Protecting Electoral Integrity in Emerging Democracies

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<u>Abstract</u>

A lack of electoral integrity in developing democracies undermines political accountability and the public good by yielding leaders who lack a governing mandate and curtailing robust participation. Despite significant resources from donors and citizen activism to improve the transparency of election processes and outcomes, poor administrative functioning, corruption, and barriers to political participation persistently undermine elections. This chapter presents the case study of "photo quick count" election monitoring technology and an ICT-enabled citizen adaption platform "VIP:Voice." Photo quick count is a low-cost, ICT-capable, independently managed monitoring system of elections results that provides polling station level photographic records of tally sheets to audit alongside scanned and certified results by a country's election commission at the conclusion of the election. The audit detects procedural failures by election officials and aggregation fraud (rigging that occurs in results transmission), either from officials directly changing tally results forms or computer hacking into results transmission systems. Photo quick count also has the ability to deter these administrative problems and corruption by announcing the audit to officials at individual stations. First deployed in Afghanistan, iterations in Uganda and Kenya helped develop usage across national coverage and new mobile devices. We pivoted to broadening adoption and functionality using a crowd-sourced functionality in South Africa with "VIP:Voice" that recruits citizen users entirely through ICT channels with no pre-existing infrastructure or direct engagement, and incorporate citizen volunteers for photo quick count. These studies further scientific knowledge and the evidence base on instruments for policy guidance among stakeholders on the mechanisms and costeffective tools to bolster institutional performance and elections at scale to improve government effectiveness and accountability for sustainable development.

Section 1. Development Challenge

Inclusive political institutions are associated with improved service delivery (Bueno de Mesquita et al. 2003), reduced corruption (Kolstad & Wiig 2016), and positive economic growth (Acemoglu et al. 2001). Two reasons for these patterns is that democratic governance reinforces political accountability by rewarding or punishing government performance (Barro 1973) and articulating the policy demands of the electorate (Manin, Przeworski, & Stokes 1999). Accordingly, the holding of competitive elections represents a promising benchmark in emerging democracies to promote good governance and rule of law as a road to economic development. To guarantee government responsiveness and communicate clear mandates from the public, the quality of a country's elections depends on robust participation and outcomes that reflect the will of the people. From voting to monitoring government action, citizens' contribution to governance strengthens institutions and elections provide a critical mechanism to improve public services and citizens' welfare.

But elections can only serve constructive purposes when conducted transparently with fair outcomes; problematically, many developing democracies lack credible electoral institutions and processes. Stories abound documenting cheating in contests from Afghanistan to Venezuela, and there are many reasons fraud persists. Many election commissions, the managerial body tasked with electoral management, frequently lack the internal capacity and appropriate technology to oversee election day operations and obtain reliable ballot counts. Politicians also exploit weak legal safeguards to corrupt elections in illicit ways, from voter suppression to rigging vote tallies, and election infrastructure is vulnerable to "hacking." From 1980-2010, upwards of 70% of all developing country elections registered reports by independent observers of significant problems (Kelley 2012). Citizens also face political exclusion due to numerous institutional and socio-demographic barriers that limit healthy participation, and the growing weaponization of information on digital media further degrades meaningful democratic practices. All told, while many poor countries have transitioned to democracy, a lack of quality elections increasingly undermines citizens' engagement (Norris 2014). The more a government reflects a corrupt vote, the less likely it pursues reforms necessary for development.

This case study recounts attempts to confront threats to electoral integrity in emerging democracies. The set of actors critical to the story include electoral commissions, politicians, and citizens in developing countries along with international organizations, academic researchers, and global publics. While the specific manner in which these groups work to protect or degrade democracy forms a central narrative of a country's political cycles – including an array of public and hidden actions – elections are also shaped by a set of intuitive and fairly generalizable plot points derived from the political economy and behavioral dimensions of how these actors organize or respond to fraud. Within the governance sector, election administration and security is perhaps unique in requiring some of the most urgent, yet simple, fixes to existing systems. As I describe, these fixes do not require radical technological shifts as much as important shifts in theoretical orientation and aspects of programming.

My personal interest in the topic of election security arose from academic and policy concerns, as well as dissatisfaction with the status of quo – of which I found myself participating. My first foray into electoral corruption started very publicly and by accident. In 2007, while conducting fieldwork in Kenya for my PhD dissertation, I witnessed fraud firsthand. I was working with partners to conduct an exit poll of Kenyan voters in a USAID-funded democracy assistance program with the International Republican Institute (IRI). For their purposes, IRI planned to use the poll as a check on certified results; for my purposes, I only planned to analyze the poll to understand citizens' electoral behavior, never seriously considering the possibility that the election might be rigged. But after allegations of fraud arose from a bungled vote count process, the exit poll became the only systematic source of data that provided a comprehensive check on vote totals (Gibson & Long 2009). While the European Union election observers witnessed illegal changes to vote tallies in a few instances, the exit poll – when compared to official returns – revealed a number of discrepancies in line with anecdotal reports and by enough to have incorrectly certified the incumbent president at the winner (Kanyinga, Long, & Ndii 2010). As a crisis mounted in Kenya with neither the government nor opposition backing down, IRI refused to release the poll's results (perhaps under diplomatic pressure from the Bush Administration to support the government, see McIntire & Gettleman 2009). Since the existence of the poll was widely known among media and policymakers, but not officially published, I received multiple requests to release its findings, which I was contractually prevented from doing until six months after the election and at which point the damage from the shambolic vote count would already play itself out. Rigging claims in Kenya's 2007 election resulted in sustained post-election violence – upwards of 2,000 deaths and 700,000 internally displaced people – and the collapse of what had been a robust (7%) economic growth rate (Kanyinga & Long 2012). IRI's refusal to provide the only comprehensive check on the results at a critical moment when Kenya's electoral integrity was being investigated did little to reinforce the democratic spirit with which millions of voters had turned out.

Witnessing these events firsthand inspired me to study electoral corruption and work with organizations in the governance sector to combat it. The international community has spent billions of dollars a year over the last four decades in democracy assistance to shore up elections in developing countries, and not just on exit polls. Donor efforts target institutional strengthening through technical assistance to election administrative bodies to ensure accuracy in voting procedures and the deployment of non-partisan observers to oversee electoral processes and outcomes (Hyde 2011). Third-party monitoring of elections should enhance election quality since independent oversight can provide important tools for improving the performance of election bodies. Motivated to contribute positively to these activities and disappointed by how things played out in Kenya, I eagerly joined a USAID-funded mission to support Democracy International's (DI) observation of Afghanistan's 2009 elections. Our team of advisors and monitors visited polling stations on election day, tracked the results, and lent other technical support. But in manner eerily similar to Kenya regarding the tallying and security of results transmission, problems of election management and the failure to produce accurate vote counts led to an uncertain process that the main candidates contested. Despite our presence, we could neither guarantee a fair process nor provide the requisite support to improve the election's management. This time, it was not because we lacked the will or succumbed to diplomatic pressure, or even because of another reason often quoted - that Afghans are not simply not "ready" for democracy (trust me, they are) – but rather because we were ill-equipped to anticipate and then action assistance necessary that would have better protected electoral administration. Vote totals were once again improperly aggregated and likely manipulated, and the election commission lacked the proper infrastructure to protect and certify results.

I quickly learned that experiences in Kenya and Afghanistan were not unique. Despite the near universal independent observation of elections in developing countries, electoral fraud abounds and the presence of foreign democracy assistance is actually more likely to be associated either with a null or negative impact on election quality than a positive one (Kelley 2011). I came to realize that the existing model may not work because the methods employed by these groups have not always taken into account changes in or threats to the electoral environment, evolving methods of "hacking," or the strategic response by election workers and politicians to observation. Such missions also do not consistently monitor or audit the results transmission and lack reliable measures of fraudulent activity; or in the cases that they do, potentially face outside pressure to suppress results (such as in Kenya). These missions also tend to lack comprehensive coverage of polling stations, an important constraint

we faced in Afghanistan, where the security required for international observers becomes cost prohibitive beyond only a handful of stations.¹ While the commitment to improve elections through donor aid remains, these limitations pointed to the need re-examine aspects of democracy assistance.

Fortunately, I was not alone in my thinking. After returning from Afghanistan to my life as a political science PhD student at UC-San Diego, quite by happenstance, a mutual colleague put me into contact with an economics graduate student on campus that I had never met. Mike Callen had been working in Afghanistan as well, on the relationship between governance and economic development, but as we begun to talk, I learned that he had also investigated the patterns of fraud in 2009 and shared many of my concerns with election observation. More importantly, both of us realized that none of the lessons learned or technical fixes were yet being implemented ahead of Afghanistan's upcoming parliamentary elections (slated for September 2010). DI told me that they would again have a presence on the ground and that they were eager to work to incorporate our research into their programming. Mike and I then decided to relocate our spit-balling sessions from San Diego's craft brewing scene to DI's office in Kabul to see what, if anything, could be done to develop better ways to detect and deter election cheating.

Looking at the evidence from Kenya and Afghanistan regarding changes to vote totals and the failure of other monitoring modalities, we did not see an obvious solution in existence. We understood that any improvement would need to confront core aspects of electoral management and the vote aggregation process, including the poor performance of administrative bodies to conduct counts properly and outside political influence to corruptly change vote totals. We also realized that no matter what solution we developed, we would be constrained by costs and security that would prevent anything like full monitoring of all activities at all polling stations. It occurred to us that one way around this would be to leverage the evolving nature of advances in information and communications technology (ICT) in developing countries, and attempts to mobilize citizen activists. ICT holds potential to better mobilize users to overcome barriers to participation in public acts; low-cost monitoring of bureaucratic performance; and to collect diffuse information regarding government service delivery. Curiously, prior election observation had often ignored these positive uses of ICT and citizen activism, and instead focused technologies in expensive and complex ways that have not improved election management. Our aim then was to harness the reality of Afghanistan's institutional context, understand the (often hidden) threats to election security, and incorporate citizen adoption to inspire new ways to overcome the programmatic and technical challenges of previous approaches.

We call the innovation that we developed "photo quick count." Photo quick count is a low-cost, ICTcapable, independently managed monitoring platform of elections results that provides polling station level photographic records of tally sheets to audit alongside scanned and certified results by a country's election commission at the conclusion of the election. By obtaining original records of vote results on tallies, the audit detects procedural failures by election officials and aggregation fraud (rigging that occurs in results transmission), either from officials directly changing tally results forms or computer hacking into results transmission systems. Photo quick count also has the ability to deter these administrative problems and corruption by announcing the audit to officials at individual stations. The inception and innovation for photo quick count was supported by DI and USAID's Development

¹ Callen & Long (2015) report that the largest international mission in Afghanistan in 2010 spent about \$10 million USD but was only able to visit 85 stations due to security concerns. While many missions do not report budgets, the European Union says it spends on average \$4 million USD per observation mission (European Union 2006). As calculated in Callen et al. (2016) and applied to the 643 stations the EU observed in Uganda, this costs on average \$6,220 per station.

Innovation Venture grant (DIV) of "phased" funding. Thus far, photo quick count has been performed by a group of in-country deputized citizen monitors that have been activated, managed, and trained by our research team and deployed for project purposes in Afghanistan, Uganda, and Kenya. Recently, our team has pivoted to broadening adoption and functionality using a crowd-sourced election monitoring in South Africa with "VIP:Voice," a bespoke ICT platform that recruits citizen users entirely through ICT channels with no pre-existing infrastructure or direct engagement by our team other than via the platform. Available across user devices, the platform allows any citizen to access election-related content, and obtains volunteers who agree to report on polling station activities and perform photo quick count.

Through rigorous evaluations, photo quick count and VIP:Voice have already furthered scientific knowledge and the evidence base on instruments for policy guidance on the mechanisms and cost-effective tools to bolster institutional performance and elections at scale. But readers will recognize that many of the problems recounted here now also plague the election security of many industrialized democracies. The knowledge transfers often promoted by research and policy communities from the global North to the global South has a different directionality in this instance, with vital contributions that developing countries are teaching us about protecting electoral integrity on a global scale.

Section 2. Implementation Context

Combating election fraud must confront manifold contextual, technical, and implementation challenges. Although countries present unique constraints to fair elections, our innovation grew out of how we understood these problems and attempts to overcome them both contextually and comparatively. A first constraint is perhaps the most obvious: politicians have incentives to cheat if doing so helps them win and they are unlikely to get caught or face sanction. Developing countries are more likely to face fewer safeguards to protect rule of law compared to industrialized democracies. Yet the possibility of corruption must also be weighed against the activities of citizens, civil society, and donors working to fight it. Governance is therefore one of the most sensitive development sectors to work in, and requires balancing a number of conflicting political interests of those running for office and voting in elections with the administrative duties of delivering a free and fair process.

A second challenge involves the countries themselves, where levels of state capacity and the nature of political competition hold the potential to shape election quality. Holding an election is never easy, and in fragile states with low bureaucratic capacity, like Afghanistan, it is administratively difficult and financially burdensome.² It is also dangerous. Taliban insurgents frequently disrupt Afghan elections (Condra et al. 2019), and even stronger states, like Uganda and Kenya, still often suffer perennial swells in violence during elections. These fragile and middling states contrast with countries like South Africa that have higher bureaucratic capacity and less fraud, but still have room to improve election management. The nature political competition is also an important contextual variable; party systems and electoral rules influence how candidates gain office and patterns of likely corruption.³

² Condra et al. 2018 document that Afghan elections cost the government about \$220 million USD per round (not including security costs), most of the funds coming from donors.

³ As discussed in Callen & Long (2015), the party and electoral system can drive the dynamics of electoral competition and therefore fraud strategies. Afghanistan's 2010 parliamentary election had thousands of candidates running for hundreds of seats with a single-non-transferrable vote (SNTV) across 34 provinces; fraud is therefore relatively decentralized with no party linkages to predict ex ante and large returns to fraud for numerous candidates. But in dominant party systems like Mexico under the PRI (Magaloni 2006), or competitive party systems where parties enjoy strong "vote bank" areas like Ghana (Ferree & Long 2016), corruption is likely to be either centralized nationally and controlled by one party or localized to areas of strong party support.

A third set of constraints is best understood from a theoretical point of departure that maps the political economy and behavioral dimensions of election fraud embedded within the institutional organization and set of actors relevant to election management. Perhaps surprisingly, most countries in the developing world run their elections in very similar ways that follow analogous, if not the same, procedures. Therefore for demonstration purposes I will adopt a general and uniform nomenclature to describe relevant electoral institutions and processes here, even though many words and concepts differ slightly across context.

Election commissions are bureaucratic agencies mandated with delivering a free and credible election. They are responsible for registering voters, hiring and overseeing poll workers, managing voting processes, tabulating results, and declaring winners. Election workers are embedded within a standard bureaucratic chain of delegation. Starting from the most local unit (Figure 1), at each polling station, what I term a polling *official* oversees voting and compliance with procedures opening the polling station, during the vote, and tabulating results. That official has a *manager* in charge of running the election process at administrative units higher than the polling station (e.g., constituency or provincial), who oversees and monitors all of the officials and polling stations in their area, or *district*. This includes receiving the election results that are sent by officials from individual polling stations to be aggregated and organized at the district level by the manager. At the national level, district managers are overseen by election *commissioners*, who run the nation-wide electoral process from the agency's headquarters and oversee all managers and officials. Commissioners declare a winner after a final vote tabulation, but election workers at every stage are important to bring the process to conclusion.

Figure 1 about here

Election commissions are a necessary but not sufficient condition required for a legitimate election. They face many of the "institutional pathologies" of public sector governance in developing countries (Olken & Pande 2016). Within the chain of delegation, three problems arise that threaten the ability of the commission to secure proper administrative procedures and without undue political interference. First, commissioners and managers face difficulty in the hiring process of polling station officials. These officials are not permanent workers with long-term contracting or incentives for performance pay, rather they are spot-market laborers who are hired for a very short period (the election) only occasionally with a contract renewal. Officials receive only minimum training, are provided wages that typically do not offset any wages they obtain from permanent positions, and while officials must demonstrate literacy and numeracy, such requirements are hard to enforce and heterogeneous across contexts.⁴ Performance pay could theoretically help improve the quality of the labor pool, but is probably too costly, does not address underlying problems of human resources and training, and would need to outweigh the amount an official could receive in a bribe.

Second, managers and commissioners lack reliable procedures and technology to oversee their agents. With a national exercise like an election occurring in a truncated time-frame, managers are not able to properly monitor the conduct of officials and the vote at individual polling stations, or keep watch on

⁴ South Africa requires at least 250,000 individual polling officials and managers to run the election and tally votes over a week's period every five years. Kenya hires about 45,000 individual officials and the equivalent of 230 district managers. In Afghanistan, where men and women voters cast ballots in separate polling stations, the commission often finds it difficult to recruit female presiding officers who meet numeracy and literacy requirements.

the vote tally and aggregation process.⁵ Commissioners are unlikely to be in a position to action every reported problem from managers across districts on a single day. While standardized chain-of-custody practices of protecting the transmission of tallies in the results process exist on paper, they are not properly enforced in many countries, particularly at levels of the aggregation process beyond the polling station (e.g., district and national levels, Figure 1). This occurs for a number of reasons. Officials frequently find it difficult to adjudicate discrepancies and may not be incentivized to report irregularities. Unfortunately, this structure provides opportunities to cheat, including administrators artificially and illegally changing vote totals for candidates directly on tally forms at district centers.⁶ As a result, managers may overturn results from polling stations, change them, or fail to enact investigations into differences. The national intake center at commission headquarters scans tally copies that they receive, which should be the same as what is posted at the polling station, and publicize and certify results on their website. But these totals often fail to reflect original totals, and candidates often seek to directly destroy evidence of the polling center count (including its tally) to then manufacture an entirely new tally that they insert into the chain of custody (Figure 1).

Third, election commissions – which should remain non-partisan and independent of political influence – are weak and vulnerable to outside influence from collusion by candidates with officials to rig in their favor, either on the transmission of paper tallies or computer hacking into results systems from outside computer networks.⁷ Collusion can involve direct bribe-paying at the level of official, manager, or commissioner; but the returns to bribing a manager or commissioner are much higher given their control over the aggregation process.

A final set of challenges to improving electoral integrity involves actors who operate directly outside of election management. Civil society and the international community desire fair results and lend diplomatic, financial, and technical assistance to elections. But curiously, much of the technology advocated by these organizations has actually made it harder to secure results transmission by overburdening officials with unnecessary tasks that slow them down and are prone to error, while at the same time failing to protect or integrating original ballots or tallies into stream-lined, easy-to-audit, and difficult-to-hack ways.⁸ To stop cheating at scale, an election needs polling station monitoring beyond areas typically visited by these organizations and in ways that actually catch cheating. Methods to recruit citizen volunteers over ICT to report on polling stations and vote returns is one avenue to increase coverage, but citizens face many institutional and personal constraints to free and fair participation in elections. Even if people have technology at their fingertips, it does not mean that they are motivated or equipped to use it to monitor actions by bureaucratic actors like election officials.

⁵ While South Africa has one of the best performing commissions in Africa, our observers still noted tallies missing in nearly 60% of polling stations in clear violate of administrative procedure.

⁶ I first learned anecdotally of illegal changes to tally sheets in Kenya's 2007, a pattern we further confirmed by a comprehensive investigation of tally differences in all districts (Kanyinga, Long, & Ndii 2010).

⁷ In Kenya's 2017 presidential election, the Supreme Court found forensic evidence of tampering directly with tally forms and computer hacking into the results transmission system (by likely domestic and foreign agents).

⁸ Afghanistan's new biometric voter identification system (supported by \$20 million USD from the international community) failed on election day in 2018 and did nothing to protect the integrity of results transmission, causing citizen protests before and after the election to shut down and delay the elections in some areas. Kenya's Integrated Management System (KIEMS), which cost the government upwards of \$1 billion USD (\$24 million USD donated by the US) was meant to upgrade and improve results sent over ICT for the 2017 election. The inability of thousands of officials to properly transmit results due to user, network, and administrative error over the system was apparent in real-time as the commission was attempting to aggregate and certify results electronically. They would eventually have to revert to original hard-copy tallies. While the Supreme Court eventually nullified this election, the opposition boycotted the revote given a lack of any upgrades to KIEMS or the results transmission system.

Section 3. Innovate, Iterate, Evaluate, Adapt

To improve electoral integrity our theory of change had to recognize the industrial organization of fraud in emerging democracies' elections as arising from institutional and behavioral elements of the actors described above. To innovate new ways to detect and deter fraud that occurs in the transmission of results, Mike Callen and I designed photo quick count. The cycle of innovation, iteration, evaluation, and adaption followed from pilot phasing in Afghanistan to nation-wide scaling in Uganda (2011) and Kenya (2013) with deputized citizen monitors recruited and managed by our team; pivoting to ICT-recruited and widespread citizen-adoption with VIP:Voice in South Africa (2014).

<u>a. Innovation</u>

The photo quick count intervention occurs in two phases, described here temporally. Phase 1 consists of a randomized announcement of an audit of polling station tallies. The announcement occurs by the delivery of a letter from one of our citizen election monitors given to the polling station official on election day during voting.⁹ The letter states that the official's station has been randomly selected to have its results audited, which will occur the next day when monitors return to the station to photograph the tally that officials are required by law to post publicly at the conclusion of the station's vote count (typically the evening of the election). In effect, the letter "reminds" officials that they are responsible for publicly posting the tally, and indicates that our monitor will photograph the tally to then compare to the certified result published at the conclusion of the election. The letter explains that this procedure helps to verify compliance with procedures at the polling station (e.g., the official's posting of the tally) and against the certified result (e.g., by the commission), recording any discrepancies and differences. The letter asks officials to sign acknowledging having received it, and our monitor takes the signed copy and leaves a copy with the official. Phase 2 occurs the next day when, as indicated in the letter, our monitors return to the same polling station to record whether the tallies have been posted and photograph the ones that are present. This is the technological aspect of the intervention, what we call photo quick count, which records whether procedures were followed in that tallies were posted, undamaged, and not removed after posting, and if properly posted, whether a polling center's tally matches the final and certified count.

The announcement of monitoring via the letter delivery and verification with photo quick count functions similar to other audits with measurement tools to detect irregularities, and in this context to encourage compliance with electoral procedures as proscribed by countries' laws and guard against aggregation cheating. This is because of how the tally itself functions in the results transmission process (Figure 1). Importantly, all of the countries in our studies require posting of tallies by officials - failure to do so is an abrogation of responsibilities and not posting is a bureaucratic failure of managers to not properly oversee officials. If the tally is posted, photographed, and the same as the scanned and certified tally published by the commission (made available on their website for public viewing), the audit verifies that no changes were made in the aggregation process by managers, commissioners, or other political actors. As designed, these original tallies are supposed to provide checks on certified results since the latter are carbon copies of the former that were originally filled at each station with identical copies sent along the delegation chain to managers at the district level and then commissioners at the national level (Figure 1). Electoral laws mandate that the results of the original tally be posted in a public and conspicuous place since they are the only official means by which an individual can see how their precinct votes (and citizens are legally allowed to view and photograph them, Figure 2). It is typical that many citizens and political agents from local communities

⁹ The monitors are in-country citizens recruited and managed by our team. They received the equivalent of two days of paid work for Phase 1 and 2, and attended one training session. They were not previously a part of any election mission.

examine tallies since they plausibly send a signal to those communities about the fairness of the election at that station. However, failure to post tallies, stealing or damaging of tallies, or inconsistencies in results between the original tallies and copies scanned by the commission reflect at best administrative failures and at worse the possible intention to manipulate the vote count process.¹⁰

Figure 2 about here

Counterfactuals: From our theory of change and photo quick count's tally fraud detection, we hypothesize that the announcement of monitoring of stations receiving the letter in Phase 1 are more likely to improve their procedures and experience fewer tally discrepancies compared to a station that did not receive a letter. To evaluate this possibility against a counterfactual, we selected a sample of audit-eligible stations. In Phase 1, we randomized the delivery of the letter in treatment stations with control stations receiving no letter. In Phase 2, for both treatment and control stations, our researchers followed the same protocols to conduct photo quick count. The evaluation compares these results to estimate the effect of the announcement via the letter delivery.

To understand how the two phases work concretely, I describe the first deployment in Afghanistan's 2010 parliamentary elections (Callen & Long 2015). We created an experimental sample of 471 polling centers (about 7.8%) that we determined were audit-eligible and could be visited by our team.¹¹ Of the 471 centers, we randomly selected 238 to receive the letter on election day (Phase 1) delivered by a team of Afghan monitors that we hired and trained, the remaining stations received no letter. The next day (Phase 2), our monitors returned to the stations that had received a letter on election day and the stations in the sample without a letter to perform photo quick count the morning after the election at which point officials should have posted tallies. They photographed tallies with digital cameras purchased by us for the project, which were not capable to transmit data in real-time but could save images on removable memory chips. While our initial hope was to crowd-seed smartphone devices to our monitors, we lacked the budget, time, and programming capability in the project period. If tallies were not posted or there was evidence they had been torn down, monitors investigated as to why and by whom (without interacting with any polling officials) and reported that information back to us.

Photo quick count documents numerous suspicious activities regarding tally postings by our monitors. Figure 3 shows a comparison taken by our monitors at a polling station (left-hand panel) and the scan of that polling station's tally received and published by the election commission in Kabul (right-hand panel) scraped from their website. These should be carbon copies and thus otherwise identical, but they differ in obvious ways. Someone has converted an original Dari script from the polling station into Arabic numerals scanned at the commission, the polling station official's name has changed, and the station tally records vote totals for several candidates that are entirely deleted from the commissions' tally. To see how these differences operated over the whole sample in Afghanistan, Table 1 records levels and types of differences between tallies. Importantly, tallies were damaged or removed at 62 of the sampled polling stations (13%), preventing any direct comparisons. But for the tallies observed in the remaining 341 stations, Table 1 shows that while there are no discrepancies recorded in 21%, the remaining stations had suspicious differences of adding, subtracting, or both.

¹⁰ As we report in Berman et al. (2019), thousands of complaints received by the Afghan Electoral Complaints Commission demonstrate that tallies were often stolen by political agents in order to take them to a secret location or another part of the aggregation chain (such as a provincial election center) to falsify results on them and reinsert them back into the count. ¹¹ The sample was limited to 19 of the country's 34 provinces and to provincial capital catchment areas within those centers, due to safety, administrative, and cost limitations.

Figure 3 & Table 1 about here

Table 1 indicates that one limitation we confronted with photo quick count is that many times the tallies were not posted or torn down at polling stations. This generated a lack of consistent measurement across the entire sample regarding candidate's originally posted vote totals to compare against their certified vote totals.¹² Our intervention and evaluation in Afghanistan and subsequent countries therefore makes use of other kinds of administrative data that further reveal measurement of likely administrative violations and fraud. Because commissions still publicize both scanned copies of tallies at the national center and separately certified data on polling station level results for each candidate on their website (even if tallies are not posted at stations), we obtain copies of commissions' scanned tallies and published results. We then investigate election forensics, which employs statistical analyses of observed vote distributions to detect suspicious or systematic irregularities indicative of fraud or that deviate from theoretical distributions that accord with a fair vote (Myagkov, Ordeshook, & Shakin 2009; Mebane 2008). Because we believed the audit announcement might differentially impact candidates based on their linkages to election administrators and therefore their ability to collude to change vote totals, we also employ qualitative data on candidates' backgrounds that identifies likely patterns of political linkages between politicians and election administrators.¹³ The combination of these data and tests with photo quick count help measure the full impact of the intervention.

b. Iterative Implementation

I address some of the possibilities and challenges of the operational, political, and technical environment of Afghanistan that influenced iterative implementation in Uganda and Kenya, which continued with support from DI and the addition of new colleagues from UC-San Diego. First, we wanted to deploy photo quick count but to do so at scale in a nation-wide and nationally representative sample of polling stations. Laterally, this scaling had to be cost-effective, so we considered ways to leverage photo capture with real-time data transmission over ICT using relatively cheap smartphones. We also wanted to test the effectiveness of the intervention in different institutional environments with variation in political dynamics that likely affect how political agents might influence bureaucratic functioning of commissions. While Afghanistan's commission was decentralized and the parliamentary elections featured no formal political parties and thousands of candidates across the country, some of whom had opportunities to collude with election officers, the institutional and political dynamics in Uganda and Kenya were different (and more tractable).

For Uganda's 2011 election, we expanded polling station coverage to 1,002 in a nation-wide sample (representative by region, see Callen et al. 2016). While this sample was more comprehensive of Uganda's electoral and institutional landscape than what we achieved in Afghanistan, it was also harder to access and manage. We tried to off-set this by having our monitors conduct photo quick count with an Android-enable smartphone app developed in partnership with Qualcomm that cost less than half the price of the digital cameras in Afghanistan (Figure 4 displays the app interface). We had to crowd-seed phones since many of our team did not yet have personal devices capable of photo quick count.

¹² We address treatment-related attrition for experimental estimates in Callen & Long (2015) and Callen et al. (2016).

¹³ For Afghanistan, the main parliamentary candidate's known connections with government officials was recorded from ethnographic profiles produced by DI since there are no party affiliations; in Uganda and Kenya, we relied on more straightforward relevant party, ethnic, and regional linkages.

The political dynamics that affect institutional performance in Uganda were also much different than Afghanistan. Rather than multiple sites of contact and influence by dispersed candidates with no formal political linkages, the election commission is staffed by a single dominant political force, the National Resistance Movement (NRM) and incumbent President Yoweri Museveni, who gained office after winning at war in 1986 and has won multiparty elections since 2006, when NRM always dominates. Uganda therefore has a high degree of centralization of political influence in the commission (at all levels) which was easier to predict ex ante but could also differentially impact the effects of monitoring. We also worried that the simple announcement of monitoring per the Afghanistan letter would potentially not operate as well in Uganda, so we developed a second version of the letter that not only announced monitoring but also included a message that reminded officials of the legally proscribed penalties for violations of the country's electoral law (Figure 5).

Figures 4 & 5 about here

The third deployment in Kenya built on the features of Uganda, with a truly nationally-representative sample of 1,200 polling stations, an improved open-sourced photo quick count app, and novel administrative data sources to look at measurement strategies built into political context as detected by photo quick count, including conducting a parallel exit poll of voters. Patterns of corruption in Kenya are less centralized overall than Uganda given the lack of a dominant party. Instead, two large and polarized political forces that have dominated recent elections and are backed in part by ethic coalitions exert control in their "vote-bank" areas (Long 2020), allowing localized and regional avenues of collusion with managers, and of which one coalition is also strong nationally with commissioners.

c. Evaluation

In Afghanistan, Uganda, and Kenya, we evaluate the randomized announcement of the tally audit of the vote results at sampled polling stations. In a first set of results, comparing the treatment sample relative to the control, the letter delivery positively improves measures directly observed by photo quick count and other administrative data sources. In Afghanistan, the letter delivery decreased the theft of tallies by 60 percent (from 18.9% to 8.1%) and reduced discrepancies in vote totals between photographed tallies and those certified by the electoral commission.¹⁴ The letter delivery had the largest reduction on votes for candidates who gained the most votes at individual polling stations (from about 21 to 15 ballots, or a 25% drop). In Uganda, where we observe a lack of posted tallies in about 78% of the entire sample, letter delivery decreased the practice of not publicly posting tallies between about 6 and 11 percentage points (depending on specification and letter version) and also reduced discrepancies in vote totals between photographed tallies and certified results for Museveni's votes per station from 8-16% (or 26-49 votes from an average of 307 per station). While Uganda introduced a second version of the letter reminding of penalties, we find no additional consistent effect of this letter compared to the announcement of auditing itself. We also observe that the letter reduced the propensity for adjacent digits (a forensic measure of fraud) by between 6-10 percentage points in Museveni's votes. Although preliminary, early analysis from Kenya shows similar effects of the announcement increasing the propensity of posted tallies and decreasing the likelihood of suspicious vote totals and differences between tallies and commission results.

In a second set of results, we document that the audit intervention seems to affect political actors differently given how political dynamics map on to institutions and likely rigging strategies. In general,

¹⁴ Given sample attrition per Table 1, we use a bounding exercise to estimate that this effect was between about 9 and 17 fewer votes changed during aggregation for candidates with known connections to the equivalent of the district manager.

the intervention appears to have the largest impact on candidates most likely to rig, followed in different ways by evidence of strategic re-adjustment (analogous to negative or positive spillovers). In Afghanistan, the treatment effects are largest for candidates with known linkages to election administrators (specifically, the equivalent of the district manager), but we also find evidence of a chilling effect from letter delivery. Using geolocations of polling stations in our sampled areas, polling stations that had a neighboring station within one kilometer treated with a letter also saw an additional loss of about seven votes for the most politically connected candidates. In Uganda, letter delivery had an impact on the polling station level results for Museveni reducing his votes by about 3 percentage points, however, we see evidence that in our sample, the central election commission appears to have slightly added votes back in his favor in monitored stations. In Kenya, rigging appears to occur at the more powerful coalition closely connected with commissioners at the national level had additional avenues for cheating and re-adjustment.

<u>d. Adaption</u>

Photo quick count produced scientific evidence on the use of randomized audits to bolster institutional performance and improve electoral integrity. At the same time, scaling was still linearly expensive and limited by the availability of ICT that still required crowd-seeding devices. We had yet to investigate the opportunities and constraints to widespread citizens' participation and their capacity for ICT-enabled monitoring given the deployment of monitors under the control of our team, and some political actors appeared to respond strategically to monitoring. If we wanted adaption at scale, we needed to pivot and re-orient our programmatic thinking and technological ambitions.

Pivot: Pivoting to citizen-based crowd-sourced monitoring required thinking through some core components of photo quick count. Broad coverage of polling station observations by voters obviates the need for a team of researchers announcing monitoring via a letter, but variegated factors shape voters' political participation and technology use. Many crowd-sourced platforms have encountered problems of uptake and usage in development applications; barriers to action and ICT usage must therefore inform the design and functionality of monitoring platforms.

Figure 6 about here

To do so, I worked with colleagues to build a new multi-channel ICT and digital media system for an entirely citizen-based election monitoring platform financed through USAID "phase 2" funding. We designed the system, branded "VIP:Voice," and launched it in South Africa before its 2014 election in partnership with developers at the Praekelt Foundation. VIP:Voice allowed citizens who registered with the system to engage with the electoral process by reporting their opinions on politics, campaign activities in their area, and other election-related matters in the lead up to polling day, including user reports on their election day experiences and monitoring of tallies. The platform was available on a variety of ICT channels accessible by users of basic phones, feature and smart phones, and web users. The platform differed from other interventions that leverage predefined organizations or lists of users obtained from registration drives, organizational memberships, or household surveys. Instead, it advertised on social media channels and "please call me" text messages (Figure 6).¹⁵ This design and

¹⁵ Please call me messages are free-to-user alerts that people can send to a contact requesting a (paid) call back – they are popular when individuals lack airtime credit to make direct calls and in South Africa are paid by advertising space embedded in the message.

functionality therefore did not limit usage to any segment of a society and multi-channel development eliminates the need to "seed" devices (they are able to rely on the devices participants already possess). Through our recruitment over SMS and social media, VIP:Voice was able to reach 50 million South African citizens, engaged with 250,000, and registered more than 90,000. Half of registered users came in through SMS "please call me" pushes on standard phone channels and half through social media channels (particularly "Mxit," which was South Africa's most popular social media channel at the time). From this, we also registered citizen volunteers in 37% of the countries electoral wards from a set of identified super users, hundreds of whom provided reports of polling station activities and hundreds of photographed tallies.

<u>Gender</u>: Digital access is not equal across demographic groups in developing countries. In South Africa, older, female, rural, and black citizens are all likely to lack the web-enabled smartphones that other groups employ, but they are still likely to own basic mobile phones. Because a goal of VIP:Voice was to obtain a nationwide yield of users that included people from all backgrounds, we had to explicitly consider how gender dynamics vary across ICT channels (Ferree et al. 2020).

VIP:Voice featured mechanisms to evaluate the efficacy of different types of engagement across the different channels, and a series of randomized experimental interventions on incentives and cost in the standard phone channel. Channels that were easier to use (with social media apps) had higher rates of engagement compared to text messages, but these user-friendly channels were more likely to see more engagement attrition over time. Many users registered with VIP:Voice with no external incentive offered, but small offers of incentives (free airtime or lotteries advertised within "please call me" alerts) improved levels of engagement. In a proof of concept experiment, from a list of about 42,000 super users, we got 17% to volunteer to observe elections (which was further improved by incentivization). Actual photo quick count monitoring documents numerous problems of tallies and differences in the commissions result, but these differences did not appear to systematically benefit one side and instead may have resulted from administrative problems.¹⁶ Although the salience of one important design consideration was not apparent at the time, VIP:Voice had the added benefit of providing citizens with real news about the campaign and election results under the control of researchers to guard against information weaponization.

<u>Responsible research</u>: Allowing citizens to serve the function of election monitor does nothing more than allow them to perform the same democracy-enhancing function as voting by providing reports on polling stations. But does that guarantee that all citizens are safe to monitor? This is a question that researchers must answer depending on context and that individual users must answer for themselves. We chose one of the safest election environments, South Africa, to build VIP:Voice, but any crowd-sourced platform must rely on trusting its users to know if and when it is too dangerous to report on government activity. And boosting participation, even if sometimes risky, should be weighed against the realities of corruption and inadequate service delivery that citizens in developing countries face every day and must collectively organized to overcome.

VIP:Voice shows that citizens can indeed be mobilized to take an active role in protecting institutions in the public realm, even where they do not receive immediate private benefits, but engaging and registering them over a digital platform to engage in real-world activities is also beset with many recruitment, technical, and programmatic challenges (Ferree et al. 2020; Erlich et al. 2018).

¹⁶ We also conducted a parallel study on locally enabled ICT professional monitors using the traditional photo quick count.

Section 4. Results/Lessons Learned

Our solution provides a competitive advantage to alternatives, such as expensive international observation missions, given its effectiveness at detection and deterrence of aggregation fraud and potential for citizen adoption. It also works in most countries at less than 1% of the per polling station cost of international missions (Callen et al. 2016; Ferree et al. 2020). The lessons learned from photo quick count and VIP:Voice have provided important insights informing ongoing work to translate previous project phases into improving the technical aspects VIP:Voice. In a new platform, colleagues and I aim to improve many of the technical limitations of VIP:Voice and further address participation barriers, recruitment, and engagement; at the same time as maintaining and growing the capacity for a professionally managed photo quick count of tallies with enough coverage to provide the minimum "risk-limiting" coverage.

Results from photo quick count and VIP:Voice tie to numerous literatures and provide insights that generalize to other contexts. They contribute to studies on the political economy of public sector corruption; evaluations of democracy and governance programs in emerging democracies; studies of election fraud; and connection to citizen-based ICT platforms in other development sectors.¹⁷ While election commissions form only one critical institution within the governance sector, there are common institutional challenges that apply broadly across bureaucratic functioning and rule of law related to oversight and monitoring of front-line officials and managers, how political linkages and connections outside of bureaucracies often undermine the performance of those bureaucracies, and whether audits work to improve agency capacity and citizen monitoring of government performance. Results offer guidance to organizations, activists, and developers regarding the usability of platforms like VIP:Voice for elections in other contexts where problems of participation, data quality and reporting, and electoral integrity can be improved with ICT.

Capacity: An independently managed audit via photo quick count by monitors can help election commissions improve their capacity and output where those commissions lack strength. For example, if a commission had real-time exposure to the information coming from audits, it could respond immediately or preserve records to include in adjudication of disputes later. In our experience, this possibility is likelier in cases where commissioners continue to be blamed for disputed results or where the commission is high performing already but wish to use our tools to manage the process better.

These positive aspects should be considered alongside numerous lessons learned for policy, some of which reveal a new set of challenges and fruitful avenues for research, technical development, and programming. First, adaption of photo quick count by election commissions, civil society organizations, and donors can help improve electoral integrity; but photo quick count only provides a check on integrity when it itself is non-partisan and independent, or done in conjunction with credible partners. It does not by itself resolve whether and how this possibility might be pursued in every country. If done in partnership with or by commissions directly, it also requires institutional actors that are fair and forthright. Even though many commissions lack capacity or are subject to influence, the growing precedent to prosecute commissioners and managers (as in Afghanistan) or nullify elections from poor management (as in Kenya in 2017 and Malawi in 2020) could change the

¹⁷ Because many features of VIP:Voice were agnostic as to the particular use of those features, we provide guidance on scaling to other sectors in international development where citizens' interaction with government agencies could be improved with monitoring and data capture to receive services, like health, education, agriculture, and financial inclusion.

thinking on the need for audit, the modalities required to conduct one, and how to preserve evidence to its effect. Given the alarming rate at which electronic systems are being hacked, photograph and paper-based audit methods are growing increasingly important to provide original copies of results.

International organizations and civil society groups are also plausibly well-placed to serve as third party "monitors-of-monitors" to facilitate the use of our tools given the other important advocacy work they are already doing to support democracy programming and technical assistance to commissions. But in our experience, beyond DI, it has been hard to find dependable international and civil society organizations to work with, and have revealed a number of second-order challenges that involve diplomatic and political considerations for donors (as I learned the hard way in Kenya) and non-political interference for civil society. I worry about the fidelity of the design of photo quick count and VIP:Voice and would want to ensure that the technology itself is deployed robustly and cannot itself be hacked, misused, or suppressed. Our fruitful partnership with USAID DIV gives me hope that these organizations could still play an important role funding or otherwise supporting independent applications of VIP:Voice as a separate component to their democracy assistance.

Section V. Summary

Our research contributes important evidence regarding Afghanistan, Uganda, Kenya, and South Africa's electoral process, the political economy of governance in election commissions in developing countries, and the viability of using photo quick count and VIP: Voice to improve electoral integrity. Although institutional pathologies of election administration persist, audits can work to improve accountability and guard against threats to results transmission. VIP: Voice provides important benefits to citizens both directly by engaging them in the election process and monitoring of their elections and indirectly by building confidence in the credibility of the process. Because the posting and comparison of results via tallies has important resonance for certifying the election, citizen monitoring plausibly could occur in a large enough sample to provide something like a minimum threshold, particularly alongside an independent manual audit. But recruitment problems and rates of attrition from registration to monitoring with citizen platforms also suggest that if a large number of users is desired, it takes more development time and continued pushes across ICT channels. These technical challenges must be considered in the design phase, and the time is ripe to action these issues. Citizens have now spontaneously begun to employ version of photo quick count in recent elections. In 2017, thousands of dispersed and unorganized Kenyans photographed tallies and posted results to social media with a series of dedicated hashtags, where comparisons often did not comport with the election commission's certified results. The Supreme Court then conducted its own audit of original paper tallies and a review of the electronic results transmission, a process revealing so many discrepancies they nullified the election and declared a revote. The importance of independent tally audits and citizen-based monitoring is only growing more salient as the integrity of elections around the world faces new and evolving threats.

Section VI. Discussion Questions

1) Under what conditions should government officials and bureaucratic agents be involved in performance audits?

2) What are the most productive ways to galvanize donors, civil society, and citizens to adopt new technologies to address needs in the governance sector?

3) How best might ICT improve citizens' political participation and ability to monitor government performance, at the same time as protecting respondent privacy and data security?

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Figures and Tables

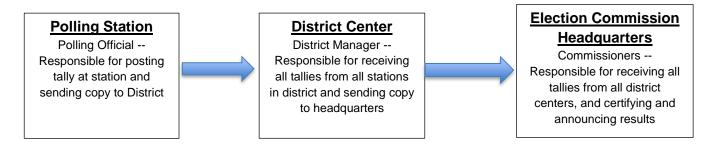


Figure 1: Bureaucratic organization and process of Aggregation of vote totals within an Election Commissions (adapted from Callen & Long 2015)



Figure 2: Afghan voters examining a tally form posted at a polling station (in Berman et al. 2019)

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Figure 3: Tally forms from the same polling station in Afghanistan (in Callen & Long 2015), left-hand panel shows photograph posted at station, right-hand shows scan at the election commission

Pattern of Discrepancies	Number of polling stations	Share of sample	
None	74	21.4%	
Adding votes (only)	70	20.2%	
Subtracting votes (only)	15	4.3%	
Adding and subtracting (equally)	15	4.3%	
Adding more than subtracting	127	36.7%	
Subtracting more than adding	45	13%	

Table 1 Patterns of discrepancies in tally aggregation process between photographed tallies at polling stations via photo quick count (sample of 341 stations) and commission tallies in Afghanistan (adapted from Callen & Long 2015)

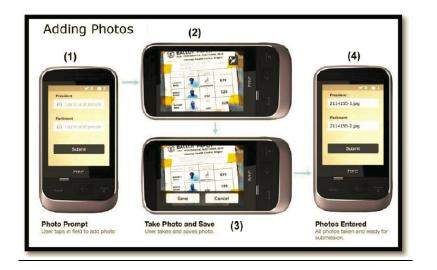


Figure 4: Photo quick count smartphone application on Android for Uganda (from Callen et al. 2016)

Urgent

February 18th, 2011

ATTENTION: The Presiding Officer, ONIGO CENTRE Polling Station

Re: Election Monitoring at ONIGO CENTRE Polling Station

Greetings! I am working with the University of California, an accredited election observation organization. We are providing this letter to tell you about some important information about your polling station.

As part of our effort to help Uganda have free and fair elections, we would like to take this opportunity to remind you of an important part of Uganda's electoral law. As you know, the Presidential Election Act of 2010 stipulates a punishment of up to a 2.4 million UGS fine and/or imprisonment of up to five years for any election officer who knowingly gives inaccurate information about the vote returns.

As another part of the observation effort, I will return to this polling station tomorrow in order to take pictures of the "Declaration of Results" forms that you are required by law to post publicly at this polling station. We will compare the results from the photos with the certified final count published by the EC in Kampala. AFTER the official EC certification, we will report these results on the internet (at www.uganda2011.org) and to newspapers. By doing this, the people of Uganda will be able to see if any changes have been made to the vote at ONIGO CENTRE Polling Station after the recording and posting of the "Declaration of Results" form. All Ugandans will be able to tell whether there have been any changes to the vote total, and they will know which candidate any change benefits. The following example shows how we will report this.

Please note that we are only doing this in a small number of randomly selected polling stations, yours included, but not every polling station. As an accredited observer, we are legally authorized to complete this activity.

In recognition that you have read and understood this letter, please sign here:

Thank you kindly for your help and cooperation!

The following is an example of how we will report results:

	Polling stat Certified Vote	ion: ONIGO Cl Total Votes from	ENTRE	-
Candidate:	from the EC in	Photographs at Polling Station	DIFFERENCE	
Candidate:	Kampala	Station		
Candidate A	100	600	+500	
Candidate B	600	100	-500	
Candidate C	14	14	0	
Candidate D	0	0	0	
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Figure 5: Election day letter announcing photo quick count in Uganda (from Callen et al. 2016)



Figure 6: Advertising for VIP:Voice platform in South Africa (from Ferree et al. 2020)