Virtual-Meeting Demands and Work Resources Associated with Organizational Citizenship Behavior in Ghana's Public Sector

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ABSTRACT

As virtual meetings become increasingly common in public-sector organizations, understanding how they relate to employees' willingness to contribute beyond their formal job responsibilities has become important. This study examines the relationship between virtual-meeting demands, relational and organizational resources, and organizational citizenship behavior (OCB) among public-sector employees in Ghana. Drawing on Job Demands–Resources theory and Social Exchange Theory, the study uses survey data from 347 employees with virtual-meeting experience and applies ordinary least squares regression to examine these relationships. The findings reveal that effective communication, trust, capacity building, perceived promotion fairness, and ergonomic and work-environment support are positively and significantly associated with OCB. In contrast, distractions, meeting duration, meeting frequency, technical difficulties, and an exploratory measure of physical engagement show negative estimated associations, although these relationships are not statistically significant. These findings suggest that employees' discretionary contributions in digitally mediated workplaces are more consistently associated with the quality of workplace relationships and organizational support than with the measured demands of virtual meetings. By examining these factors together, the study extends understanding of OCB within Ghana's evolving digital public-sector environment and highlights the importance of considering relational and organizational conditions alongside technological demands. Given the cross-sectional design, the findings are interpreted as associations rather than causal effects.

Keywords: digital collaboration; virtual meetings; organizational citizenship behavior; public sector; Job Demands–Resources theory; Ghana

1. INTRODUCTION

Digital collaboration systems have become part of the ordinary infrastructure of public-sector work. Video-conferencing platforms, shared digital workspaces, email, document-management tools, and virtual-office systems now shape how employees exchange information, coordinate tasks, maintain relationships, and participate in organizational life. Research initially emphasized the costs of this transition, including videoconference fatigue, nonverbal overload, restricted movement, self-view, and cognitive strain (Bailenson, 2021; Fauville et al., 2021; Riedl, 2022). More recent research is more balanced, showing that remote and virtual work can simultaneously create autonomy, flexibility, isolation, and coordination challenges (Gajendran et al., 2024; Rivkin et al., 2024). The resulting question is therefore not whether virtual work is intrinsically beneficial or harmful, but which configurations of digital work support constructive employee behavior.

One outcome for which this question is especially relevant is organizational citizenship behavior (OCB). OCB captures discretionary activities such as helping coworkers, conscientious contribution, courtesy, sportsmanship, and constructive participation in organizational life (Organ, 1988; Podsakoff et al., 2000). Public-administration research has developed a substantial OCB literature, while also showing that public-sector-specific contexts and mechanisms remain unevenly examined (de Geus et al., 2020). In digitally mediated public organizations, these behaviors remain relevant because service delivery and internal coordination can depend on cooperation that extends beyond formal job descriptions. Yet digital work changes the social conditions under which employees notice coworkers' needs, interpret organizational support, and decide whether to contribute beyond minimum requirements.

The issue has particular significance in Ghana, where public-sector digitalization has moved beyond isolated technology projects toward shared digital infrastructure. The National Information Technology Agency's Smart Workplace platform supports government email, document workflows, virtual meetings, and related collaboration functions (National Information Technology Agency, n.d.), while public-sector digital-skills initiatives have sought to strengthen employees' capacity to work through these systems (Ministry of Communications and Digitalisation, 2024). The 2021 Civil Service Annual Performance Report documents poor internet connectivity, inadequate digital/ICT equipment and working tools, and IT-training needs in relation to remote and virtual work across ministries and departments (Office of the Head of Civil Service, 2021, pp. 18, 121, 154–155). Ghana therefore offers a theoretically informative setting in which expanding digital infrastructure coexists with uneven organizational and work resources. This trajectory is consistent with wider evidence of digital platformisation as a public-sector transformation strategy in Ghana (Senyo et al., 2021).

This setting also connects with research on digitally mediated work and public-sector transformation in developing economies. Ghanaian studies have examined telecommuting adoption (Ansong & Boateng, 2018), virtualization of government-to-citizen engagement (Ofoeda et al., 2018), digital channels for local e-governance (Asamoah, 2019), and platform governance in e-government adoption (Abdul-Salam et al., 2026). International public-sector OCB research has mapped a broad set of antecedents and outcomes but calls for stronger contextualization and research designs (de Geus et al., 2020), while recent remote- and hybrid-work studies have examined OCB in settings outside Ghana (Lenz et al., 2023; Pedersen et al., 2026). What remains untested in this literature is the joint association of meeting-specific demands, relational resources, and organizational resources with OCB in Ghanaian public administration. The present study addresses that population-mechanism-context gap rather than relying on a general claim that digital work in Ghana has received limited attention.

The study therefore examines the same predictor set through three theory-guided interpretive blocks: virtual-meeting demands, relational resources, and organizational resources. The original predictor-level directional hypotheses preceded the present manuscript's theoretical refinement; the three-block JD-R/SET grouping was introduced during manuscript development as an interpretive structure rather than as a preregistered confirmatory architecture. Meeting-related variables include distractions, meeting length, meeting frequency, technical problems, and an exploratory physical-engagement indicator. Relational resources comprise effective communication and trust, while organizational resources comprise capacity building, perceived promotion fairness, and ergonomic/work-environment support. Job Demands–Resources (JD-R) theory provides the primary organizing logic because it distinguishes conditions that consume

effort from resources that enable goal attainment and motivation (Bakker et al., 2023). Social Exchange Theory (SET) complements the resource pathways by explaining why supportive and fair workplace conditions may elicit reciprocal extra-role contribution (Blau, 1964; Cropanzano & Mitchell, 2005).

The study therefore seeks to examine how virtual-meeting demands, relational resources, and organizational resources are associated with OCB in Ghana's digitally transforming public sector. The contribution is threefold. First, the study extends public-sector OCB research into digitally mediated meeting conditions in an African public-administration setting. Second, it distinguishes meeting-exposure and friction indicators from relational and organizational resources and examines whether these groups show different patterns of conditional statistical support within the same model, without claiming a formal between-block effect test. Third, it connects Ghana's institutional digitalization context to employee-level discretionary behavior, showing how digital infrastructure and organizational conditions can be examined together rather than treating Ghana only as the location of data collection.

2. LITERATURE REVIEW AND HYPOTHESES

2.1 Organizational citizenship behavior in digitally mediated work

OCB was originally defined as discretionary behavior that is not directly or explicitly recognized by formal reward systems but that supports effective organizational functioning (Organ, 1988). Although later work has refined the concept and distinguished citizenship directed toward individuals from citizenship directed toward the organization, the central idea remains extra-role contribution to the social and psychological context of work (Podsakoff et al., 2000, 2009). Meta-analytic evidence links affect, job satisfaction, and personality traits to affiliative and change-oriented forms of OCB (Chiaburu et al., 2022).

Digital work potentially alters the opportunity structure for OCB. Helping behavior may require deliberate messaging rather than spontaneous face-to-face interaction; civic participation may occur through virtual meetings rather than physical attendance; and courtesy may depend on digitally appropriate communication norms. At the same time, reduced visibility may make some forms of helping less observable. These changes make it theoretically useful to distinguish between the degree of virtuality and the quality of the digital work environment in which citizenship occurs.

2.2 Job Demands–Resources theory and virtual meetings

JD-R theory proposes that every occupation contains demands and resources whose balance shapes employee motivation and strain. Job demands require sustained physical, cognitive, or emotional effort, whereas job resources help employees achieve work goals, reduce the costs of demands, or stimulate learning and development. Contemporary JD-R theory emphasizes that demands and resources are context-specific and can operate across individual, team, and organizational levels (Bakker et al., 2023). This flexibility makes the framework especially appropriate for digital work, where the same technology may simultaneously create efficiencies and impose new cognitive or social requirements.

Videoconferencing research identifies several plausible digital demands. Frequent meetings can fragment attention; long meetings can intensify fatigue; technical problems interrupt task flow; background distractions compete for cognitive resources; and constrained physical or social interaction can increase the effort needed to communicate. The Zoom Exhaustion and Fatigue scale developed by Fauville et al. (2021) linked frequency, duration, and burstiness of virtual meetings

to greater fatigue. Riedl (2022) similarly conceptualizes videoconferencing fatigue as a stress phenomenon, while neurophysiological and behavioral studies have documented fatigue-related consequences of prolonged videoconferencing (Macchi & De Pisapia, 2024; Masjutin et al., 2024). Across 38 quantitative studies and 56 antecedents, Beyea et al. (2025) found the largest category-level association with videoconference fatigue for psychological factors (r = .24), with feeling trapped among the strongest individual antecedents. These findings caution against reducing videoconference burden to exposure alone.

This nuance matters for OCB. Citizenship behavior is discretionary and therefore may be particularly sensitive to resource depletion: when employees use more energy coping with friction, interruptions, or fatigue, they may have fewer resources available for voluntary helping or constructive participation. Yet because virtual interaction can also facilitate flow, flexibility, and coordination, meeting exposure should not automatically be assumed to reduce OCB (Gajendran et al., 2024; Rivkin et al., 2024). The present model therefore treats specific meeting conditions as demands rather than treating virtual work itself as inherently detrimental.

2.3 Virtual-meeting demands

Background distractions compete with the attention needed to process meeting content and respond to coworkers. Research on attention residue shows that switching away from unfinished or interrupted tasks can leave residual attention that impairs performance on the next task (Leroy, 2009; Leroy & Schmidt, 2016). In remote settings, household interruptions, environmental noise, and competing digital notifications can therefore increase attentional switching. From a JD-R perspective, repeated distraction is treated here as a demand because maintaining focus may require additional self-regulatory effort. The proposed association with OCB is a theory-based expectation rather than an already established direct empirical effect of distraction on citizenship behavior.

Longer and more frequent meetings may also function as demands when they reduce recovery time, fragment focused work, or create meeting overload. Research on videoconference fatigue has repeatedly considered duration and frequency as potential antecedents, although effect sizes vary across studies (Beyea et al., 2025; Fauville et al., 2021). Technical problems create a related form of friction by interrupting communication, delaying decisions, and increasing the effort required to participate. In the Ghanaian public-sector context, official reports have specifically identified connectivity and equipment constraints as barriers to effective remote work (Office of the Head of Civil Service, 2021).

H1a: Greater background distraction during virtual meetings is negatively associated with OCB.

H1b: Longer virtual-meeting duration is negatively associated with OCB.

H1c: Greater virtual-meeting frequency is negatively associated with OCB.

H1d: Greater technical disruption during virtual meetings is negatively associated with OCB.

The empirical model also included an exploratory variable labelled physical engagement. Archived construct documentation describes it as perceived physical/social engagement associated with virtual-meeting participation, but the source item, response anchors, and coding details are not preserved in the archived instrument available for this revision. It is therefore retained only as an exploratory archival indicator, is not assigned a directional hypothesis, and is interpreted

cautiously rather than as a validated construct distinct from physical discomfort or ergonomic support.

2.4 Relational resources: communication and trust

Effective communication is a central resource in digitally mediated work because it reduces ambiguity, facilitates coordination, and helps employees understand how their contribution connects to collective goals. Remote-work research identifies ineffective communication as a recurring work-design challenge (Wang et al., 2021), while communication satisfaction has been linked empirically to OCB (Chan & Lai, 2017). Virtual interaction can remove some nonverbal cues and make conversational repair more effortful, increasing the value of clarity, responsiveness, and well-managed information exchange. When communication is effective, employees are better able to identify coworkers who need help, coordinate voluntary effort, and participate constructively in organizational affairs. Communication is therefore theorized as a resource that lowers the coordination cost of discretionary helping rather than merely as a technical feature of meetings.

Trust is similarly important because OCB often involves vulnerability: employees spend time helping others, share knowledge without guaranteed reward, and undertake discretionary acts that may not be formally recognized. SET argues that high-quality social exchanges emerge through repeated reciprocity and trust (Blau, 1964; Cropanzano & Mitchell, 2005). Contemporary evidence supports a positive relationship between organizational trust and OCB, including two-wave research showing that trust promotes citizenship through identification and loyalty (Dai et al., 2022). Ghana-based research likewise indicates that human-resource development climate can foster OCB partly through organizational trust (Hayfron et al., 2023). In virtual work, where employees have fewer informal cues and less physical co-presence, trust may be particularly important for sustaining voluntary cooperation.

H2a: Effective communication in digitally mediated work is positively associated with OCB.

H2b: Trust in workplace relationships is positively associated with OCB.

2.5 Organizational resources: capacity building, fairness, and ergonomic support

Capacity building represents an organizational investment in employees' competence and adaptability. Training can reduce the effort required to use digital tools, strengthen self-efficacy, and signal that the organization values employee development. Sustainable training practices have been associated directly with organizational citizenship behavior, including OCB directed toward the organization and toward individuals, while Ghanaian evidence links a supportive human-resource development climate to OCB (Gupta et al., 2023; Hayfron et al., 2023). From a JD-R perspective, capability is a resource that helps employees meet digital work demands; from an SET perspective, developmental investment may be reciprocated through discretionary effort.

Promotion fairness captures a broader justice signal. When employees perceive advancement systems as transparent and merit-based, they are more likely to interpret the organization as fair and trustworthy. Organizational justice has long been associated with citizenship behavior because fair treatment strengthens social exchange and reduces the need to protect oneself from perceived exploitation (Colquitt et al., 2001; Whitman et al., 2012). In digital workplaces, where informal visibility and access to supervisors may vary, transparent promotion systems can become

especially important in assuring employees that virtual participation does not disadvantage career progression.

Ergonomic and work-environment support is also relevant because effective virtual work requires more than software access. Comfortable workspaces, adequate equipment, and appropriate workstation design reduce physical discomfort and enable sustained concentration. Research on remote work shows that separate workspace, ergonomic furniture, workstation adjustability, and systems-oriented virtual-office interventions are associated with better satisfaction, lower discomfort, and improved functioning (McAllister et al., 2022; Robertson et al., 2022). While such studies do not establish a direct OCB effect, JD-R theory supports treating ergonomic support as a resource that preserves energy for both in-role and extra-role behavior.

H3a: Capacity-building support is positively associated with OCB.

H3b: Perceived fairness of promotion practices is positively associated with OCB.

H3c: Ergonomic/work-environment support is positively associated with OCB.

2.6 Contextualized conceptual model

Figure 1 summarizes the contextualized model. Within Ghana's digitally transforming public sector, virtual-meeting demands are expected to constrain discretionary behavior by consuming cognitive and attentional resources, whereas relational and organizational resources are expected to support OCB through motivational, enabling, and reciprocal exchange mechanisms. The model therefore treats the public-sector digital context as the setting in which these demand and resource pathways operate.

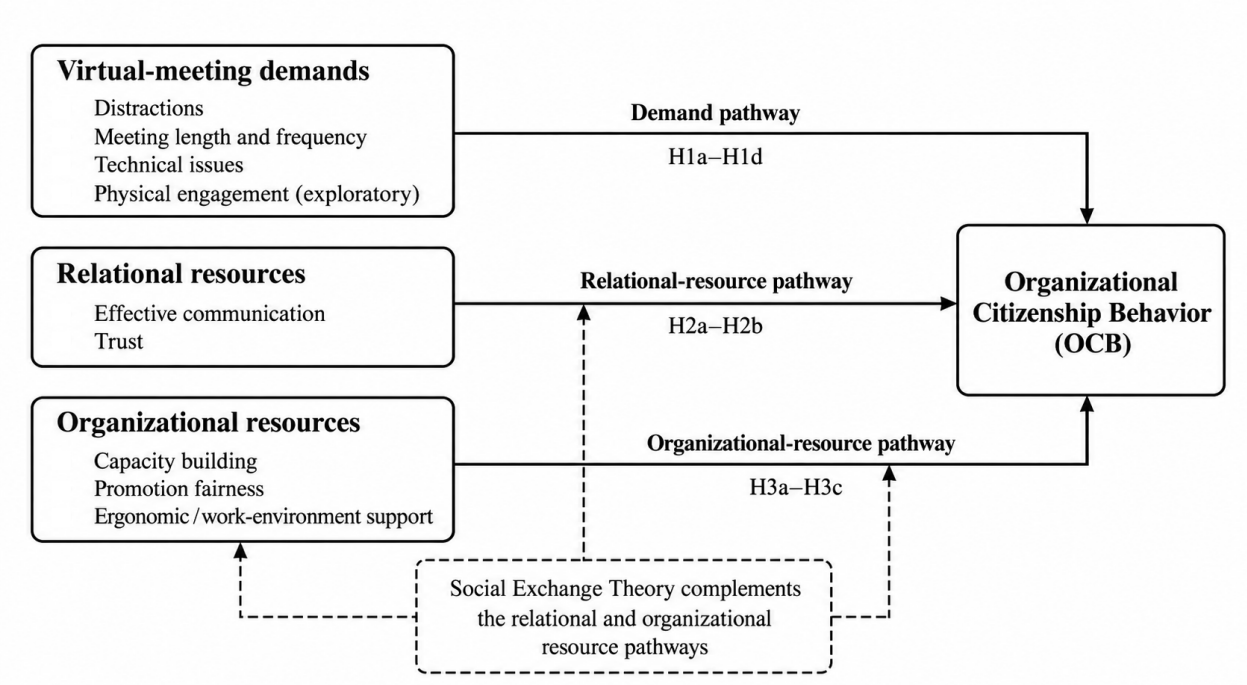


Figure 1. *Contextualized model of virtual-meeting demands, relational resources, organizational resources, and organizational citizenship behavior*

Note. Solid paths denote hypothesized associations with OCB. Physical engagement is exploratory and is not assigned a directional hypothesis. JD-R = Job Demands–Resources theory; SET = Social Exchange Theory; OCB = organizational citizenship behavior.

3. METHOD

3.1 Research context and design

The study used a quantitative, cross-sectional observational survey design to examine associations between digitally mediated meeting conditions and OCB among employees in Ghana's public sector. The design supports estimation of conditional associations at a single point in time but does not establish temporal ordering or causality. Data collection was conducted from 1 May to 14 June 2023, a field period of approximately six and a half weeks. The electronic questionnaire was launched on 1 May 2023, two reminder messages were circulated during the field period, and the survey was closed on 14 June 2023 before analysis commenced.

The Ghanaian public-sector context is integral to the research design. Official sources document Smart Workplace and related government digital-collaboration tools (National Information Technology Agency, n.d.) and record poor internet connectivity, inadequate digital/ICT equipment and working tools, and IT-training needs associated with remote and virtual work (Office of the Head of Civil Service, 2021, pp. 18, 121, 154–155). These sources are used for institutional description rather than theoretical or causal claims. Prior scholarly studies similarly show that telecommuting adoption and process virtualization in Ghana depend on contextual organizational and social conditions (Ansong & Boateng, 2018; Ofoeda et al., 2018). The study therefore examines virtual meetings as part of a broader public-sector digital-work environment shaped by local infrastructural and organizational conditions.

3.2 Participants and sampling

The final analytical sample comprised 347 Ghanaian public-sector employees who participated in virtual meetings. The individual employee was the unit of analysis. Eligibility required public-sector employment and experience with virtual meetings, and the electronic survey was circulated purposively to employees in roles where virtual communication was relevant. The questionnaire did not request respondents' employing institutions, and no organization was treated as a sampled research site or analytic cluster. The archived materials do not preserve the total number approached, the number of returned questionnaires, or a complete response/exclusion flow; therefore, a response rate and selection/nonresponse bias cannot be reconstructed. Table 1 summarizes the sample. Frontline service provision represented 42.1% of respondents, followed by administrative support (27.4%), technical roles (14.1%), policy development (9.2%), and project management (7.2%). The sample was 74.6% male and 25.4% female. Age groups were 18–35 years (45.5%), 36–45 years (38.3%), 46–55 years (15.0%), and 56–60 years (1.2%). These distributions are descriptive rather than population-representative. No a priori power analysis is documented; a retrospective sensitivity calculation indicates that N = 347 with 10 predictors provides approximately 80% power at $\alpha = .05$ to detect an overall multiple-regression effect of about $f^2 = .048$.

Table 1. Demographic and Job-Function Characteristics of Respondents (N = 347)

Characteristic	Category	%
Gender	Male	74.6

Characteristic	Category	%
Gender	Female	25.4
Age	18–35	45.5
Age	36–45	38.3
Age	46–55	15.0
Age	56–60	1.2
Job function	Frontline service provision	42.1
Job function	Administrative support	27.4
Job function	Technical roles	14.1
Job function	Policy development	9.2
Job function	Project management	7.2

Note. Data are from the authors' survey (2023).

3.3 Survey measures, scoring, and documentation

The questionnaire was developed from the study objectives and relevant literature and was reviewed for wording and relevance before administration. The archived instrument contains demographic items; categorical items for virtual-meeting frequency and duration; meeting-format choices; a five-category communication-effectiveness item; a work-task engagement item; a multi-select meeting-challenge item; one global OCB-frequency item; and five change items covering altruism, conscientiousness, sportsmanship, courtesy, and civic virtue. The manuscript does not claim that these items form an adopted validated OCB scale. Table 2 reports the measurement information that can be verified from the archived instrument and identifies documentation gaps.

The dependent variable is the archived OCB composite used in the original analysis. Predictors are effective communication, trust, capacity building, promotion fairness, ergonomic/work-environment support, physical engagement, distractions, meeting length, meeting frequency, and technical issues. For interpretation, they are grouped as virtual-meeting demands, relational resources, and organizational resources; physical engagement is exploratory. The archived materials preserve response categories for several meeting, communication, and OCB items, but do not preserve the exact OCB aggregation rule, range, reverse coding, missing-item rule, or reliability estimate. They also do not preserve complete item-level provenance, response anchors, or reliability/validity evidence for several resource indicators. These variables are therefore retained as archival coded indicators and interpreted cautiously rather than reconstructed.

Table 2. Measurement and Coding Information for the Analytical Variables

Variable	Conceptual role	Verifiable archived measurement information	Documentation/interpretive note
Meeting frequency	Virtual-meeting demand	One item: Daily; Several times a week; Weekly; Less frequently.	Numeric coding follows archived dataset.
Meeting length	Virtual-meeting demand	One item: <30 min; 30–60 min; 1–2 h; >2 h.	Numeric coding follows archived dataset.
Technical issues	Virtual-meeting demand	Challenge selected: poor connection/software problems.	Presence/absence documented; exact coding from dataset/codebook.
Distractions	Virtual-meeting demand	Challenge selected: distractions in remote environment.	Presence/absence documented; exact coding from dataset/codebook.
Effective communication	Relational resource	One 5-category item: Very effective to Very ineffective.	Single-item perception; units not comparable across scales.
Trust	Relational resource	Indicator included in original model.	Source item(s), anchors, count, reliability/validity not preserved.
Capacity building	Organizational resource	Indicator included in original model.	Source item(s), anchors, count, reliability/validity not preserved.
Promotion fairness	Organizational resource	Indicator included in original model.	Source item(s), anchors, count, reliability/validity not preserved.
Ergonomic/work-environment support	Organizational resource	Indicator included in original model.	Source item(s), anchors, count, reliability/validity not preserved.
Physical engagement	Exploratory meeting condition	Archived description: perceived physical/social engagement in virtual meetings.	Source item/anchors not preserved; exploratory only.
OCB composite	Outcome	One global frequency item plus five change items: altruism, conscientiousness, sportsmanship, courtesy, civic virtue.	Composite scoring, range, missing rule, reverse coding, and reliability not preserved.

Note. Compiled by the authors from the archived questionnaire and analysis documentation

Core operational information is reported in the main manuscript. Where item-level documentation cannot be recovered from the archived study materials, the variable is identified as an archival coded indicator. Deidentified data supporting the reported findings are available from the corresponding author on reasonable request, subject to respondent-confidentiality safeguards.

3.4 Ethical considerations

Participation was voluntary and involved adult public-sector employees responding in their individual capacities. The electronic survey introduction explained the study purpose, confidentiality and anonymized/aggregate reporting before respondents proceeded; submission indicated consent to participate. No employing institution was recruited as a research site, institutional identifiers were not collected for analysis, and no institutional records were accessed. Formal institutional ethics committee approval or an exemption reference number was not obtained at the time of data collection, and no such approval or exemption is claimed.

4. ANALYSIS

Ordinary least squares (OLS) regression was used to estimate conditional associations between the ten predictors and the archived OCB composite for 347 respondents. Because exact item-level scoring and scale ranges are not fully preserved, OLS is reported as the original model rather than as a newly re-estimated model-choice test. Results therefore emphasize unstandardized B, conventional standard errors, t statistics, two-sided p values, 95% confidence intervals, and overall model fit without ranking coefficients across differently scaled predictors. The predictor-level directional hypotheses preceded the later three-block JD-R/SET interpretive grouping. The original software/version and complete diagnostic outputs are not preserved. Omnibus and Jarque–Bera tests are reported only as limited residual-normality checks; VIF/tolerance, heteroscedasticity, influence, standardized-effect, alternative-control, and original missing-data diagnostics cannot be independently reconstructed. Gender, age, and job function were descriptive and were not included as controls; residual confounding remains possible.

5. RESULTS

5.1 Multivariable regression

As shown in Table 3, the reported OLS model was statistically significant, $F(10, 336) = 22.77$, $p < .001$, with $R^2 = .404$ and adjusted $R^2 = .386$. The ten predictors therefore accounted for 40.4% of the observed variance in the archived OCB composite in this sample. The original output reported Prob(Omnibus) = .772 and Prob(Jarque–Bera) = .814; these results provide no strong evidence of residual-normality departure by those tests, but they do not establish linearity, homoscedasticity, absence of multicollinearity, or absence of influential cases.

Table 3. Ordinary Least Squares Regression Coefficients Predicting Organizational Citizenship Behavior

Predictor	B	SE	t	p	95% CI low	95% CI high
Physical engagement	-0.4268	0.289	-1.477	.141	-0.995	0.142
Distractions	-0.4330	0.271	-1.599	.111	-0.966	0.100
Meeting length	-0.1255	0.294	-0.426	.670	-0.704	0.453
Meeting frequency	-0.3857	0.277	-1.391	.165	-0.931	0.160
Technical issues	-0.1511	0.284	-0.533	.595	-0.709	0.407
Effective communication	2.9963	0.284	10.534	< .001	2.437	3.556
Trust	1.6139	0.284	5.676	< .001	1.055	2.173
Capacity building	1.1424	0.285	4.003	< .001	0.581	1.704
Promotion fairness	1.5000	0.272	5.516	< .001	0.965	2.035
Ergonomic/ work-environment support	1.0631	0.263	4.038	< .001	0.545	1.581

Note. B = unstandardized coefficient; SE = conventional OLS standard error; CI = confidence interval. N = 347; R^2 = .404; adjusted R^2 = .386; $F(10, 336) = 22.77$, $p < .001$. All coefficient tests are two-sided. Because predictor scale documentation is incomplete for several archival indicators, B values are not compared as standardized effect sizes.

Five predictors had positive estimates whose 95% confidence intervals excluded zero: effective communication (B = 2.9963, 95% CI [2.437, 3.556], $p < .001$), trust (B = 1.6139, 95% CI [1.055, 2.173], $p < .001$), promotion fairness (B = 1.5000, 95% CI [0.965, 2.035], $p < .001$), capacity building (B = 1.1424, 95% CI [0.581, 1.704], $p < .001$), and ergonomic/work-environment support (B = 1.0631, 95% CI [0.545, 1.581], $p < .001$). Because the coefficients are unstandardized and several predictor scales are incompletely documented, they are interpreted individually rather than ranked by magnitude.

The confidence intervals for physical engagement, distractions, meeting length, meeting frequency, and technical issues included zero; these predictors were not statistically supported in the adjusted model. Their coefficient signs are not interpreted as directional evidence.

5.2 Hypothesis assessment

Table 4 consolidates the hypothesis decisions using the coefficient estimates, confidence intervals, and p values from the adjusted model. Physical engagement remains exploratory and is not treated as a directional hypothesis.

Table 4. Hypothesis Test Results for Virtual-Meeting Demands and Work Resources

Hypothesis	Predictor	Expected direction	B	95% CI	p	Decision
H1a	Distractions	Negative	-0.4330	[-0.966, 0.100]	.111	Not supported
H1b	Meeting length	Negative	-0.1255	[-0.704, 0.453]	.670	Not supported
H1c	Meeting frequency	Negative	-0.3857	[-0.931, 0.160]	.165	Not supported
H1d	Technical issues	Negative	-0.1511	[-0.709, 0.407]	.595	Not supported
H2a	Effective communication	Positive	2.9963	[2.437, 3.556]	< .001	Supported
H2b	Trust	Positive	1.6139	[1.055, 2.173]	< .001	Supported
H3a	Capacity building	Positive	1.1424	[0.581, 1.704]	< .001	Supported
H3b	Promotion fairness	Positive	1.5000	[0.965, 2.035]	< .001	Supported
H3c	Ergonomic/ work support	Positive	1.0631	[0.545, 1.581]	< .001	Supported
Exploratory	Physical engagement	None assigned	-0.4268	[-0.995, 0.142]	.141	Not statistically supported

Note. B = unstandardized regression coefficient; CI = confidence interval. Physical engagement is exploratory and has no assigned directional hypothesis.

6. DISCUSSION OF RESULTS

The central finding is not that virtual meetings uniformly improve or damage citizenship behavior. Rather, the adjusted model shows a different pattern of statistical support across the measured demand and resource variables. Effective communication, trust, capacity building, promotion fairness, and ergonomic/work-environment support had positive confidence intervals that excluded zero, whereas physical engagement, distractions, meeting length, meeting frequency, and technical problems were not statistically supported. No formal between-block comparison or standardized effect comparison was conducted, so the results should not be read as proof that one class of variables is statistically stronger than another. The pattern instead shifts attention from a

general ‘impact of virtual meetings’ claim toward the organizational conditions that accompany discretionary behavior in digital work.

This interpretation is consistent with the direction of recent hybrid-work research. Pedersen et al. (2026) found that the extent of remote work itself did not predict OCB among Danish knowledge workers, while relational variables were more informative. Lenz et al. (2023) similarly showed that virtual work in the public sector cannot be reduced to a pure hindrance demand: it related positively to OCB as well as to counterproductive work behavior. Gajendran et al. (2024) reach a comparable conclusion at the broader remote-work level, showing simultaneous positive and negative pathways through autonomy and isolation. Together with the present results, this literature suggests that virtuality is an incomplete explanation; what matters is how virtual work is organized and socially supported.

The nonsignificant coefficients for meeting frequency, meeting length, technical issues, and distractions deserve interpretation rather than being treated as failed hypotheses. One possibility is that these conditions create strain but do not directly determine whether employees choose to engage in citizenship behavior. Employees may tolerate inconvenience while continuing to help colleagues when relational and organizational resources remain strong. This would be consistent with JD-R theory, where resources can support motivation even in demanding environments.

One plausible explanation, requiring direct testing, is that the association between meeting exposure and employee outcomes is nonlinear or conditional. Videoconference studies show that duration and frequency alone do not capture all antecedents of fatigue; psychological mechanisms such as feeling trapped, nonverbal load, self-presentation, meeting norms, and task characteristics may also matter (Bailenson, 2021; Beyea et al., 2025; Wang & Prester, 2025). Rivkin et al. (2024), by contrast, examined flow and found that virtual-meeting time could coincide with beneficial functioning under favorable conditions. Those studies concern fatigue or flow rather than OCB, so they do not establish the mechanism in the present data. They motivate future tests of whether meeting conditions influence OCB indirectly through fatigue, flow, social presence, or engagement.

A third explanation is statistical. Because the study is cross-sectional and self-reported, the model estimates partial associations rather than temporal effects. Meeting variables that correlate weakly with OCB in isolation may become nonsignificant once communication, trust, and organizational support are included. Future work should test whether fatigue, social presence, or work engagement mediates the relationship between meeting characteristics and OCB rather than assuming a direct path.

Effective communication showed a positive, statistically supported conditional association with OCB. This is theoretically plausible because citizenship behavior requires awareness of others’ needs and coordination beyond prescribed tasks. In virtual environments, unclear communication can increase the coordination cost of helping: employees may not know who needs assistance, whether a request is urgent, or how voluntary effort fits collective goals. Clear, responsive communication can lower these costs and thereby support opportunities for OCB. This interpretation is consistent with remote-work evidence on ineffective communication as a work-design challenge (Wang et al., 2021) and with evidence linking communication satisfaction to OCB (Chan & Lai, 2017).

Trust complements communication by reducing the social risk attached to discretionary effort. Employees who trust colleagues and supervisors are more willing to share information, provide

assistance, and contribute beyond minimum requirements because they expect such contributions to be recognized within a reciprocal relationship. Dai et al. (2022) show that organizational trust promotes OCB through identification and loyalty, and Hayfron et al. (2023) demonstrate the relevance of trust within a Ghanaian human-resource development context. The present findings extend this logic into virtual public-sector work, where reduced co-presence may make trust an especially important substitute for direct monitoring and informal reassurance.

The positive coefficient for capacity building is also theoretically meaningful. Digital transformation is not simply a matter of installing platforms; employees need the confidence and skills to use them effectively. Training reduces effort costs and can signal organizational investment. This interpretation aligns with Ghana's continued emphasis on public-sector digital skills through DigSMART and with research linking sustainable training or HRD climate to organizational citizenship behavior (Gupta et al., 2023; Hayfron et al., 2023).

The study's promotion-fairness indicator also showed a positive, statistically supported association. The archived construct documentation describes it as perceived fairness and transparency of promotion arrangements, but the source item(s), response anchors, and validation evidence are not preserved in the archived instrument available for this revision. The discussion therefore does not treat the indicator as a validated broad organizational-justice scale. At a conceptual level, justice research shows why perceived fairness can matter for citizenship behavior (Colquitt et al., 2001; Whitman et al., 2012), while SET provides a mechanism through which fair treatment may be reciprocated through extra-role contribution. The present estimate should nevertheless be interpreted narrowly as an association involving the study's archived promotion-fairness measure.

The positive ergonomic/work-environment support coefficient broadens the concept of digital support beyond communication technology. Virtual work depends on physical conditions, equipment, and the ability to sustain concentration without discomfort. Telework research finds that ergonomic furniture, adjustability, training, and systems-oriented virtual-office interventions can improve comfort, satisfaction, and performance (McAllister et al., 2022; Robertson et al., 2022). In JD-R terms, such support preserves physical and cognitive resources that employees can allocate to both formal tasks and discretionary behavior.

The Ghanaian context provides important institutional background for interpreting the model. NITA's Smart Workplace description documents government use of collaboration functions including Microsoft Teams, email, document management, and workflow tools (National Information Technology Agency, n.d.), while the DigSMART programme documents investment in public-servant digital skills (Ministry of Communications and Digitalisation, 2024). The Civil Service 2021 Annual Performance Report also records internet-connectivity problems, inadequate ICT equipment/working tools, and IT-training needs (Office of the Head of Civil Service, 2021). These official sources establish programme and infrastructure context; they are not used to infer causal relationships with OCB. The theoretical interpretation instead rests on scholarly work showing that digital-work outcomes depend on organizational, social, and institutional conditions (Ansong & Boateng, 2018; Ofoeda et al., 2018; Asamoah, 2019; Zook et al., 2026).

Taken together, this institutional context makes it plausible that digital collaboration is experienced alongside uneven work supports, but the cross-sectional model does not establish that the national digitalization context caused the observed coefficients. The evidence is more appropriately read as showing positive adjusted associations for communication, trust, capacity building, promotion fairness, and ergonomic/work-environment support within a purposive public-sector sample. The

policy relevance is therefore to treat digital transformation as an organizational-design issue as well as a technology-deployment project, while recognizing that the present data do not identify causal policy effects.

7. CONCLUSION

Virtual meetings are now part of routine public-sector work, but this study does not establish whether virtuality itself improves or reduces organizational citizenship behavior. In this purposive cross-sectional sample of 347 Ghanaian public-sector employees, effective communication, trust, capacity building, promotion fairness, and ergonomic/work-environment support showed positive adjusted associations with the archived OCB composite, while the confidence intervals for the measured meeting-demand variables included zero in the same model. Read through JD-R theory and SET, this is an observed pattern of conditional associations rather than evidence that resource variables are causally stronger than meeting demands. The results nevertheless support continued attention to the relational and organizational conditions surrounding digital collaboration, while the purposive sample, incomplete measurement documentation, same-source design, and limited archived diagnostics require cautious interpretation and independent replication.

8. IMPLICATIONS

8.1 Theoretical implications

First, the study extends JD-R reasoning into virtual-meeting research by distinguishing meeting-specific demands from relational and organizational resources. This is more precise than labeling virtual work itself as a demand. The findings suggest that the motivational resource pathway may be particularly important for understanding OCB, a discretionary outcome that depends on willingness as much as capacity.

Second, the study complements JD-R theory with SET. Communication quality and trust represent relational resources, while capacity building, fair promotion, and ergonomic support can be interpreted as organizational investments. SET explains why employees may respond to these investments with extra-role contribution. The combination therefore links resource availability to a reciprocity mechanism rather than treating resources only as buffers against strain.

Third, the study contributes to the emerging debate about whether physical distance weakens helpfulness. The pattern is closer to recent evidence that remote-work extent itself may be less important than relational quality (Pedersen et al., 2026). This suggests a shift in research questions: instead of asking whether virtual work suppresses citizenship, researchers should investigate which digital-work configurations enable or constrain different forms of OCB.

8.2 Managerial and Practical Implications

The findings do not support treating meeting reduction alone as the primary managerial lever in this sample; however, the nonsupported demand estimates should not be interpreted as evidence that meeting burden is unimportant. Meeting hygiene remains a reasonable practice: clear agendas, time discipline, breaks, technical preparation, and norms that reduce unnecessary cognitive load, but these recommendations are not experimental effects demonstrated by the present study. The more directly supported managerial focus is to examine the quality of communication, trust, capability development, perceived fairness, and work support surrounding digital collaboration.

Communication practices should make responsibilities, decisions, and follow-up actions explicit. Managers can use concise agendas, structured turn-taking, written summaries, and shared digital

workspaces so that employees leave meetings with common understanding. Trust can be supported through predictable follow-through, transparent decision making, reasonable autonomy, and consistent supervisory contact rather than excessive monitoring.

Capacity building should extend beyond basic platform operation to digital collaboration, information management, cyber hygiene, facilitation, and hybrid-team norms. Promotion and recognition systems should make clear how performance and extra-role contribution are evaluated when employees work across physical and virtual settings. Finally, public organizations should treat devices, connectivity, workspace ergonomics, and technical support as work resources rather than individual conveniences. This systems perspective is consistent with both Ghana's digital-transformation agenda and the broader virtual-office literature.

9. LIMITATIONS AND FUTURE RESEARCH

The cross-sectional, same-source design limits causal and temporal inference. Reverse causality is possible, and self-report covariance may have influenced associations because the archived design did not include temporal separation, multi-source OCB ratings, or a reconstructable common-method sensitivity analysis. Multi-wave, diary, experimental, and multi-source studies should test temporal mechanisms involving fatigue, social presence, engagement, and trust.

Sampling and measurement also constrain generalization. Recruitment was purposive, the sample was predominantly male, the oldest age group was small, institution names were not collected, and the number approached and response/exclusion flow cannot be reconstructed. The sample should not be treated as representative of Ghana's public service. Several indicators also lack complete item provenance, anchors, reliability/validity evidence, or scoring documentation; physical engagement is especially weakly documented. Future studies should use established multi-item measures and retain full codebooks and scoring rules.

Finally, the archived output does not permit independent recomputation of multicollinearity, heteroscedasticity, influence, functional-form, standardized-effect, or alternative-control diagnostics. Replication should preserve respondent-level analysis files and report VIF/tolerance, residual-versus-fitted and Q–Q diagnostics, Cook's distance/leverage, missing-data handling, prespecified analysis choices, and robustness models with defensible demographic and organizational controls.

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