that invalid voting is a global electoral challenge shaped by both political and administrative factors. Globally, studies distinguish between intentional invalid voting as a form of political protest and unintentional ballot spoilage caused by voter illiteracy, poor ballot design, and weak electoral administration. Studies in Latin America, Ecuador, the United States, and Europe show that voters sometimes deliberately spoil ballots to express dissatisfaction with political candidates or distrust in electoral systems, while complex ballot structures and administrative procedures also contribute significantly to accidental ballot rejection. Across Africa, similar patterns emerge, with studies from Kenya, Uganda, Malawi, Zimbabwe, and Liberia linking invalid ballots to protest voting, inadequate civic education, electoral manipulation, and institutional weaknesses. African scholars further emphasise that high levels of invalid voting can influence electoral outcomes, especially in closely contested elections, and have therefore advocated reforms such as simplified ballot designs, multilingual voter education, and stronger electoral management systems.

In Ghana, the literature identifies voter illiteracy, weak civic education, electoral manipulation, and institutional inefficiencies as the major drivers of spoiled and rejected ballots. Empirical studies reveal that districts with lower literacy rates tend to record higher levels of invalid votes, while political actors may exploit ballot rejection processes in competitive constituencies. Historical evidence also shows that rejected ballots have steadily increased over successive elections, becoming a significant feature of Ghana's democratic process. Scholars and policymakers therefore recommend interventions such as simplified ballot papers, electronic voting systems, local-language civic education, voter recasting opportunities, and post-election audits to reduce ballot invalidation. Overall, the literature concludes that spoiled and rejected ballots are not merely technical electoral problems but reflect broader issues of political dissatisfaction, socio-economic inequality, democratic trust, and institutional capacity.

4.2 Descriptive Statistics

This analysis shows the mean and standard deviation of the variables used for the analysis. From Table 2, the mean rejected ballots is 178,566 with a standard deviation of 81,432.15. This means that, on average, for every election, over 170,000 votes are either rejected or considered spoiled ballots. The mean number of candidates is 6.625, indicating that, on average, seven candidates contest every presidential election since 1992. The mean turnout ratio is 68.69, indicating that, on average, less than 70 per cent of registered voters come out to vote in elections. Average poverty incidence and illiteracy level are 32.76 and 65.88, respectively.

Table 2
Descriptive Statistics of Variables

Variables	Mean	Standard Deviation
Rejected Ballots	178,565.5	81,432.15
Registered Voters	12,122,411	3,302,010.0
Total Valid Votes	8,447,990	3,378,837.0
Number of Candidates	6.625	2.9247
Total Votes Cast	8,626,556	3,450,819.0
Number of Polling Stations	25,956.67	7,110.616
Turnout Ratio	68.697	17.753
Illiteracy Level	65.883	10.269
Poverty Incidence	32.763	9.707

Source: Analysis from the Gazetted Results of the Electoral Commission (2026).

4.3 Trend Analysis of Rejected Ballots

We adopted a trend analysis to determine the effect of rejected ballots on the outcome of elections since the beginning of the Fourth Republic. Figure 1 shows the trend analysis of the presidential valid votes and votes cast from 1992 to 2020. The gap or difference between the votes cast and valid votes represents rejected ballots, and the analysis shows that the total number of valid votes continued to reduce in percentage terms vis-à-vis the total number of votes cast. Even though the total votes cast continued to widen, total valid votes reduced, impacting the number of votes for each candidate. The number of rejected ballots since 1992 continued to increase in nominal terms from 64,354 in 1992 to 88,867 in 1996, constituting a growth rate of 28 per cent from 1992 to 1996. This resulted from an increase in votes cast from 2,126,918 in 1992 to 7,234,341 in 1996. Total valid votes also increased from 2,062,564 in 1992 to 7,145,474 in the 1996 general elections.

In the 2000 general election, there was a reduction in valid votes and votes cast to 6,455,808 and 6,605,084, respectively. However, rejected ballots increased to 149,276, representing a growth rate of 40.5 per cent from the 1996 general elections. Even though the growth rate in rejected ballots reduced significantly in the 2004 general elections to 20.7 per cent, there was an increase in rejected ballots to 188,123 in nominal terms. This nominal increase resulted from increases in both valid votes and votes cast to 8,625,785 and 8,813,908, respectively.

In 2008, there was a significant reduction in the growth of rejected ballots from 20.7 per cent in 2004 to 8.4 per cent in 2008. However, the trend in nominal terms showed 205,438 rejected ballots, which further jumped to 251,720 by 2012, representing 18.4 per cent growth. This increase resulted from an increase in votes cast to 11,246,982 and 10,995,262 valid votes.

The 2016 election was unique in terms of growth and trends in rejected ballots. The number of rejected ballots reduced significantly from 251,720 in 2012 to 167,349 in 2016, representing a growth rate of -50.42 per cent. However, this increased significantly to 46.6 per cent in 2020, increasing the number of rejected ballots to 313,397. This sharp increase is based on the increase in valid votes and votes cast to 13,119,460 and 13,432,857, respectively.

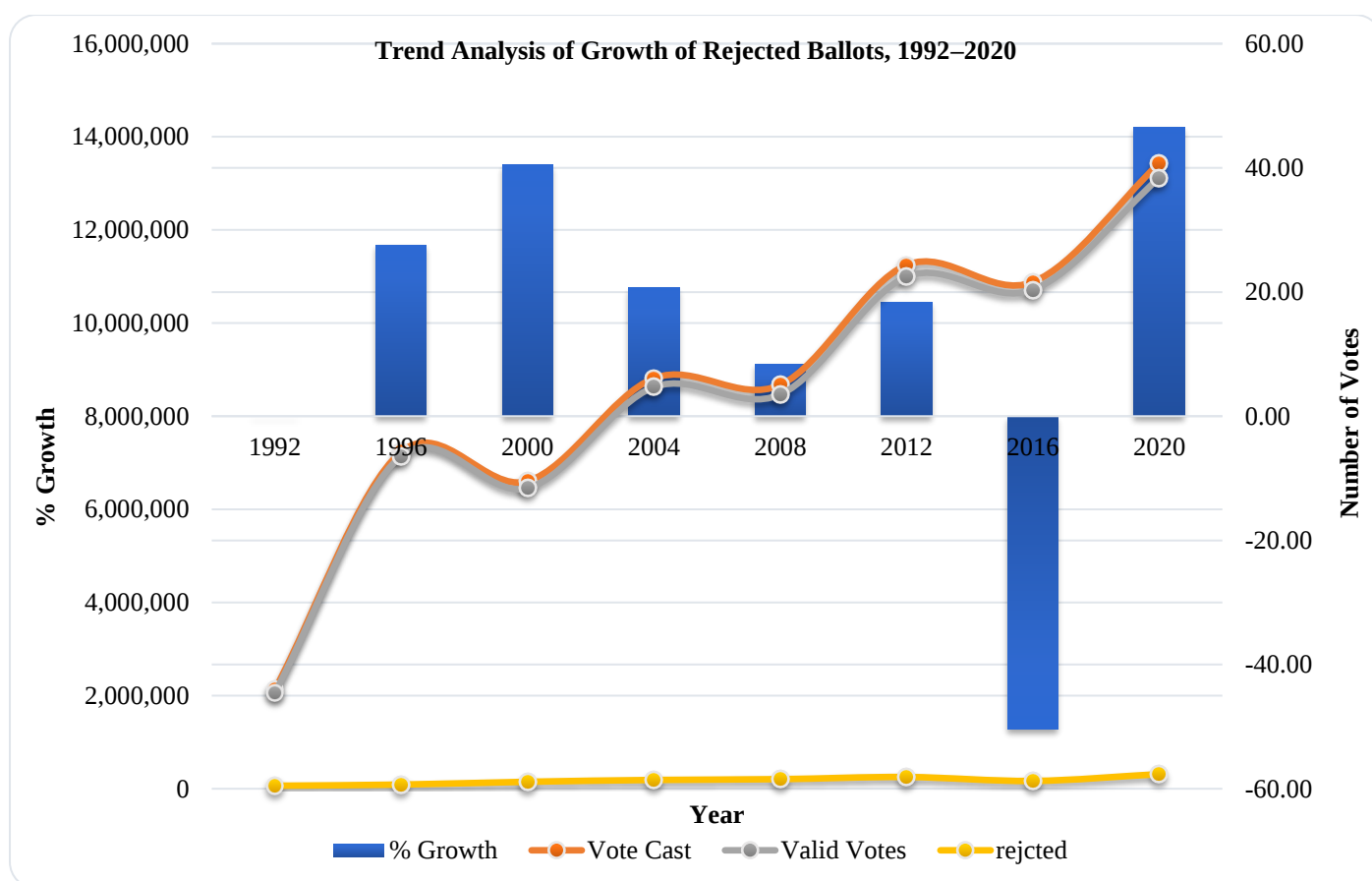


Figure 1
Trend Analysis of Growth of Rejected Ballots, 1992-2020

The 2024 presidential election recorded 239,109 rejected ballots (2.1% of total votes cast) out of 11,430,531 total votes cast. This represents a significant increase from the 2020 election (313,397 rejected ballots) in nominal terms, though the growth rate in percentage terms (from 2.33% in 2020 to 2.1% in 2024) actually declined.

4.4 Rejected Ballots and Electoral Outcomes in Ghana

Ghana's return to constitutional rule climaxed with the first general elections on 3 November 1992. The election was contested by five political parties: the New Patriotic Party (NPP), the Peoples National Convention (PNC), the National Democratic Congress (NDC), the National Independent Party (NIP), and the Peoples Heritage Party (PHP) (Nugent, 1995). The NDC won the election with 58.40 percent of total valid votes, while the NPP had 30.3 per cent. Total rejected ballots were 64,354 (3.12% of valid votes). Even though the number of rejected ballots was significant, it could not change the election outcome if all rejected ballots were added to the NPP, which came second. Gyimah-Boadi (2009) attributed the high rejected ballots to the over 13 years' wait since the 1979 elections.

The 1996 elections were also won by the NDC with 56.52 per cent of valid votes, and the NPP got 38.99 percent. Unlike 1992, contested by five parties, the 1996 presidential elections were contested by three parties: NDC, NPP, and

PNC (Ayee, 1997). The NDC won with a larger margin compared to 1992. Total rejected ballots reduced from 3 percent in 1992 to 1.22 per cent in 1996. Even though in nominal terms, rejected ballots increased significantly, they did not impact the election outcome.

The 2000 presidential election was unique as the first election to go into a run-off. According to Gyimah-Boadi (2009), Anaman and Bukari (2019b) and Alidu and Bukari (2020), it was the third election in the Fourth Republic that a constitutionally elected government had completed its full term of eight years. Additionally, it was the first time political power changed hands without military intervention. Seven political parties participated. In the first round, the NPP led with 48.32 per cent, and because they could not garner the required 50 percent plus 1 vote, the elections went into a run-off with the NDC (44.82%). Rejected ballots in the first round (119,362, 1.8%) exceeded the valid votes of the Convention People's Party (CPP), United Gold Coast Movement (UGM), Great Consolidated People's Party (GCPP), and Democratic People's Party (DPP). If this 1.8 per cent had been added to the NPP candidate's valid votes, there would not have been a run-off (the candidate's percentage would have been 50.12%). The run-off was therefore necessitated by votes declared as spoiled or rejected ballots.

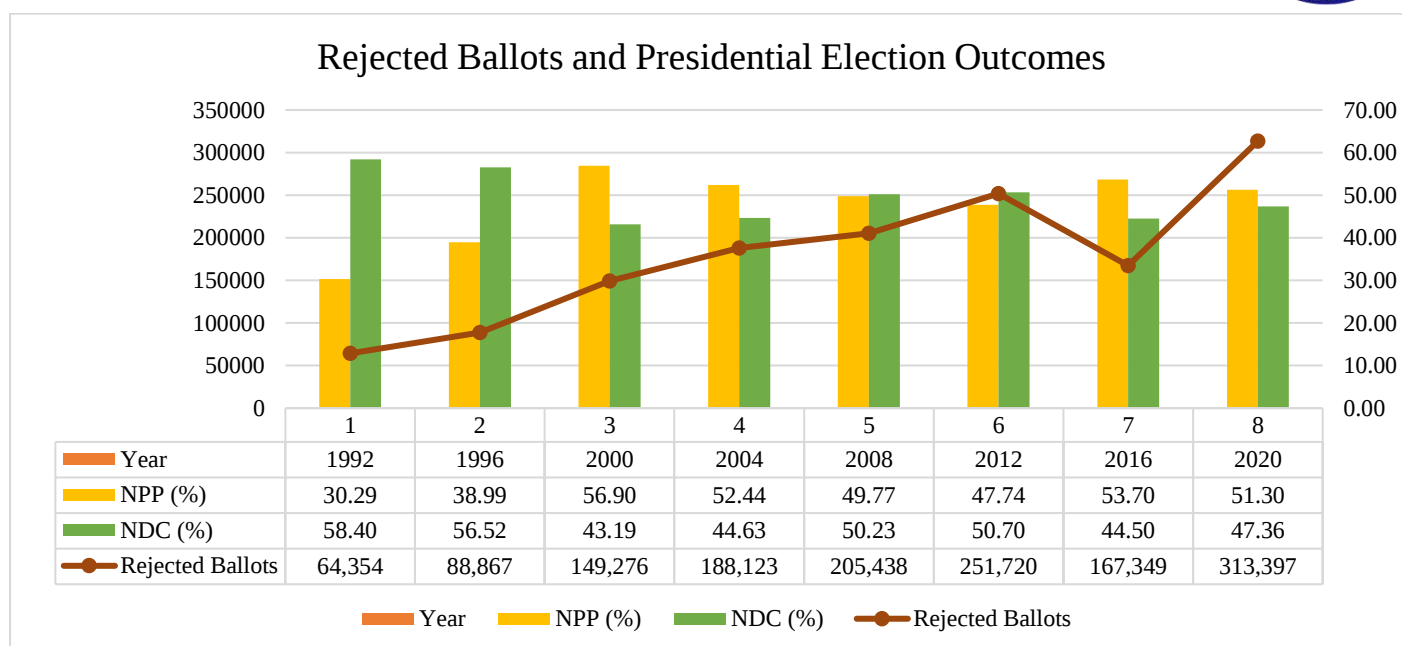
The NPP won the run-off with 56.9 percent, while the NDC had 43.19 percent. Rejected ballots increased from 1.22 per cent in 1996 to 2.26 per cent in the 2000 run-off. Given the NPP's margin of victory, rejected ballots could not change the outcome even if all 149,276 rejected ballots were added to the NDC. The NPP again won the 2004 presidential elections with 52.44 percent of valid votes, while the NDC gained 44.63 per cent. Four political parties participated: NDC, NPP, PNC, and CPP. The trend in rejected ballots continued to increase, raising serious concerns about voter education. Rejected ballots increased to 2.13 percent of total valid votes, exceeding votes gained by PNC (1.91%) and CPP (0.99%). Notably, if all rejected ballots had been added to the NDC candidate's valid votes, the election could have gone to a run-off.

The 2008 presidential election was similar to 2000, as the first round could not produce a clear winner. In the first round, the NPP candidate won 49.13 per cent while the NDC had 47.92 per cent. Rejected ballots (2.4%) exceeded votes garnered by each of the remaining six political parties, including the independent candidate. If all rejected ballots were added to the NPP candidate, the election would have tilted to an NPP first-round win. According to Hayden (2010), the tension and violence characterising the run-off would have been prevented but for the increasing number of rejected ballots. Gyampo (2009) posited that but for the high number of rejected ballots in the first round, Ghanaians would have been spared the tensions, agony, and anxiety of another run-off. The NPP lost narrowly with 49.77 per cent, and the NDC won with 50.23 per cent in the run-off.

According to the Commonwealth Observer Group report in 2012, the 2012 elections were one of the most keenly contested in the Fourth Republic. Seven political parties and an independent candidate contested. The NDC won in the first round with over 300,000 votes (50.70%), while the NPP lost with 47.74 percent. The opposition NPP challenged the results in an election petition at the Supreme Court, alleging various electoral infractions. After nearly eight months, the Supreme Court dismissed the petition and upheld the NDC as the winner. Total rejected ballots (2.23%) were very high in nominal terms, exceeding the valid votes of each of the six remaining parties and the independent candidate. The total rejected ballots exceeded all valid votes of the six other candidates combined (1.56% of the valid vote).

The 2016 election was the seventh consecutive election under the Fourth Republic, and the third time political power changed hands from a ruling party to an opposition party. Six political parties and an independent candidate contested. The NDC lost with 44.50 per cent as the NPP won with 53.72 per cent over nine hundred thousand votes, unprecedented in Ghana's political history. It was the first time a sitting president lost an election after his first term. Total rejected ballots (1.5% of votes cast) were unique as the first time rejected ballots had reduced significantly, approaching 1996 levels in percentage terms. However, the impact on election outcomes remained significant, as rejected ballots exceeded the votes of each of the remaining five candidates.

The 2020 election reversed the trend of an incumbent party losing after its first term. The NPP was seeking its second term after winning the 2016 poll by over 900,000 votes. Candidates representing 12 parties contested, including an independent candidate. The incumbent won with over 500,000 votes amidst stiff competition from the opposition NDC. The NPP won with 51.30 per cent, and the NDC lost with 47.36 per cent of valid votes. Total rejected ballots (2.33%) exceeded the votes of all remaining 10 candidates combined (1.34% of the valid vote). As in 2012, if rejected ballots were a political party, they would have placed third. However, because the margin of victory was significant, adding all rejected ballots as valid votes to the NDC candidate would still not change the outcome.

**Figure 2***Rejected Ballots and Election Outcomes, 1992-2020*

The 2024 presidential election was contested by 12 candidates, according to official records (11 male and 1 female). According to the Electoral Commission, the NDC candidate, John Dramani Mahama, won with 6,328,397 votes (56.55%), while the NPP candidate, Dr Mahamudu Bawumia, secured 4,657,304 votes (41.61%). The remaining ten candidates collectively received less than 200,000 votes.

The number of rejected ballots (239,109) exceeded the combined valid votes of all ten minor candidates (approximately 200,000). This means that, once again, rejected ballots could be described as the ‘Third Force’ in the election, a pattern observed in several previous elections (2000, 2008, 2012, 2020). The 239,109 rejected ballots represent 2.1 per cent of total votes cast, which is a slight decrease from 2.33 per cent in 2020, reversing the upward trend seen between 2016 and 2020. However, because Mahama’s margin of victory over Bawumia was over 1.6 million votes, even if all rejected ballots were added to Bawumia’s total, the outcome would not have changed. The EC Chairperson explicitly stated that even including all votes from the nine outstanding constituencies (totaling 947,116 registered voters) and adding them to Bawumia’s total, he would still have 46.17 per cent of the total valid votes, falling short of the 50 per cent plus one (50 %+ 1) threshold required to win.

4.5 Correlation Matrix Analysis

In the analysis, we used the coefficient of determination (usually expressed as a percentage) to quantify the proportion of variation in the dependent variable explained by the independent variable. The results of the correlation matrix analysis, indicated in Table 2 below, show a strong positive relationship between rejected ballots and the number of candidates on the ballots. The 77.8 per cent correlation indicates a strong relationship between rejected ballots and the number of candidates. On average, there have been seven candidates on each presidential ballot since 1992, which is relatively high and therefore accounts for the high number of rejected ballots over the years.

There is a strong positive relationship between registered voters and rejected ballots. The correlation value of 65.8 per cent indicates that as the number of registered voters increases, it results in a significant increase in rejected ballots. This also means that as more people register to vote, the more likely rejected ballots are to increase. There is a moderate positive relationship between turnout ratio and rejected ballots. The correlation value of 56.3 per cent indicates that an increase in turnout ratio in any election would increase rejected ballots. This means that as more people turn out to vote, the more likely rejected ballots are to increase. The findings from Table 2 indicate a moderate but positive relationship between rejected ballots and the illiteracy level of the electorate. The correlation value of 53.3 per cent indicates that as illiteracy rates of voters increase, it results in an increase in rejected ballots. Therefore, illiteracy increases the chances of rejected ballots. Finally, there is a moderate relationship between rejected ballots and when the New Patriotic Party (NPP) candidate is first on the ballot. The correlation value of 59.8 per cent suggests that when the NPP candidate was first on the ballot in those elections, more rejected ballots were recorded. When the NDC candidate is first on the ballot, the correlation is weak but positive, with a value of 31.6 per cent.

Table 2*Correlation Analysis of Rejected Ballots and Other Variables*

	Rejected ballots	Candidates	Registered voters	Valid votes	Turnout Ratio	Polling Station	Illiteracy level	Poverty incidence	NPP Position	NDC Position
Rejected Ballots	1.000									
Candidates	0.778	1.000								
Registered Voters	0.658	0.777	1.000							
Valid Votes	0.828	0.668	0.907	1.000						
Turnout Ratio	0.563	-0.067	0.122	0.526	1.000					
Polling Station	0.773	0.798	0.922	0.9201	0.281	1.000				
Illiteracy Level	0.533	0.601	0.948	0.883	0.177	0.885	1.000			
Poverty incidence	-0.631	-0.486	-0.886	0.940	-0.458	-0.789	-0.912	1.000		
NPP Position	0.598	0.700	0.392	0.350	0.006	0.420	0.092	-0.144	1.000	
NDC Position	0.316	0.063	0.117	0.264	0.342	0.003	0.198	-0.373	-0.316	1.000

Several patterns in Table 2 deserve narrative discussion. First, the negative correlation between poverty incidence and rejected ballots (-0.631) is noteworthy and counterintuitive. This finding suggests that districts with higher poverty rates actually recorded fewer rejected ballots, contrary to expectations that socioeconomic disadvantage might increase voting errors. This pattern may reflect differential mobilisation efforts, voting assistance programs in poorer areas, or the possibility that poverty incidence is proxying for other variables not included in our model. Second, the very strong correlation between poverty incidence and valid votes (0.940) and between poverty incidence and illiteracy level (-0.912) indicates complex interrelationships among socioeconomic variables that warrant further investigation. Third, the correlation between poverty incidence and registered voters (-0.886) suggests that poorer areas have lower voter registration rates, a finding consistent with the broader political economy literature on voter participation. The strong positive correlation between rejected ballots and the number of candidates (77.8%) remains the most important finding, supporting the ballot complexity theory. The correlation with illiteracy (53.3%) and turnout (56.3%) remains moderate, suggesting that while these factors play a role, the number of candidates on the ballot is the dominant predictor. Table 3 below reports p-values and 95 per cent confidence intervals for the key correlation coefficients to provide transparency about the reliability of our estimates despite the small N.

Table 3*Correlation Coefficients with P-values and Confidence Intervals (N= 9)*

Variable Pair	Correlation (r)	P-value	95% CI
Rejected Ballots & Candidates	0.778	0.014	[0.22, 0.95]
Rejected ballots & Registered voters	0.658	0.054	[-0.01, 0.92]
Rejected ballots & Turnout ratio	0.563	0.115	[-0.19, 0.89]
Rejected ballots & Illiteracy level	0.533	0.139	[-0.22, 0.88]
Rejected ballots & NPP position	0.598	0.089	[-0.12, 0.90]

Note: P-values are two-tailed; confidence intervals calculated using Fisher's z-transformation

The analysis treats each election year as a single national-level observation. However, we recognise that rejected ballots vary substantially across districts and constituencies within the same election. As noted in the literature, the proportion of spoiled ballots reached as high as 15.5 per cent in some districts, even when the national average was 2.2 per cent. District-level variation is theoretically important for testing illiteracy and poverty effects, as these factors vary considerably across Ghana's administrative regions.

The correlation analysis presented in this paper demonstrates associations between variables but cannot establish causal relationships. Unobserved confounding variables may explain the observed correlations. Therefore, we frame our findings as identifying statistical associations and patterns consistent with the theoretical explanations, rather than claiming definitive causal identification. The paper explicitly shows that the analysis is strictly national-level and

cannot explain subnational variation. Re-running the analysis with district-level data would increase the sample size (N) and allow testing of contextual effects, but such data are not consistently available across all election cycles. This remains an important direction for future study.

4.6 Discussion

The findings of this study on the determinants of spoiled and rejected ballots in Ghana's presidential elections present a complex picture that both aligns with and challenges existing literature. The paper's results offer important empirical contributions to understanding voter impairment, ballot complexity, and protest voting in African electoral contexts. The study's strongest finding, a robust positive correlation between the number of presidential candidates and rejected ballots ($r = 0.778$, $p = 0.014$), strongly supports ballot complexity theory as articulated in the literature review. This finding aligns with the theoretical framework presented, which drew from Anaman and Bukari (2019b) and Anaman and Bukari (2021) to argue that the number of candidates, the design of the ballot paper, and the cognitive burden of information processing systematically increase the likelihood of unintentional errors. This finding confirms that Ghana's experience mirrors global patterns where multiparty contests with numerous candidates create conditions for accidental ballot spoilage. The fact that rejected ballots exceeded the combined valid votes of all minor candidates in elections since 2000 (including 2024) substantiates the theoretical claim that ballot crowding has systematic electoral consequences.

The study provides longitudinal evidence across nine election cycles in Ghana, demonstrating that the relationship between candidate numbers and rejected ballots has been remarkably consistent despite changes in electoral administration and voter education. This contributes to the literature by showing that the ballot complexity effect is robust across varying political and institutional contexts. The persistence of rejected ballots at levels exceeding 2% of total votes cast, even in elections with simplified ballot designs and improved voter education, supports the protest voting theory. This aligns with the literature review's framing that spoiled ballots are an intentional signal of voter dissatisfaction with the available options, typically interpreted as a rational act of dissent when all viable candidates or parties are deemed unacceptable (Alidu & Bukari, 2020; Anaman & Bukari, 2021). The persistence of rejected ballots as 'the third force' in elections, particularly in 2012 and 2020, where they outperformed minor candidates, provides compelling evidence that some voters deliberately spoil ballots as a form of political expression. The study suggests a more nuanced interpretation than the protest voting literature typically allows. The finding that rejected ballots decreased significantly in 2016 (to 1.5% of votes cast) despite no major changes in ballot design or voter education suggests that protest motivations may be context-dependent. This aligns with Anaman and Bukari's (2019b) observation that invalid voting rates fluctuate with political crises and declining trust. The study also notes that the persistence of rejected ballots across elections, even when the number of candidates has varied considerably, also suggests a protest component. This nuanced view that protest voting coexists with accidental spoilage refines the protest voting literature, which sometimes treats these as mutually exclusive categories.

The study finds a moderate positive relationship between illiteracy and rejected ballots ($r = 0.533$, $p = 0.139$), which aligns with the literature review's emphasis on voter education. This finding is consistent with Anaman and Bukari (2019b), who found a significant negative relationship between literacy rates and spoiled ballots using district-level data. However, the weak statistical significance ($p = 0.139$) and moderate correlation (53.3%) suggest that illiteracy may be less dominant than some literature suggests. This partially challenges the emphasis in Ghanaian literature that positions illiteracy as a primary driver. The study's finding that other factors, particularly when the number of candidates, are stronger predictors, represents an important corrective to the literature that may overemphasize voter education deficits. The most surprising finding, a negative correlation between poverty incidence and rejected ballots ($r = -0.631$), directly contradicts much of the existing literature. Most studies (Anaman & Bukari, 2019b) assume that socioeconomic disadvantage increases the likelihood of voting errors. This finding represents a significant contribution to the literature, as it suggests that the relationship between socioeconomic status and invalid voting may be more complex than previously understood. It also raises questions about the appropriateness of aggregating national-level socioeconomic data, as district-level analysis might reveal different patterns. The moderate positive correlation between turnout ratio and rejected ballots ($r = 0.563$) is consistent with the literature suggesting that higher participation rates, particularly among first-time or less engaged voters, may generate more errors. This aligns with Anaman and Bukari (2021), who found that higher turnout was associated with more spoiled ballots, and Verjee (2013), which noted that mail ballot rejection rates increased with higher participation. The finding that registered voters correlate with rejected ballots ($r = 0.658$, $p = 0.054$) extends the literature by suggesting that the sheer scale of the electorate and the associated logistical challenges may contribute to higher rejection rates. This has implications for electoral management bodies, particularly in rapidly growing democracies. The finding that NPP position on the ballot correlates with rejected ballots ($r = 0.598$) while NDC position shows a weak correlation ($r = 0.316$) is a novel contribution to the literature. While ballot position effects have been studied in other contexts (e.g., the "primacy effect" in electoral psychology), this study appears to be among the first to examine this systematically in Ghana. This finding suggests that partisan mobilization or voter

confusion may interact with ballot order. It aligns with the broader political economy literature in Ghana (Ichino & Schündeln, 2012; Alidu & Bukari, 2020) that examines how party identification influences voter behaviour.

The paper's introduction of voter impairment as an analytical framework, distinguishing between Type 1 (inadvertent errors), Type 2 (deliberate protest), and Type 3 (administrative failures), represents a significant conceptual contribution to the literature. This framework addresses a gap in the literature identified in the review: the tendency to treat invalid voting as either exclusively protest or exclusively error. The study's finding that rejected ballots have consistently exceeded the combined valid votes of all minor candidates in elections since 2000 supports literature documenting the significance of rejected ballots in Ghanaian elections (Gyampo, 2009; Anaman & Bukari, 2019b; Anaman & Bukari, 2021). The study's observation that "rejected ballots could be described as the 'Third Force' in the election, a pattern observed in several previous elections (2000, 2008, 2012, 2020)" confirms the cumulative evidence from previous studies. The study's identification of specific temporal dynamics, the reduction in rejected ballots in 2016 and subsequent increase in 2020, followed by a slight decrease in percentage terms in 2024, adds nuance to the literature. While Anaman and Bukari (2019b) identified general trends, this study provides a more detailed analysis of fluctuations and their electoral consequences. The finding that 2024's rejected ballots exceeded the combined valid votes of all ten minor candidates continues the pattern identified in previous literature, demonstrating the persistence of this phenomenon despite electoral reforms.

The study's explicit acknowledgment of its methodological limitations, particularly the small sample size ($N = 9$) and the use of national-level rather than district-level data, represents a transparent contribution to the literature. This aligns with the literature review's recognition that district-level data on rejected ballots would increase statistical power, test contextual effects, and examine subnational variation. The paper's contribution to theoretical synthesis, integrating protest voting and ballot complexity theories while introducing the voter impairment framework, represents a significant advancement in the literature. This framework provides both analytical clarity and practical guidance for electoral reform. The persistence of rejected ballots across Ghana's elections underscores the need for continued research and evidence-based policy interventions to reduce voter impairment and strengthen democratic participation.

V. CONCLUSION & RECOMMENDATIONS

5.1 Conclusion

The paper examined the determinants of rejected ballots and analysed their impact on electoral outcomes and the impairment of voter participation. Rejected ballots have been a significant feature of Ghana's electoral democracy since the return to constitutional democracy in 1992. Results of the trend analysis of rejected ballots indicate that the phenomenon was less influential in determining election outcomes at the earliest part of Ghana's transition to constitutional rule (1992 and 1996) but began to have an electoral effect from the third general election onward (2000 onwards). Since the latter period, the results show that rejected ballots have continued to increase in nominal terms, affecting the outcome of presidential elections either by contributing to a run-off or affecting the margin of victory, except for the 2016 presidential election. In 2024, although the nominal number of rejected ballots decreased from 313,397 in 2020 to 239,109, they remained a significant factor, exceeding the combined votes of all ten minor candidates.

The correlation analysis revealed a strong positive relationship between rejected ballots and the number of candidates on the ballot (77.8%). The correlation value of 65.8% indicates that as registered voters increase, rejected ballots increase significantly. The results show a moderate positive relationship between turnout ratio and rejected ballots (56.3%). The results reveal a moderate but positive relationship between rejected ballots and illiteracy level (53.3%). Finally, there is a moderate relationship between rejected ballots and when the NPP candidate is first on the ballot (59.8%). When the NDC candidate is first on the ballot, the correlation is weak but positive (31.6%).

This paper makes three primary contributions to the literature on rejected ballots and electoral democracy in Africa: First, we demonstrate that both ballot complexity (number of candidates) and voter characteristics (literacy, turnout) are associated with rejected ballot rates, supporting an integrated theoretical framework that recognises both accidental and protest-based spoilage. The strong correlation with the number of candidates ($r = 0.778$) suggests that simplifying ballot design could reduce accidental spoilage, while the persistence of rejected ballots even in low-complexity elections suggests a protest component that requires political rather than technical solutions. Second, we provide the first systematic national-level analysis of rejected ballots across all nine presidential elections in Ghana's Fourth Republic (1992-2024), establishing baseline empirical patterns for future research. Our trend analysis reveals important temporal dynamics, including the dramatic reduction in rejected ballots in 2016, their subsequent increase in 2020, and a slight reduction in percentage terms in 2024. Third, it introduces conceptual clarity to the study of voter impairment by distinguishing inadvertent errors, deliberate protest, and administrative failures. This framework has practical implications for electoral reform, as each type requires different interventions.

However, the methodological limitations acknowledged in Section 3 constrain the generalisability of the findings. The small sample size ($N = 9$) means that the correlation coefficients, while suggestive, should be interpreted

with caution. Future studies with additional election cycles (as more data become available) and district-level disaggregated data would allow for more robust statistical inference, including multivariate regression analysis that can control for confounding variables and better establish causal relationships. Besides, distinguishing between purposeful and accidental spoilage at the individual level requires different data than that from voting behavior, exit polls, or qualitative interviews with voters who have spoiled ballots, which would provide valuable insights into the relative prevalence of protest versus accidental motivations. Despite these limitations, this paper establishes that rejected ballots are not merely a technical electoral nuisance but a significant phenomenon with implications for democratic representation, electoral outcomes, and voter participation in Ghana's democracy.

5.2 Recommendations

Based on the results, the paper recommends that the Electoral Commission of Ghana should consider reducing ballot complexity through reasonable ballot access requirements and by improving ballot paper design to reduce cognitive burden on voters. Also, the National Commission for Civic Education should initiate deliberate policy-level voter education programmes targeting populations with lower literacy levels and first-time voters, with particular attention to districts that have historically recorded high rates of rejected ballots. Polling stations should provide clearer voting instructions and assistance for voters with literacy challenges. The paper suggests further study on the protest motivations behind deliberate vote spoiling, including surveys and qualitative interviews with voters who have spoiled ballots, to understand whether dissatisfaction is with specific candidates, parties, or the political system more broadly. Finally, future studies should collect and analyse district-level data on rejected ballots to increase statistical power, test contextual effects, and examine subnational variation that the national-level analysis of the paper cannot capture.

Declaration of Interest

The authors declare that they do not have any known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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