

Not All Social Media Use Is Equal: Work Ethics as a Dual Boundary Condition for Self-Reported Employee Productivity in a Ugandan Pharmaceutical Manufacturer

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ABSTRACT

Employee social media use can facilitate coordination and information access but can also interfere with concentration. This study examines whether five differentiated forms of social media use are associated with self-reported employee productivity and whether work ethics conditions the relationships involving work-related and problematic use. Survey data from 174 permanent employees of a Ugandan pharmaceutical manufacturer were analyzed using moderated ordinary least squares regression with HC3 standard errors and 5,000 bootstrap replications. Work-related and informational use were positively associated with self-reported productivity, whereas problematic use was negatively associated. Socialization and entertainment showed no unique associations. Work ethics was positively associated with productivity and strengthened the positive work-related-use association while attenuating the negative problematic-use association. The main contribution is a differentiated and conditional model that separates social media use purpose from behavioral dysregulation and identifies work ethics as a dual boundary condition for productivity-related associations.

Keywords: Employee social media use, Work ethics, Employee productivity, Problematic social media use, Pharmaceutical manufacturing

1. Introduction

Social media has become embedded in organizational communication, shaping how employees locate information, exchange knowledge, maintain professional relationships, and coordinate work across functional and hierarchical boundaries [1], [2]. Enterprise platforms can increase communication visibility by allowing employees to observe conversations, identify expertise, and recognize connections that would otherwise remain inaccessible [1]. Meta-analytic evidence indicates that, on average, enterprise social media use is positively associated with job performance, although the relationship varies by performance type, sample composition, and national economic context [2]. These findings position social media as a potentially valuable organizational resource, but they do not imply that all forms of workplace use produce equivalent outcomes.

In this study, employee social media use encompasses employees' reported use of organization-

owned enterprise systems and public, professional, video-sharing, and messaging platforms. Work-related use is explicitly task-oriented, whereas the socialization, entertainment, and informational measures capture broader use purposes that were not consistently anchored to work time, work tasks, or coworker interaction. The analytical distinction therefore concerns use purpose and behavioral regulation rather than assuming that every reported activity occurred in the workplace. Research separating work-related from socially oriented use shows that purpose influences the relationship with work performance [3]. Positive associations can arise through knowledge sharing, organizational commitment, social capital, and access to expertise [1], [4], [5]. By contrast, excessive or problematic use can increase strain, distraction, procrastination, concentration loss, overload, and work-life conflict [6], [7]. Three-wave evidence further indicates that enterprise social media use can contribute to counterproductive behavior through workplace loneliness when digital interaction fails to satisfy affiliation needs, with information and communication technology hassles intensifying this process [8]. Consequently, the evidence suggests that employee social media use should not be represented as a unitary behavior. Drawing on uses and gratifications theory [9], this study distinguishes work-related, informational, socialization, and entertainment uses from problematic use, which captures behavioral dysregulation, postponed responsibilities, and impaired concentration [6], [7].

Work ethics may help explain why employees with comparable digital access report different productivity outcomes. Drawing on multidimensional work ethic research [10], [11] and social cognitive theory of self-regulation [12], the study examines work ethics as both a direct correlate of productivity and a boundary condition for the work-related use and problematic use relationships. These proposed conditional relationships are particularly consequential in pharmaceutical manufacturing. Good manufacturing practice requires medicinal products to be consistently produced and controlled in accordance with defined quality standards and places particular importance on suitable personnel, validated processes, accurate documentation, and the reliable execution of approved procedures [13]. Uganda's National Drug Authority inspects pharmaceutical manufacturers to assess compliance with good manufacturing practice and to ensure that medicines meet required standards of quality, safety, and efficacy [14]. The research was conducted at a pharmaceutical manufacturer in Kampala, Uganda. This regulated setting links digital coordination and information reliability with quality assurance, procedural compliance, and responsible work conduct [13], [14].

Three unresolved issues define the research gap. First, research on productive enterprise social media use and research on excessive or problematic use have developed partly as separate streams. Meta-analytic evidence indicates an overall positive relationship between enterprise social media use and employee performance [2], while recent systematic reviews link problematic use to distraction, overload, procrastination, concentration impairment, and other adverse employee outcomes [7]. Purpose-specific research further shows that work-related and socially oriented use can operate through different mechanisms and produce different work outcomes [3], while excessive-use research links dysregulated engagement with strain and reduced job performance [6]. What remains underdeveloped is an organizational model that estimates task-oriented, informational, relational, recreational, and dysregulated use simultaneously rather than assuming that a single social media-use

score has a uniform organizational meaning.

Second, prior research identifies self-regulation as relevant to the performance consequences of excessive social media use [6], but work ethics has not been established as a boundary condition that may operate across both task-aligned and behaviorally dysregulated forms of digital behavior. Multidimensional work-ethic research links occupational beliefs and standards with perceived performance [11], yet it has not integrated work ethics with a differentiated employee social media-use model. The unresolved theoretical question is whether stronger occupational standards are associated with both a stronger positive relationship between work-related use and productivity and a weaker negative relationship between problematic use and productivity.

Third, the geographical and organizational evidence base remains narrow. Recent systematic review evidence identifies limited geographical diversity, inconsistent measurement, and a shortage of objective outcomes in research on problematic social media use and employee outcomes [7]. A regulated pharmaceutical manufacturer in Uganda provides a bounded context in which digital coordination occurs alongside formal expectations concerning documentation, quality, safety, and procedural compliance [13], [14]. The study does not assume that one organization represents the Ugandan pharmaceutical sector. Instead, it examines whether differentiated social media-use relationships and the proposed work-ethics boundary conditions are observable within a setting characterized by substantial procedural and quality requirements.

Accordingly, this study examines how work-related use, informational use, socialization, entertainment, and problematic use are associated with self-reported employee productivity and whether work ethics conditions the relationships involving work-related and problematic use. Socialization and entertainment are retained as exploratory employee-reported use purposes because the administered items were not consistently anchored to work time or occupational content. The central contribution is a differentiated and conditional model that separates social media use purpose from behavioral dysregulation and connects uses and gratifications theory with social cognitive theory of self-regulation by positioning work ethics as a dual boundary condition.

2. Literature Review and Hypothesis Development

2.1 Theoretical Foundations and Integrated Framework

Uses and gratifications theory provides the primary explanation for the four purpose-based forms of social media use reported by employees. The theory treats media users as active agents who select channels and content to satisfy cognitive, social, and recreational needs [9]. In organizational settings, this perspective directs attention to why employees use social media rather than only to how frequently they access it. Employees may use the same platform to coordinate tasks, obtain information, maintain relationships, or seek entertainment. Evidence from this perspective indicates that cognitive, social, and hedonic uses have distinct relationships with innovative behavior and job performance [15].

Uses and gratifications theory does not fully explain how employees regulate their behavior after accessing social media. Purposeful activity can become excessive when engagement continues

beyond current task requirements. Social and informational value have been associated with excessive enterprise social media use, whereas hedonic value did not demonstrate the same relationship [16]. Problematic use should therefore not be treated as a fifth gratification. It represents behavioral dysregulation that can emerge from otherwise purposeful activity.

Social cognitive theory of self-regulation provides the complementary explanation. Individuals monitor their conduct, compare it with personal and situational standards, and adjust their behavior through evaluative self-reactions [12]. These processes matter in digital work because employees repeatedly decide whether social media activity advances an occupational objective or competes with sustained attention to assigned tasks.

Work ethics is not identical to self-regulation, but it can supply the occupational standards through which self-regulation operates. The broader work ethic literature supports a multidimensional view of work-oriented beliefs and attitudes [10], [11]. In this study, work ethics is operationalized through work interest, occupational moral orientation, and intrinsic work motivation. These dimensions capture the meaning attached to work, responsibility toward occupational obligations, and willingness to invest effort. The integrated framework therefore assigns distinct roles to the two theories. Uses and gratifications theory explains variation in purpose-based use, while social cognitive theory of self-regulation explains why work ethics may shape the productivity implications of work-related and problematic use. The moderation hypotheses focus on these two relationships because work-related use is the clearest, directly task-aligned form, whereas problematic use is the clearest form of goal-displacing behavioral dysregulation. Informational use is modeled through a direct knowledge-resource pathway. Socialization and entertainment remain exploratory because their mechanisms and reported outcomes are mixed.

2.2 Conceptualizing Differentiated Employee Social Media Use

Workplace social media research has commonly contrasted work-related use with social or personal use, but this binary classification can conceal important behavioral differences [3], [15]. Work-related use concerns direct task coordination, problem solving, collaborative learning, and access to expertise. Informational use concerns reading news, sharing ideas, and following developments that may or may not subsequently become relevant to work. Socialization and entertainment reflect relational and recreational purposes. Problematic use is conceptually different because it captures behavioral dysregulation rather than a use purpose. Aggregating these activities can obscure opposing relationships because a global score may increase through either task-supporting engagement or behavior that interferes with work.

Empirical evidence supports a more differentiated approach. Meta-analytic findings indicate a positive average relationship between enterprise social media use and job performance, although its magnitude varies across outcomes, samples, and contexts [2]. Purpose-specific studies report less uniform patterns. In some settings, work-related and social use have been associated with performance through engagement, knowledge sharing, and extra-role behavior [3], [17]. Cognitive use has demonstrated positive indirect relationships with performance, while social and hedonic uses have produced positive, negative, or nonsignificant findings depending on the outcome and

mechanism examined [15], [18]. Two-wave evidence also shows that social use can support thriving, while work-related use may depend on knowledge sharing and employees' locus of control [19]. These findings are not necessarily contradictory. They suggest that prior studies often examine broader job performance outcomes, while this study focuses on employee productivity through effectiveness, output, and efficiency. They also show that purpose-based use and behavioral dysregulation should be assessed separately. The model therefore distinguishes work-related, informational, socialization, and entertainment use from problematic use.

2.3 Work-Related Social Media Use and Employee Productivity

Work-related social media use can support productivity by reducing communication delays and connecting employees with the information and expertise required for task completion. Communication visibility allows employees to identify relevant knowledge, observe prior exchanges, and locate colleagues who can contribute to problem resolution [1]. Work-related use can also facilitate coordination, collaborative learning, and rapid clarification across functional boundaries [1], [4].

Empirical evidence generally supports this task-resource pathway. Enterprise social media use is, on average, positively associated with job performance [2]. Studies have also identified knowledge sharing, organizational commitment, and social capital as mechanisms through which digital connectivity supports employee outcomes [4], [5]. Research that separates work-related and social use further indicates that work-related use can support performance through engagement [17].

The evidence also indicates that the relationship is not automatic. Work-related use did not have a significant direct association with thriving in a two-wave study, although knowledge sharing provided an indirect pathway, and locus of control conditioned the relationship [19]. This suggests that work-related social media is an enabling resource whose value depends on employees applying digital information and coordination to their tasks. Its alignment with occupational goals nevertheless provides a clear basis for expecting a positive, unique association with productivity.

H1. Work-related social media use is positively associated with employee productivity.

2.4 Informational Social Media Use and Employee Productivity

Informational use differs from direct work-related coordination because it extends awareness beyond an immediate task. In the administered measure, informational use concerned reading news, sharing new ideas, and following trending events without requiring the material to be work- or industry-related. Some of this information may subsequently prove relevant to problem recognition, learning, or task execution, but that relevance was not built into the item wording. Uses and gratifications theory conceptualizes this activity as cognitive gratification because users seek information, understanding, or learning [9].

Available evidence supports a knowledge-resource mechanism but does not establish a uniformly positive direct relationship with performance. Cognitive social media use has been associated with innovative behavior and indirectly with job performance [15]. Social and cognitive uses have also demonstrated positive indirect relationships with routine and innovative performance

through social capital [18]. These findings suggest that informational use may create value when the acquired material is credible and relevant, and is subsequently applied to work, although the items did not directly measure that application.

Information seeking can become excessive when informational value encourages engagement beyond current task requirements [16]. This risk concerns behavioral overextension rather than informational purpose itself. The model therefore separates informational use from problematic use, which captures compulsive engagement, task postponement, and concentration impairment [6], [7]. When informational and problematic use are modeled separately, the potential cognitive value of information acquisition provides a theoretical basis for expecting a positive association with productivity, although the measure does not establish whether the information was work-relevant or subsequently applied.

H2. Informational social media use is positively associated with employee productivity.

2.5 Problematic Social Media Use and Employee Productivity

Problematic social media use is not equivalent to frequent use. Employees may communicate frequently because their roles require rapid coordination, customer interaction, or continuous information exchange. Use becomes problematic when engagement is difficult to control and begins to displace occupational responsibilities through compulsive checking, task postponement, attentional fragmentation, or difficulty restoring concentration [6], [7].

Dual-system research attributes excessive personal social media use partly to the interaction between habitual impulses and insufficient controlled self-regulation. Employee evidence shows that habit and weaker self-regulation contribute to excessive use, which increases strain and, in turn, reduces job performance [6]. Enterprise social media research similarly shows that social and informational value can encourage engagement beyond the level required for productive activity [16].

A systematic review links problematic social media use with procrastination, distraction, overload, work conflict, and impaired functioning [7]. Three-wave evidence further indicates that enterprise social media use can contribute to counterproductive behavior through workplace loneliness when information and communication technology hassles intensify the experience [8]. These findings indicate that dysregulated use competes with the attention and time required for effective task completion.

H3. Problematic social media use is negatively associated with employee productivity.

2.6 Work Ethics and Employee Productivity

Work ethics reflects the value employees attach to work and the standards they apply to occupational conduct. The broader work ethic literature conceptualizes the construct as multidimensional rather than as a single belief in hard work [10], [11]. This study adopts a focused operationalization comprising work interest, occupational moral orientation, and intrinsic work motivation rather than reproducing the complete multidimensional work ethic profile. Work interest captures the significance assigned to occupational activity. Occupational moral orientation captures responsibility toward appropriate conduct. Intrinsic work motivation captures the willingness to

invest effort because the work itself is valued.

Behavioral evidence supports a connection between work ethic and task execution. Work ethic predicted task intensity in an unsupervised activity, with morality and ethics making the strongest contribution to the amount of work produced [20]. Cross-cultural research also associates a multidimensional work ethic with perceived organizational performance, although the relative importance of its dimensions varies across national and career contexts [11]. Recent evidence from Ugandan public servants reports a positive association between work ethics and performance, but treats intrinsic motivation as a mediator rather than as a component of work ethics [21]. That study therefore provides contextual support for the broader work ethics–performance relationship rather than direct validation of the composite used in this study.

Consequently, the evidence indicates that work ethics can support effectiveness, output, and efficiency by directing effort toward occupational goals. Employees with stronger work interest should assign greater personal significance to task completion. Stronger intrinsic work motivation should support effort without continuous external supervision. Stronger occupational moral orientation should make responsible time use and fulfillment of work obligations more salient.

H4. Work ethics is positively associated with employee productivity.

2.7 Moderating Role of Work Ethics

2.7.1 Work ethics and the work-related use association

Work-related social media use creates access to communication, expertise, and coordination resources, but employees must still translate those resources into task-directed action. Social cognitive theory of self-regulation proposes that individuals monitor their conduct, compare it with internal standards, and adjust their behavior in response to perceived discrepancies [12]. Work ethics can provide standards concerning responsibility, effort, and commitment to occupational goals [10], [11].

Related empirical evidence supports the relevance of personal boundary conditions. Ononye et al. found that self-regulation conditioned the relationship between workplace social media use and thriving, with thriving contributing to job performance [22]. Zhu et al. found that locus of control moderated the relationship between work-related use and thriving and that knowledge sharing provided an indirect pathway [19]. Although neither study examines work ethics directly, both indicate that regulatory and control orientations influence whether digital resources are converted into favorable work outcomes.

Employees with stronger work ethics should be more likely to evaluate the task relevance of social media activity, apply useful information, and return attention to assigned work after an interaction. The positive association between work-related use and productivity should therefore become stronger as work ethics increase.

H5. The positive association between work-related social media use and employee productivity is stronger at higher levels of work ethics.

2.7.2 Work ethics and the problematic use association

The regulatory logic differs for problematic use because the focal behavior reflects weakened control over attention and time. Employees may recognize that continued checking is unrelated to their tasks but still postpone disengagement. Stronger work ethics should increase the salience of unfinished work, occupational responsibility, and the personal importance of task completion.

Evidence shows that controlled self-regulation can counterbalance habitual social media engagement [6]. Daily diary research also indicates that social media overuse is associated with lower work effort through reduced state self-control, and that a personal regulatory resource, such as mindfulness, can buffer this adverse process [23]. These findings do not establish that work ethics and mindfulness are equivalent. They support the broader proposition that personal regulatory resources can reduce the extent to which digital overuse undermines occupational behavior.

Stronger work ethics should therefore attenuate the negative association between problematic use and productivity. This buffering expectation does not imply that problematic use becomes beneficial. It indicates that employees with stronger occupational standards may limit the degree to which dysregulated engagement displaces task effort and concentration.

H6. The negative association between problematic social media use and employee productivity is weaker at higher levels of work ethics.

2.8 Exploratory Roles of Socialization and Entertainment

Socialization and entertainment do not support unambiguous directional hypotheses. Socialization may support belonging, informal support, relational resources, and access to colleagues, with prior studies identifying engagement, extra-role behavior, and knowledge sharing as pathways to favorable work outcomes [3], [17], [19]. Other evidence identifies a negative direct association between social use and job performance or an adverse pathway through relationship conflict [15], [17]. Its productivity implications may therefore depend on whether social interaction supplies work-relevant relational resources or displaces attention from assigned tasks.

Entertainment use is similarly ambiguous. Social media break activities can support psychological detachment and relaxation during the workday [24]. However, hedonic use has also demonstrated a negative direct association with routine performance, a positive indirect association with innovative performance through social ties, or no significant direct relationship depending on the outcome and model examined [15], [18]. Entertainment also differs from problematic use because recreational purposes do not necessarily involve loss of behavioral control. Socialization and entertainment are therefore retained as exploratory predictors without directional hypotheses.

Figure 1 summarizes the conceptual model. Work-related use, informational use, problematic use, and work ethics are linked to self-reported employee productivity through H1 to H4. Work ethics moderates the work-related-use and problematic-use relationships (H5 and H6), while socialization and entertainment are estimated as exploratory predictors without directional hypotheses.

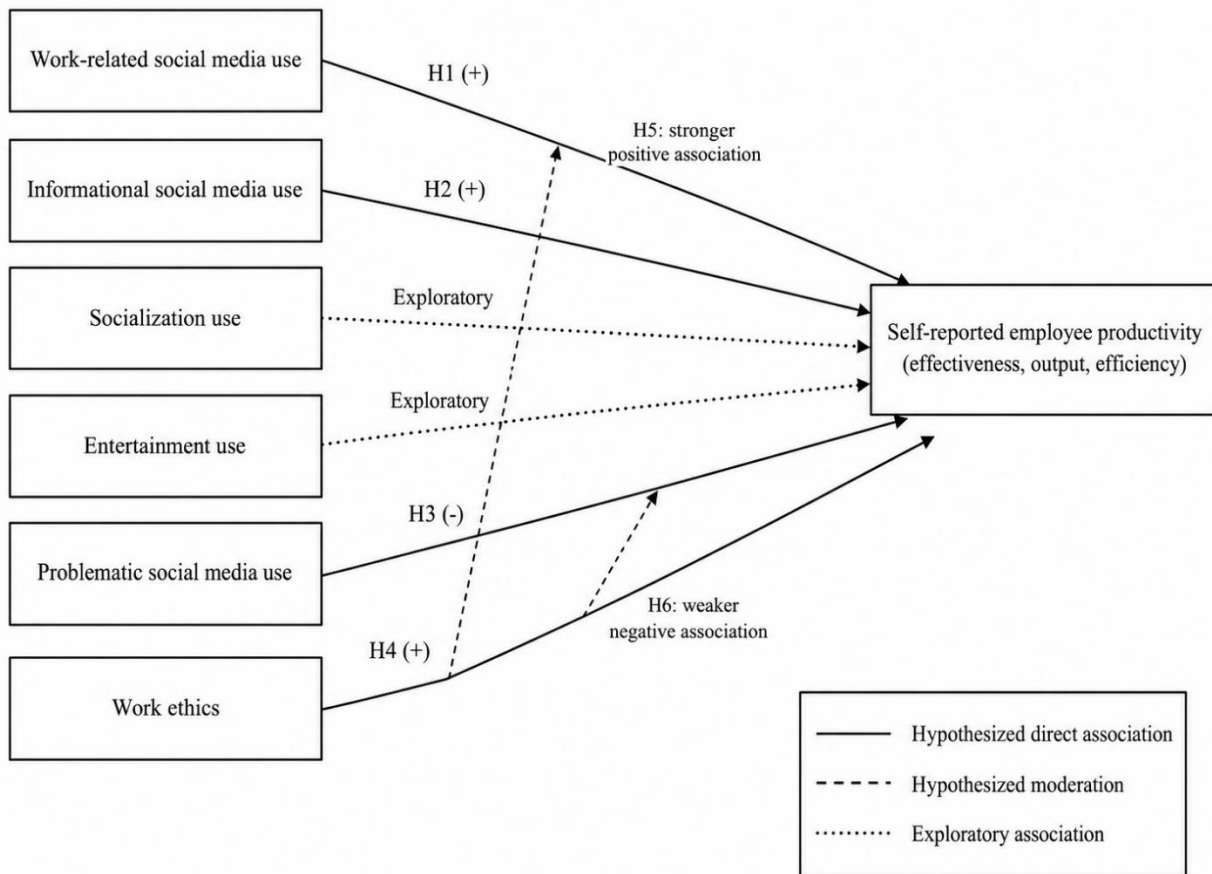


Figure 1. Conceptual model of differentiated employee social media use, work ethics, and self-reported employee productivity

Source: By author.

3. Methodology

3.1 Research Design and Article-Specific Reanalysis

The article reports a theory-led secondary analysis of quantitative survey data collected as part of a broader doctoral research project. The original project included quantitative and qualitative components, whereas this article addresses an article-specific research question through a differentiated-use moderation model. The reanalysis operationalizes the paper's contribution by distinguishing four purpose-based forms of social media use from problematic use as behavioral dysregulation and by examining work ethics as both a direct correlate of employee productivity and a moderator of the associations involving work-related and problematic use. No new data were collected, no participants were recontacted, and the article-specific reanalysis used de-identified archival data.

A cross-sectional analytical design was used to estimate contemporaneous direct and conditional associations. The design does not establish temporal ordering or causal effects. The article therefore uses the terms association, relationship, and conditional association throughout. Reporting was guided by the Consensus-Based Checklist for Reporting of Survey Studies and the relevant cross-

sectional items of the Strengthening the Reporting of Observational Studies in Epidemiology statement [25], [26].

3.2 Study Setting

The research was conducted at a pharmaceutical manufacturer in Kampala, Uganda, anonymized as UPM-1 to protect organizational and participant confidentiality. The organization employed staff in manufacturing, quality and regulatory functions, commercial and distribution functions, and corporate services. These functions varied in their requirements for digital coordination, external information, sustained concentration, and procedural accountability.

3.3 Population and Sampling

The eligible population comprised 349 permanent employees, including 20 senior executives, 30 managers, 201 officers, and 98 operators. A target sample of 183 employees was determined using the Krejcie and Morgan finite-population procedure [27]. The target was allocated proportionally as 10 senior executives, 16 managers, 106 officers, and 51 operators.

The organization's human resources office supplied current employee lists. Employees were stratified by job category, and random numbers generated in Microsoft Excel were used to select participants independently within each stratum. The achieved analytical sample comprised 174 employees, including 10 senior executives, 15 managers, 101 officers, and 48 operators. This represented a usable response rate of 95.1 percent relative to the target sample. The achieved distribution remained close to the planned proportional allocation.

3.4 Data Collection and Analytical Sample

Questionnaires were administered online to employees with suitable digital access and in paper form to employees for whom printed administration was more accessible. Both modes used the same substantive item content and five-point response format. The informed-consent, confidentiality, and anonymity procedures are reported in Section 3.8.

The article's reanalysis used the supplied analytical file, which contained 174 records, none of which had missing item values. No additional imputation was conducted during the article reanalysis. The pre-cleaning file and the missing-data treatment applied during the doctoral workflow were unavailable, although the doctoral report documented 3.333 percent overall item-level missingness.

3.5 Measures

The questionnaire included demographic and platform-use questions together with multi-item measures of social media use, work ethics, and self-reported employee productivity. All focal construct items used a five-point agreement format ranging from strongly disagree to strongly agree. The socialization, entertainment, and informational items were adapted from Gupta and Bashir's Social Networking Usage Questionnaire, which was developed in a university-student population [28]. Because the administered socialization and informational items were not consistently anchored to work time, work tasks, coworkers, or organizational channels, they are interpreted as general use purposes reported by employees rather than as validated measures of workplace social media use.

The archived questionnaire also contained work-related-use and constraint blocks whose exact published source provenance could not be verified. These measures are therefore treated as study-specific adapted composites rather than previously validated employee scales.

3.5.1 *Differentiated social media use*

Work-related social media use was measured with seven items assessing the use of social networking sites to attain work-related goals, help coworkers perform their jobs, provide work information, resolve workplace problems, support collaborative learning, acquire job knowledge, and seek help from experienced workers. The work-related-use score was calculated as the mean of the seven items.

Socialization was measured with six administered items concerning sociability, social identity, preference for online interaction, interpersonal relationships, contact with relatives, and awareness of social events. Informational use was measured with three items concerning news reading, idea sharing, and trending events. Because these items were not consistently anchored to occupational content, work time, coworkers, or approved organizational channels, the resulting scores are interpreted as socialization and informational use reported by employees rather than as exclusively workplace-specific behavior.

Entertainment was calculated from three of the four administered entertainment items. The retained items concerned picture sharing, humorous content, and movies. The fourth administered item referred to relief from academic stress. Because that wording was not contextually meaningful for an employee population, it was excluded from the revised primary entertainment composite. The three-item composite had a Cronbach's alpha of .802. This exclusion is a measurement correction made during manuscript revision and does not establish that the remaining entertainment items constitute a previously validated workplace entertainment scale.

Problematic use was measured with three archived constraint items assessing compulsive social media engagement, postponement of work-related tasks, and difficulty concentrating while using social networking sites. These items corresponded to the original constraint items CS2 through CS4. The first constraint item was excluded because it assessed difficulty finding exact work information rather than behavioral loss of control. Because the exact published source of the constraint block could not be verified, the three-item problematic-use score is treated as a study-specific adapted composite. Its interpretation is restricted to the behaviors represented by the administered items and should not be understood as a clinically validated disorder measure or as a fully validated problematic-use scale.

Separate arithmetic means were calculated for work-related use, socialization, entertainment, informational use, and problematic use. The primary model retained the constructs separately, as specified by the theory. A global social media-use score was examined only as a nonprimary sensitivity specification.

3.5.2 *Work ethics*

Work ethics was measured using an adaptation of Sharma and Rai's work ethic instrument [29].

Six items assessed work interest, five items assessed intrinsic work motivation, and five administered items addressed occupational moral orientation. The telephone-time item was excluded from the primary occupational moral-orientation score because it directly referred to misuse of employer time through telephone activity and therefore overlapped with problematic digital behavior. The primary occupational moral-orientation score consequently contained four items.

Separate dimension means were calculated for work interest, occupational moral orientation, and intrinsic work motivation. The overall work-ethics score was calculated as the equally weighted mean of the three-dimension scores. A sensitivity analysis restored the excluded telephone-time item.

3.5.3 Self-reported employee productivity

Self-reported employee productivity was operationalized through six items covering effectiveness, output, and efficiency. Two effectiveness items assessed accurate completion of expected work and effective problem resolution. Two output items assessed delivery of the required quality and quantity of work. Two efficiency items assessed task completion without unnecessary resource waste and achievement of performance targets. Dimension means were calculated before averaging effectiveness, output, and efficiency to produce the self-reported productivity score. Ten additional items concerning organizational practices were excluded because they represented organizational enablers rather than direct individual performance. The six-item outcome is a study-specific self-report composite because an exact previously validated source could not be verified. Its high internal consistency and exploratory one-factor result support empirical coherence within this sample, but they do not establish content validity, criterion validity, or equivalence to supervisor-rated or objectively recorded productivity.

3.6 Measurement Evaluation Procedures

Measurement quality was examined before hypothesis testing. Factorability was assessed using the Kaiser-Meyer-Olkin measure and Bartlett's test of sphericity. Factor retention was evaluated via parallel analysis across 1,000 randomly generated normal datasets, using the reproducible seed 20260726. Observed eigenvalues were compared with the mean random eigenvalues and the stricter 95th-percentile random eigenvalues [30], [31]. Both criteria were reported because they produced different retention decisions.

Internal consistency was assessed using Cronbach's alpha. The heterotrait-monotrait ratio was used as a supplementary diagnostic of empirical construct distinctiveness [32]. These procedures were treated as exploratory measurement diagnostics. They were not interpreted as confirmatory factor analysis, PLS-SEM, or evidence of a complete latent-variable measurement model. The resulting measurement findings are reported in Section 4.

3.7 Statistical Analysis

The hypotheses were tested using moderated multiple regression. The primary model included work-related use, informational use, socialization, entertainment, problematic use, work ethics, the interaction between work-related use and work ethics, and the interaction between problematic use and work ethics. Socialization and entertainment were retained as exploratory predictors.

Continuous composite scores were standardized as z scores using the analytical sample mean and the standard deviation calculated with the denominator N. The interaction terms were calculated as the products of standardized work-related use and work ethics and of standardized problematic use and work ethics.

Ordinary least squares coefficients were evaluated using heteroskedasticity-consistent HC3 standard errors. Regression results are reported with HC3 standard errors, p-values, and percentile-bootstrap confidence intervals generated from 5,000 case-resampling replications using the reproducible seed 20260726. Moderation was examined using conditional slopes at one standard deviation below the work-ethics mean, at the mean, and at one standard deviation above the mean. Johnson-Neyman regions were used to identify the observed work-ethics values across which each focal association was statistically distinguishable from zero [33].

Model evaluation included explained variance, adjusted explained variance, the incremental variance associated with the interaction block, variance inflation factors, and local effect sizes. Robustness assessment included a controlled model, alternative work-ethics scoring, restoration of the excluded entertainment item referring to academic stress, an aggregate social media-use specification, and ten-fold cross-validation.

The controlled sensitivity model included gender, ordered age and education categories, job-category indicators, paper administration, perceived essentiality of social media for work, and WhatsApp as the primary platform. Operators and male respondents served as the reference categories for job category and gender, respectively. The control coefficients were not interpreted as substantive explanatory relationships.

Predictive performance was assessed through ten-fold cross-validation using shuffled folds generated with the reproducible seed 20260726. The same fold assignment was used for the differentiated interaction model, the main-effects specification, and the training-mean benchmark. Standardization parameters were estimated within each training fold and then applied to the corresponding test fold. Cross-validated explained variance was calculated as one minus the ratio of the pooled out-of-sample squared prediction error to the pooled squared prediction error of the training-mean benchmark. Root mean squared error and mean absolute error were calculated from the pooled out-of-sample predictions. The article-specific analyses were conducted in Python 3.13.5 using NumPy 2.3.5, SciPy 1.17.0, statsmodels 0.14.6, and scikit-learn 1.8.0.

All focal variables were reported by the same employees during the same survey administration. This design creates a risk of common-source covariance because reported social media behavior, work ethics, and self-reported productivity may share response tendencies, consistency motives, and socially desirable self-presentation. Anonymous participation and the noncollection of personal names reduced direct evaluative pressure but cannot eliminate these sources of bias. Contemporary methodological guidance emphasizes that statistical diagnostics cannot establish that common-method bias is absent [34]. The reported coefficients and explained variance are therefore interpreted as associations among employee-reported measures rather than as bias-free estimates of relationships with objective productivity.

A supplementary marker-variable sensitivity specification added the mean of three administered method-marker items to the primary regression model. The items concerned preference for written rather than verbal instructions, organization of digital files by date, and preference for tabular rather than paragraph-only documents. The analysis was treated only as a sensitivity diagnostic because marker-variable procedures cannot establish that common-method bias is absent [34].

3.8 Ethical Considerations

Ethical approval was granted by the relevant university research ethics committee on November 1, 2022. The approval authorized data collection after completion of the required informed-consent documentation. Participants received study information and provided informed consent before completing the questionnaire. Participation was voluntary, personal names were not collected, and coded respondent identifiers were used in the analytical file.

4. Results and Discussion

4.1 Sample Characteristics and Descriptive Statistics

The final analytical sample comprised 174 of the 183 targeted employees, representing a usable response rate of 95.1 percent. Officers formed the largest job category, and WhatsApp was the primary reported platform for 153 respondents. Table 1 presents the complete demographic, occupational, administration mode, and primary platform profile of the analytical sample.

Table 1. Sample characteristics

Characteristic	Category	n	Percent
Gender	Male	117	67.2
	Female	57	32.8
Age	21 to 25 years	47	27.0
	26 to 30 years	71	40.8
	31 to 35 years	24	13.8
	36 to 40 years	25	14.4
	Over 40 years	7	4.0
Education	Below diploma	32	18.4
	Diploma	35	20.1
	Degree	94	54.0
	Postgraduate	13	7.5
Job category	Senior executive	10	5.7
	Manager	15	8.6
	Officer	101	58.0
	Operator	48	27.6

Characteristic	Category	n	Percent
Department	Manufacturing	55	31.6
	Quality and regulatory	39	22.4
	Commercial and distribution	32	18.4
	Corporate services	48	27.6
Administration mode	Online	105	60.3
	Paper	69	39.7
Primary platform	WhatsApp	153	87.9
	Other or not reported	21	12.1

Source: By author.

Work-related use had the highest mean (4.024), followed by work ethics (4.022), self-reported employee productivity (3.999), informational use (3.969), and socialization (3.839). Entertainment use had a mean of 3.220 after excluding the employee-incongruent academic-stress item, while problematic use had the lowest mean at 2.462. No focal composite exhibited severe univariate nonnormality. Skewness ranged from $-.636$ to $.039$, while excess kurtosis ranged from $-.712$ to $.357$.

The descriptive pattern indicates that respondents reported greater task-oriented and informational activity than entertainment or problematic engagement. Because the socialization and informational items were not consistently anchored to work tasks or coworker interactions, these dimensions should be interpreted as general-purpose uses reported by employees. The lower mean for problematic use indicates that compulsive engagement, task postponement, and concentration difficulty were, on average, less strongly endorsed, although sufficient variation remained to examine their association with productivity. Table 2 reports the means, standard deviations, and bivariate correlations among the focal composite measures.

Table 2. Means, standard deviations, and correlations among focal composites

Variable	Mean	SD	1	2	3	4	5	6	7
1. Work-related use	4.024	.638	1						
2. Socialization	3.839	.714	.367***	1					
3. Entertainment	3.220	.793	.110	.358***	1				
4. Informational use	3.969	.699	.411***	.288***	.176*	1			
5. Problematic use	2.462	.751	-.100	.131	.300***	-.110	1		
6. Work ethics	4.022	.500	.231**	.182*	-.086	.128	-.242**	1	
7. Self-reported employee productivity	3.999	.625	.473***	.184*	-.024	.361***	-.392***	.533***	1

Note. $N = 174$. Correlations are Pearson coefficients based on two-tailed tests. $p < .05$. $p < .01$. p

$< .001$. *Entertainment is calculated from the revised three-item composite after exclusion of the employee-incongruent academic-stress item. Source: By author.*

The bivariate correlations were broadly consistent with the principal regression patterns. Self-reported employee productivity was positively correlated with work-related use, informational use, and work ethics and negatively correlated with problematic use. Socialization showed a small positive bivariate association with self-reported productivity, but this association did not remain statistically significant after the other predictors were considered. Entertainment was not significantly correlated with self-reported productivity. The difference between the socialization correlation and its multivariable coefficient illustrates why unadjusted bivariate relationships should be distinguished from unique associations estimated after simultaneous adjustment for the remaining constructs.

4.2 Exploratory Measurement Diagnostics

Following exclusion of the employee-incongruent academic-stress item, factorability remained adequate for the revised 22-item social media block, with KMO equal to .858 and Bartlett's test statistically significant at 1694.07 with 231 degrees of freedom and a probability below .001. The work-ethics block retained a KMO of .906, and the employee-productivity block retained a KMO of .910. Cronbach's alpha ranged from .788 to .909 across the focal measures, and the maximum heterotrait-monotrait ratio remained .653.

Parallel analysis retained four social media factors under both the mean random-eigenvalue criterion and the stricter 95th-percentile criterion. The work-ethics block retained three factors under the mean criterion and two under the 95th-percentile criterion, while both criteria retained one employee-productivity factor. The five theory-specified social media scores were retained as observed composites for the regression analysis because the article tests differentiated use scores rather than a confirmatory latent-variable model. Socialization and entertainment remain explicitly exploratory. Table 3 summarizes measure provenance, item counts, and internal consistency.

Table 3. Measurement source status and internal consistency

Construct	Items	Source or adaptation status	Cronbach's α
Work-related media use	social 7	Study-specific adapted composite. Published source provenance unavailable in archived study documentation	.889
Socialization use	6	Adapted from Gupta and Bashir [28]. Items originated in a university-student population and were not consistently anchored to occupational content	.867
Entertainment use	3	Adapted from Gupta and Bashir [28]. Employee-incongruent academic-stress item excluded from the revised primary composite	.802
Informational use	3	Adapted from Gupta and Bashir [28]. Items were not consistently anchored to work-related or industry-specific information	.788
Problematic media use	social 3	Study-specific adapted composite derived from constraint items CS2–CS4. Published source provenance unavailable in archived study documentation	.790
Work interest	6	Adapted from Sharma and Rai [29]	.866
Occupational orientation	moral 4	Adapted from Sharma and Rai [29]. Telephone-time item excluded because of conceptual overlap with problematic digital behavior	.827
Intrinsic motivation	work 5	Adapted from Sharma and Rai [29]	.829
Self-reported employee productivity	6	Study-specific composite covering effectiveness, output, and efficiency. Published source provenance unavailable in archived study documentation	.909

Note. Internal consistency was assessed using Cronbach's alpha. The revised entertainment composite excludes the administered item referring to relief from academic stress because its wording was not contextually appropriate for an employee population. Alpha coefficients indicate internal consistency within the present sample and should not be interpreted as evidence of established content validity, criterion validity, or confirmatory construct validity. Socialization and informational use are interpreted as general use purposes reported by employees because their administered items were not consistently anchored to work time, work tasks, coworkers, or organizational channels. Work-related social media use, problematic social media use, and self-reported employee productivity are treated as study-specific observed composites because their exact published provenance could not be independently verified from the archived study documentation. Source: By author.

4.3 Direct and Exploratory Associations with Self-Reported Employee Productivity

4.3.1 Hypothesized direct associations

Table 4 presents the revised primary moderated regression estimates using the three-item entertainment composite. The model explained 54.6 percent of the variance in self-reported employee productivity, with adjusted explained variance of 52.4 percent. The HC3 robust omnibus test was statistically significant, $F(8, 165) = 32.33, p < .001$. Variance inflation factors remained below levels associated with problematic multicollinearity. The main-effects specification explained 50.2 percent of the variance. Adding the two interaction terms increased explained variance by 4.4 percentage points. An HC3 robust joint test showed that the interaction block contributed significantly, $F(2, 165) = 7.34, p = .001$.

Table 4. Primary moderated multiple regression results

Predictor	β	HC3 SE	p	95% bootstrap CI	f^2
Work-related use	.295	.054	< .001	.181 to .400	.140
Socialization	-.023	.058	.692	-.130 to .096	.001
Entertainment	.013	.065	.844	-.116 to .131	< .001
Informational use	.199	.058	.001	.088 to .317	.067
Problematic use	-.240	.056	< .001	-.351 to -.130	.104
Work ethics	.381	.056	< .001	.287 to .484	.276
Work-related use $\times$ work ethics	.142	.045	.002	.056 to .226	.044
Problematic use $\times$ work ethics	.155	.055	.005	.061 to .252	.047

Note. N = 174. The dependent variable is standardized self-reported employee productivity. Continuous predictors were standardized before estimation. Entertainment use was calculated from the revised three-item composite after exclusion of the employee-incongruent academic-stress item. Standard errors and probability values are based on HC3 heteroskedasticity-consistent inference. Confidence intervals are percentile-bootstrap intervals based on 5,000 case-resampling replications. Standardization was recalculated within each bootstrap sample. Coefficients are standardized. Local effect sizes are reported as f^2 . The model explained 54.6 percent of the variance in self-reported employee productivity, $R^2 = .546$, adjusted $R^2 = .524$, HC3-robust $F(8, 165) = 32.33$, $p < .001$. The main-effects model explained 50.2 percent of the variance. Addition of the two interaction terms increased explained variance by 4.4 percentage points, $\Delta R^2 = .044$. An HC3-robust joint test of the interaction terms was significant, $F(2, 165) = 7.34$, $p = .001$. Variance inflation factors ranged from 1.02 to 1.40, indicating no problematic multicollinearity. Source: By author.

At the mean level of work ethics, work-related social media use was positively associated with self-reported employee productivity, with a standardized coefficient of .295, HC3 standard error of .054, and a probability below .001. The 95 percent bootstrap interval ranged from .181 to .400. Employees reporting greater task-oriented use therefore also tended to report greater effectiveness, output, and efficiency after accounting for the remaining predictors. The finding supports H1 and remains consistent with evidence that task-oriented digital communication can provide access to knowledge, coordination, and work-related resources [2], [3], [19].

The result is consistent with meta-analytic evidence of a positive average association between enterprise social media use and employee outcomes [2] and with evidence linking task-oriented use to work performance [3]. The analysis adds behavioral precision by separating task-oriented use from informational, socialization, entertainment, and problematic activity.

The result differs partly from Zhu et al. [19], who did not identify a direct association between work-related use and thriving, although knowledge sharing provided an indirect pathway and locus of control conditioned the relationship. This difference may reflect the focal outcome. Their study examined thriving through vitality and learning, whereas this study assessed self-reported effectiveness, output, and efficiency. The comparison suggests that task-oriented digital communication may relate more directly to task execution than to broader psychological thriving and that its association with productivity may vary across employee-level boundary conditions.

Informational use was positively associated with self-reported employee productivity, with a standardized coefficient of .199, HC3 standard error of .058, and a probability of .001. The 95 percent bootstrap interval extended from .088 to .317. Respondents reporting greater use of social media for news, ideas, and trending information also tended to report higher productivity after accounting for the remaining use dimensions, work ethics, and the specified interactions. H2 was therefore supported. Because the informational items were not consistently anchored to occupational content, this result should be interpreted as an association involving general informational use reported by employees rather than evidence that work-specific information seeking caused higher productivity.

This result differs from the work-related-use finding because the informational items did not

require the acquired material to concern an immediate task or a specific industry. The simultaneous significance of both constructs indicates that direct task coordination and broader informational activity each made a separate statistical contribution. This finding is consistent with evidence linking cognitive social media use to innovative behavior and indirect performance outcomes [15] and with evidence that cognitive use can operate through social capital [18]. The result extends that literature by identifying a positive unique association between informational use and self-reported employee productivity after the other social media-use dimensions, work ethics, and the specified interactions were considered.

At the mean level of work ethics, problematic use was negatively associated with self-reported employee productivity, with a standardized coefficient of negative .240, HC3 standard error of .056, and a probability below .001. The 95 percent bootstrap interval extended from negative .351 to negative .130. Respondents reporting greater compulsive engagement, task postponement, and concentration difficulty also tended to report lower effectiveness, output, and efficiency after accounting for the remaining predictors. H3 was therefore supported. This result is consistent with recent evidence linking problematic or excessive social media engagement to occupational interference and reduced work functioning [7], [23].

This finding aligns with dual-system evidence showing that habitual engagement and insufficient self-regulation can encourage excessive personal social media use, increase strain, and reduce job performance [6]. It is also consistent with the systematic review by Gao and Shao [7], which found that problematic social media use is commonly associated with distraction, procrastination, work conflict, reduced concentration, and impaired occupational functioning. This study extends this evidence to a regulated pharmaceutical manufacturer and indicates that the adverse association persists even after controlling for other social media-use dimensions, work ethics, and the specified interactions.

When work-related and problematic use were at their mean levels, work ethics had the largest positive coefficient in the revised model. Its standardized coefficient was .381, with an HC3 standard error of .056 and a probability below .001. The 95 percent bootstrap interval extended from .287 to .484. Respondents reporting stronger work interest, occupational moral orientation, and intrinsic work motivation also tended to report higher self-reported productivity. H4 was therefore supported. The finding is consistent with broader work-ethic evidence and with recent Ugandan research linking work ethics with employee performance, while remaining specific to the study-specific operationalization used here [11], [21].

This result is consistent with evidence that work ethic predicts task intensity, particularly in an unsupervised task setting [20]. It also aligns with cross-cultural evidence linking a multidimensional work ethic to perceived organizational performance [11]. Recent Ugandan evidence similarly reports a positive relationship between work ethics and performance, although that study treated intrinsic motivation as a mediator rather than as part of the work-ethics composite [21]. The result therefore supports the relevance of work ethics in a digitally connected and regulated manufacturing context while remaining specific to the operationalization used in this study.

4.3.2 Exploratory socialization and entertainment associations

Socialization did not demonstrate a significant unique association with self-reported productivity, $\beta = -.023$, HC3 SE = .058, $p = .692$. Entertainment was also nonsignificant, $\beta = .013$, HC3 SE = .065, $p = .844$. These estimates indicate that neither relational nor recreational use explained unique variation in self-reported productivity after accounting for task-oriented use, informational use, problematic use, work ethics, and the specified interactions. The nonsignificant coefficients should not be interpreted as evidence that socialization or entertainment is universally irrelevant to employee outcomes.

The socialization result differs from studies identifying favorable pathways through engagement, extra-role behavior, knowledge sharing, or thriving [3], [17], [19]. This difference is plausible because the administered socialization items included general sociability, social identity, contact with relatives, and social events rather than exclusively coworker interaction. The entertainment result is consistent with mixed evidence showing negative, indirect positive, and nonsignificant performance relationships across different models [15], [18], while bounded social media breaks may support recovery [24]. In the present model, entertainment remained nonsignificant while problematic use was negatively associated with self-reported productivity, supporting the distinction between recreational purpose and behavioral dysregulation.

4.4 Moderating Role of Work Ethics

Table 5 summarizes the conditional associations for both focal interactions. Sections 4.4.1 and 4.4.2 interpret these patterns, while Figures 2 and 3 display the corresponding fitted relationships.

Table 5. Conditional associations at selected levels of work ethics

Focal predictor	Work-ethics level	Conditional slope β	HC3 SE	p	95% HC3 CI
Work-related use	Low	.153	.073	.037	.010 to .297
Work-related use	Mean	.295	.054	< .001	.187 to .402
Work-related use	High	.436	.068	< .001	.302 to .571
Problematic use	Low	-.395	.086	< .001	-.565 to -.225
Problematic use	Mean	-.240	.056	< .001	-.352 to -.129
Problematic use	High	-.086	.070	.222	-.224 to .053

Note. $N = 174$. Conditional slopes are standardized. Standard errors, probability values, and confidence intervals are based on HC3 heteroskedasticity-consistent inference. Low and high work

ethics represent one standard deviation below and above the mean, respectively. Table 4 reports percentile-bootstrap confidence intervals for the model coefficients, whereas Table 5 reports HC3 confidence intervals for the conditional slopes. Source: By author.

4.4.1 Moderation of the work-related use association

The interaction between work-related use and work ethics was positive, with a standardized coefficient of .142, an HC3 standard error of .045, and a probability of .002. The 95 percent bootstrap interval extended from .056 to .226. H5 was therefore supported. The conditional association between work-related use and self-reported productivity was .153 at low work ethics, .295 at the mean, and .436 at high work ethics. The corresponding probability values were .037, below .001, and below .001. Johnson-Neyman analysis indicated that the positive association was statistically distinguishable from zero at observed work-ethics values above approximately 1.05 standard deviations below the mean. This pattern indicates that higher work ethics is associated with a stronger positive relationship between task-oriented social media use and self-reported productivity.

This result does not imply that employees with lower work ethics receive no productivity value from task-oriented use. It is consistent with evidence that locus of control conditions the relationship between work-related use and thriving [19] and that self-regulation changes how social media use relates to employee outcomes [22]. The present study extends this conditional perspective by identifying work ethics as an occupational orientation associated with stronger translation of task-aligned digital activity into reported productivity.

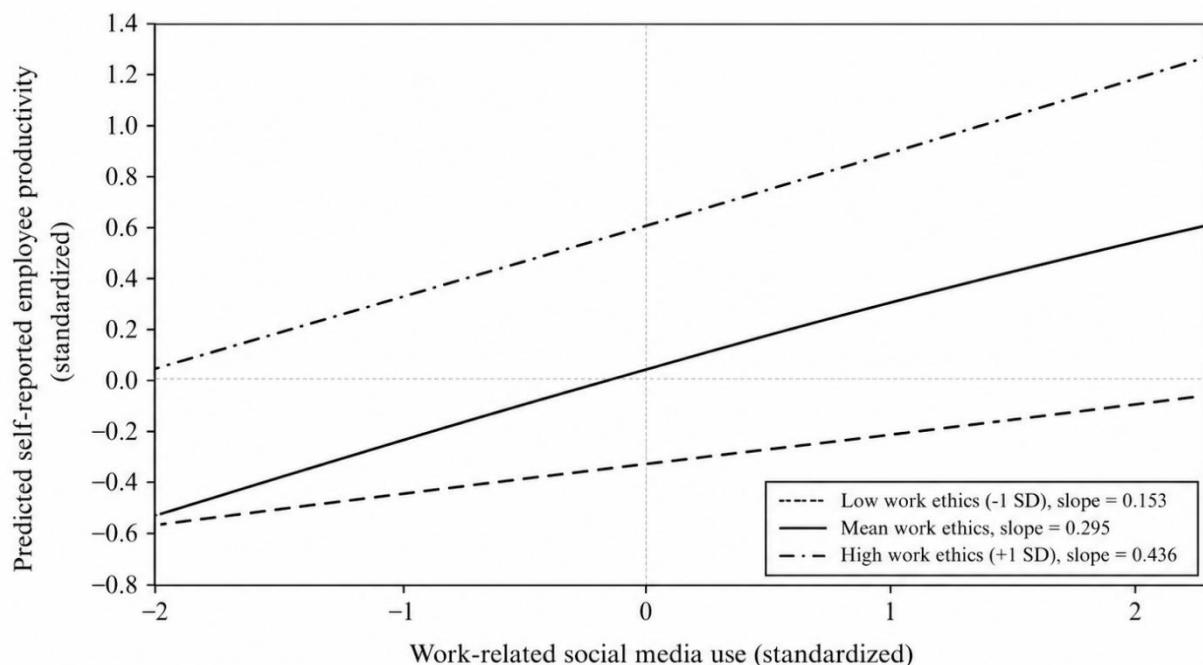


Figure 2. Conditional association between work-related social media use and self-reported employee productivity across levels of work ethics

Note. Predicted values are based on the primary moderated regression model. Low and high work

ethics represent one standard deviation below and above the mean, respectively. All remaining standardized predictors were held at zero. Source: By author.

4.4.2 Moderation of the problematic use association

The interaction between problematic use and work ethics was positive, with a standardized coefficient of .155, HC3 standard error of .055, and a probability of .005. The 95 percent bootstrap interval extended from .061 to .252. Because the conditional problematic-use association was negative, the positive interaction represents attenuation of that adverse relationship. H6 was therefore supported. The conditional association was $-.395$ at low work ethics, $-.240$ at the mean, and $-.086$ at high work ethics. The corresponding probability values were below .001, below .001, and .222. Johnson-Neyman analysis indicated that the negative association was statistically distinguishable from zero at observed work-ethics values below approximately .75 standard deviations above the mean. The result indicates attenuation rather than reversal and does not imply that stronger work ethics makes problematic use beneficial or harmless.

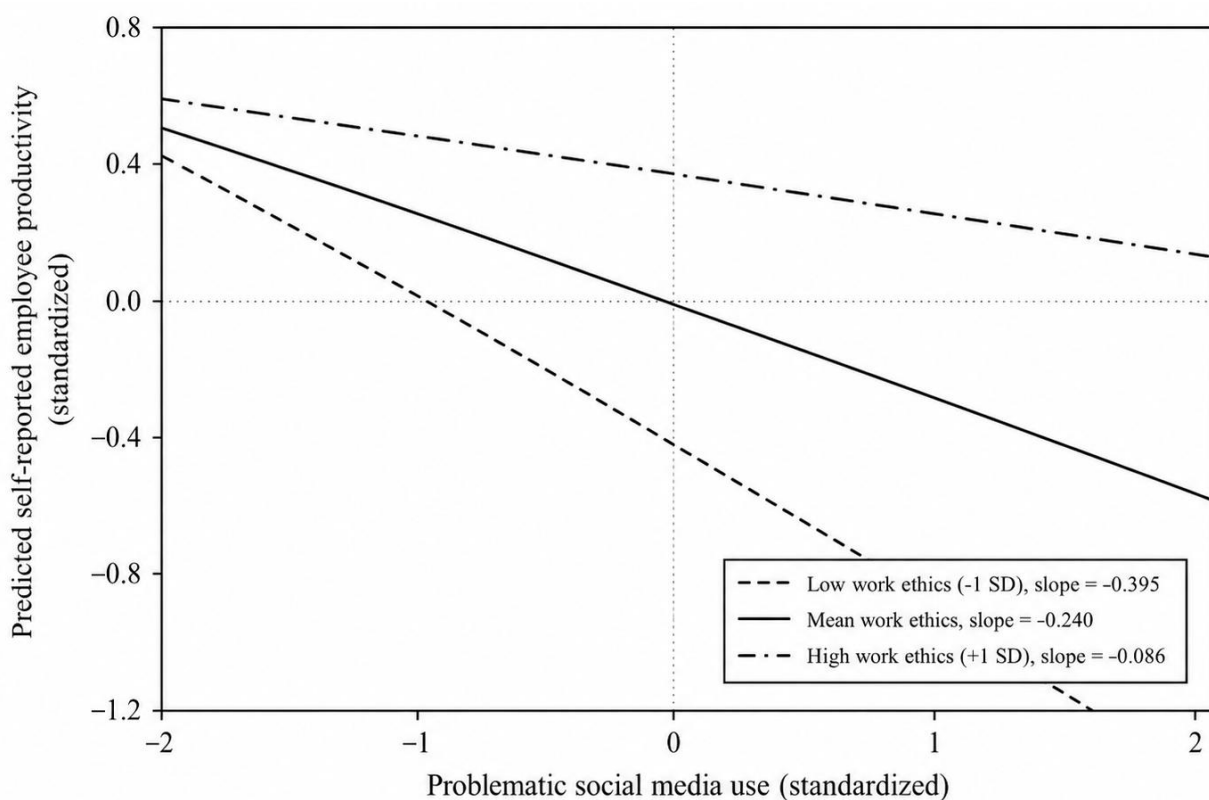


Figure 3. Conditional association between problematic social media use and self-reported employee productivity across levels of work ethics

Note. Predicted values are based on the primary moderated regression model. Low and high work ethics represent one standard deviation below and above the mean, respectively. All remaining standardized predictors were held at zero. Source: By author.

4.5 Robustness and Predictive Assessment

The primary findings remained stable after gender, age, education, job category, administration mode, perceived essentiality of social media for work, and WhatsApp as the primary platform were included. Work-related use remained positively associated with self-reported productivity, $\beta = .311$, $p < .001$, and informational use remained positive, $\beta = .196$, $p = .001$. Problematic use remained negative, $\beta = -.242$, $p < .001$, while work ethics remained positive, $\beta = .369$, $p < .001$. The work-related-use interaction remained positive, $\beta = .136$, $p = .005$, and the problematic-use interaction remained positive, $\beta = .182$, $p = .002$. Socialization and entertainment remained nonsignificant. The controlled model explained 56.1 percent of the variance in self-reported productivity. The covariates were included only to assess the sensitivity of the focal estimates and were not interpreted as substantive explanatory relationships. Table 6 reports the complete controlled sensitivity model for transparency.

Table 6. Controlled sensitivity model

Model term	Estimate	HC3 SE	Test statistic	p	95% HC3 CI
Intercept	.109	.288	0.38	.706	-.461 to .678
Work-related use	.311	.056	5.52	< .001	.200 to .422
Socialization	-.025	.063	-0.40	.687	-.150 to .099
Entertainment	.002	.070	0.03	.980	-.136 to .139
Informational use	.196	.062	3.18	.001	.074 to .318
Problematic use	-.242	.059	-4.11	< .001	-.359 to -.126
Work ethics	.369	.059	6.30	< .001	.253 to .485
Work-related use $\times$ work ethics	.136	.049	2.80	.005	.040 to .233
Problematic use $\times$ work ethics	.182	.059	3.08	.002	.065 to .298
Female	.089	.134	0.67	.503	-.174 to .353
Age group	-.048	.050	-0.96	.335	-.146 to .050
Education level	.088	.069	1.27	.203	-.048 to .223

Senior executive	.107	.281	0.38	.704	-.449 to .662
Manager	.109	.209	0.52	.601	-.304 to .523
Officer	-.026	.130	-0.20	.845	-.283 to .232
Paper administration	-.076	.127	-0.60	.551	-.328 to .176
Social media perceived as essential for work	-.060	.134	-0.45	.651	-.324 to .203
WhatsApp as primary platform	-.179	.170	-1.05	.295	-.515 to .158

Note. $N = 174$. The dependent variable is standardized self-reported employee productivity. Estimates for the focal continuous predictors and interaction terms are standardized coefficients. Control-variable estimates reflect the coding described below. Standard errors, probability values, and confidence intervals are based on HC3 heteroskedasticity-consistent inference. The model explained 56.1 percent of the variance in self-reported employee productivity ($R^2 = .561$; adjusted $R^2 = .513$; HC3-robust $F(17, 156) = 16.43$, $p < .001$). Female was coded as 1 and male as 0. Age was coded as an ordered variable ranging from 1 (21 to 25 years) to 5 (over 40 years). Education was coded from 1 for below diploma to 4 for postgraduate education. Operator was the reference category for the senior-executive, manager, and officer indicators. Paper administration was coded as 1, and online administration was coded as 0. Perceived essentiality of social media for work was coded 1 for yes and 0 for no. WhatsApp as the primary platform was coded 1, with other or unreported platforms coded 0. Source: By author.

Additional specification checks supported the primary construct decisions. Restoring the telephone-time item to the work-ethics composite changed the work-ethics coefficient from .381 to .386. An alternative specification using a single global social media-use composite yielded a substantially smaller standardized coefficient ($\beta = .174$). Because that composite combined task-oriented, informational, social, recreational, and problematic activity, its attenuated coefficient is consistent with cancellation among conceptually opposing forms of use. Restoring the excluded academic-stress item to the entertainment composite did not alter the direction or statistical interpretation of the focal relationships. These checks support the revised three-item entertainment composite and the exclusion of the overlapping telephone-time item from the primary work-ethics score.

A supplementary marker-variable sensitivity analysis produced a marker coefficient of $\beta = .043$, HC3 standard error of .054, and a probability of .426. The largest absolute change among the eight focal coefficients was .005. The primary estimates were therefore numerically stable to this specification. This result does not establish the absence of common-method bias because the focal predictor and outcome measures remained self-reported and were collected from the same

respondents [34].

The differentiated interaction model also showed positive held-out predictive performance within the same organizational dataset. Ten-fold cross-validation produced cross-validated explained variance of .506, RMSE of .441, and MAE of .344. The interaction model outperformed the main-effects specification, which produced cross-validated explained variance of .462, RMSE of .460, and MAE of .361. It also outperformed the training-mean benchmark, which produced RMSE of .627 and MAE of .520. This predictive analysis is treated as supplementary robustness evidence rather than support for causal or population-wide generalization.

5. Contributions and Implications

5.1 Theoretical Contributions

This study contributes to management and organizational research by showing that a global account of employee social media use can mask behaviorally distinct associations. Separating four purpose-based forms of use from problematic use as behavioral dysregulation indicates that an aggregate social media-use construct lacks a single organizational meaning. The contribution is therefore one of conceptual precision. The findings support models that distinguish social media-use purpose from behavioral regulation rather than treating employee social media use as a uniform form of behavior.

The study also extends the organizational application of uses and gratifications theory [9]. The theory explains why employees engage with social media for task-related, cognitive, relational, and recreational purposes. The findings indicate that these use purposes do not have equivalent relationships with productivity. Problematic use occupies a different conceptual position because it concerns compulsive engagement, task postponement, and impaired concentration rather than gratification alone [6], [7]. This distinction clarifies the purpose of social media use and its regulation when explaining employee outcomes.

Integrating uses and gratifications theory with social cognitive theory of self-regulation adds further value. Uses and gratifications theory explains why employees undertake different forms of social media activity, while social cognitive theory explains how personal and situational standards may condition behavior [12]. Work ethics is not equivalent to self-regulatory capacity. In this study, it represents an occupational orientation comprising work interest, occupational moral orientation, and intrinsic work motivation. Positioning work ethics within the self-regulation framework clarifies how occupational standards may condition the associations between digital behavior and employee productivity.

The central theoretical contribution is to position work ethics as a dual boundary condition. Prior research links work ethic with task intensity and performance [11], [20], [21], while workplace social media studies identify locus of control, self-regulation, and mindfulness as relevant personal boundary conditions [19], [22], [23]. By identifying a stronger positive work-related-use slope and a weaker negative problematic-use slope at higher levels of work ethics, the study connects these research streams within a single differentiated model. The pattern is consistent with resource

mobilization and behavioral restraint, although these mechanisms were not measured directly and require longitudinal or experimental testing.

Finally, the contrast between the nonsignificant entertainment coefficient and the negative problematic-use coefficient indicates that recreational purpose should not be conflated with behavioral dysregulation. The relevant theoretical boundary concerns loss of control and functional interference rather than nonwork content alone [6], [7], [24].

5.2 Empirical and Contextual Contributions

The study estimates the unique associations of five differentiated employee-reported social media-use constructs with self-reported employee productivity within one model and tests work ethics as both a direct correlate and a moderator of two theoretically selected relationships. The specification separates four purpose-based forms of use from problematic use as behavioral dysregulation. In the sensitivity analysis, the global social media-use composite yielded a standardized coefficient of $\beta = .174$. Because the composite combined behaviors whose unique associations differed in direction and magnitude, aggregation could not separately represent the positive work-related-use association and the negative problematic-use association. Within this sample, the global specification therefore reduced behavioral specificity and obscured theoretically meaningful heterogeneity that became visible when the use dimensions were modeled separately.

The study also extends research on differentiated employee social media use to a pharmaceutical manufacturer in Uganda. Pharmaceutical manufacturing places particular importance on accurate documentation, procedural compliance, reliable execution, information integrity, and responsible employee conduct [13], [14]. The differentiated-use specification and the conditional role of work ethics yielded theoretically interpretable direct and conditional associations under these regulated conditions. This bounded contextual extension does not imply that the relationships are unique to Uganda, pharmaceutical manufacturing, or sub-Saharan Africa. Rather, it shows that the model remains analytically informative in an organization with substantial quality and procedural requirements. These contributions remain bounded by the cross-sectional, self-reported, single-organization design examined in Section 6.

5.3 Managerial and HRM Implications

The managerial implications are evidence-informed propositions rather than evaluated interventions. The findings provide a basis for considering differentiated digital-use governance instead of a binary choice between unrestricted access and complete prohibition. Organizations should identify which social media activities provide legitimate task or informational value, which behaviors interfere with occupational responsibilities, and which controls are proportionate to the associated operational risks.

Task-oriented social media activity may be governed through approved channels, defined communication purposes, and proportionate information controls. WhatsApp was the most frequently reported platform among respondents, but the focal use scores were not platform-specific. The study therefore does not support platform-level causal inference. External evidence that WhatsApp can

support team communication and task accomplishment [35] may inform implementation, but it does not establish that consumer messaging applications are suitable for controlled pharmaceutical records. A conservative implication of pharmaceutical quality and documentation requirements is that information governed by quality, regulatory, laboratory, confidentiality, or controlled-document obligations should remain within approved organizational systems [13], [14].

Policies concerning problematic use should focus on observable occupational interference, including compulsive engagement, task postponement, and difficulty concentrating, rather than on platform presence or use frequency alone. HRM systems may reinforce occupational standards through onboarding, supervisory modeling, and performance discussions. However, the work-ethics composite should not be used for individual hiring, promotion, performance rating, or disciplinary decisions because the study did not validate it as a personnel-assessment instrument.

Focused training may address notification management, concentration periods, separation of work and personal communication, and verification before information sharing. External evidence supports piloting narrowly specified self-regulation interventions [36] and suggests that clear guidance may be more constructive than predominantly punitive controls [37], although those studies examined outcomes different from the productivity relationships tested in this study. Role-sensitive arrangements should therefore be based on local task and risk assessment rather than assumed from the findings.

The managerial implications can be summarized as a three-part organizing framework for policy development and testing. Organizations may enable digital activities that provide documented task or informational value, intervene when use becomes compulsive or functionally disruptive, and reinforce occupational standards together with attention-management and behavioral-regulation practices. These measures should be introduced through transparent, limited pilots and evaluated using employee feedback and indicators of productivity, quality, procedural compliance, information integrity, confidentiality, and implementation burden before wider adoption.

6. Limitations and Future Research

6.1 Design, Data Source, and Sampling Limitations

The findings are bounded by the cross-sectional design. Social media use, work ethics, and self-reported employee productivity were measured during the same data-collection period. The results therefore provide estimates of direct and conditional associations but do not establish temporal ordering or causality. They cannot determine whether social media behavior preceded productivity, whether productivity influenced employees' use patterns, or whether unmeasured factors contributed to both [38]. The controlled model addressed selected demographic, hierarchical, administration-mode, and platform differences but could not rule out confounding from workload, role autonomy, supervisory practices, exposure to digital-use policies, personality, or objective task complexity. Future longitudinal research should measure the focal variables at multiple time points to assess temporal ordering and distinguish stable between-person differences from within-person change. Experiments, natural experiments, and credible quasi-experimental designs are needed to support

stronger causal conclusions.

All focal variables were reported by the same employees during the same data-collection period, which remains a material limitation of the hypothesis tests. Self-report is appropriate for use in assessing perceived compulsive engagement, concentration difficulty, and intrinsic work motivation because these phenomena are not always directly observable. The productivity outcome, however, is perceptual rather than objective. Shared response tendencies and socially desirable self-presentation may therefore strengthen observed covariation, particularly because work ethics and productivity are normatively valued characteristics. The model's 54.6 percent explained variance should consequently not be interpreted as free from possible common-source inflation. Contemporary methodological guidance indicates that statistical checks cannot establish that common-method bias is absent [34]. Future research should separate predictor and outcome sources where feasible by combining employee reports with supervisor assessments, independently recorded task completion, production and quality indicators, documented errors, and other role-appropriate operational outcomes.

The mixed online and paper administration created the possibility of mode-related response differences, although administration mode did not alter the principal conclusions in the controlled analysis. Measurement equivalence across administration modes and occupational groups was not assessed. Information about the nine selected employees who did not provide usable questionnaires was unavailable, so nonresponse bias could not be evaluated directly. The sampling frame was limited to permanent employees. The findings therefore do not extend directly to temporary, contract, outsourced, or other contingent workers, whose organizational access and employment arrangements may differ. Future studies should examine whether the differentiated relationships are comparable across employment arrangements.

6.2 Measurement Limitations

The principal measurement limitation concerns construct validity rather than internal consistency. The socialization, entertainment, and informational items originated in a student-focused questionnaire [28]. The archived work-related-use and problematic-use blocks lack independently verified published provenance, and self-reported productivity was operationalized as a study-specific composite. These conditions constrain claims of established content validity and comparability with previously validated employee measures. In addition, the socialization and informational items were not consistently anchored to occupational content, and the revised entertainment score required exclusion of an administered item that referred to academic stress. The resulting constructs should therefore be interpreted according to their observed item content rather than as fully validated workplace scales.

The revised dimensional analysis reinforces this caution. Parallel analysis of the 22 retained social media items supported four factors under both random-eigenvalue criteria rather than independently confirming the five theory-specified scores. The study retains the five observed composite scores because they represent analytically differentiated use categories and because socialization and entertainment are exploratory rather than hypothesized focal predictors. This decision does not establish a five-factor latent measurement structure. Future research should develop

employee-context measures through expert content assessment, cognitive interviews with employees, pilot administration, and independent psychometric validation before structural hypotheses are tested.

The removal of the academic-stress item improves contextual fit but does not retroactively validate the entertainment measure. Likewise, the internal consistency of the work-related, problematic-use, and productivity composites does not establish criterion or construct validity. Future studies should use independently validated employee measures and should distinguish occupationally relevant informational and social activity from general social media behavior through explicit wording concerning work tasks, work time, coworkers, organizational channels, and role-relevant information.

The questionnaire did not record the timing, duration, content, platform, or sequence of individual social media episodes. Respondents' primary-platform choices were strongly concentrated on WhatsApp, but the focal composite responses were not tied to a single platform. The observed associations may therefore reflect a mix of messaging applications, public social networking platforms, professional networking platforms, and other uses. Diary and experience-sampling designs could separate stable between-person differences from within-person fluctuations across days and tasks [39]. They could also examine short-term processes involving interruption, recovery, information acquisition, concentration, and task completion. Platform-specific measures, digital traces, or time-use records could provide complementary behavioral evidence, provided that their collection is governed by informed consent, data minimization, confidentiality safeguards, and proportionate organizational access.

6.3 Analytical and Reproducibility Limitations

The article reports a theory-led secondary analysis of data collected for a broader doctoral project. The differentiated moderation model and article-specific hypotheses were not preregistered. Although the analytical specification was theoretically grounded and implemented through a documented analysis workflow, the analysis retained some researcher degrees of freedom because direct, exploratory, interaction, and sensitivity relationships were examined. The primary hypotheses were theory-specified, while the exploratory and robustness findings should be interpreted as supplementary. Future research should preregister the hypotheses, composite definitions, exclusions, interaction terms, robustness procedures, and inferential rules before examining the data. Ten-fold cross-validation estimated predictive performance across held-out folds within the same organizational dataset. It does not constitute external validation across another organization, employee cohort, or time period.

Socialization and entertainment were estimated as exploratory linear predictors. Their nonsignificant unique coefficients do not establish that they are universally irrelevant. Socialization may operate indirectly through engagement, relational resources, or knowledge sharing [3], [17], [19], while entertainment may support recovery under bounded conditions [24]. The model did not test indirect, nonlinear, temporal, or task-contingent relationships. Future research should distinguish purposeful recovery from habitual recreational checking and examine whether relational or recreational use has different implications across tasks and time periods.

The two work-ethics interactions were statistically significant but small, with local f^2 values of .044 and .047. The original sample size was determined through a finite-population sampling procedure rather than an interaction-specific prospective power analysis. The interaction estimates may therefore be sensitive to sampling variation and should not be treated as precise or stable population estimates. Larger multisite samples are required to produce narrower confidence intervals, assess the reproducibility of the conditional associations, and determine whether the effect sizes remain substantively meaningful across settings.

The moderation estimates identify conditional associations but do not establish the mechanisms through which work ethics may operate. Resource mobilization, attention regulation, knowledge application, task prioritization, and behavioral restraint were not measured directly. Future studies should test these processes explicitly and examine work interest, occupational moral orientation, and intrinsic work motivation as separate moderators.

The occupational subgroups were uneven in size, particularly among managers and senior executives. The study was therefore unable to reliably test whether the coefficients and interactions differed across hierarchical or functional groups. The analysis also did not model employees as nested within supervisors or work teams. Future multisite research should recruit adequate samples within occupational categories and, where ethically permissible, collect de-identified supervisory and team-cluster information to support multigroup and multilevel analyses without compromising participant confidentiality.

The article-specific reanalysis used the supplied file of 174 complete records and conducted no additional imputation. The doctoral documentation reported missing responses before the final analytical file was created, but the original pre-cleaning export and complete missing-data treatment log were unavailable. The transition from returned questionnaires to complete analytical records could therefore not be reconstructed, and the influence of the undocumented treatment procedure on the estimates could not be evaluated. Exact fieldwork dates were also unavailable, preventing precise alignment of the findings with time-specific organizational policies, platform conditions, or work arrangements. Future studies should preserve original data exports, dated cleaning and imputation logs, questionnaire versions, exclusion decisions, fieldwork metadata, reproducible code, and version-controlled analysis outputs.

6.4 Contextual Boundaries and Generalizability

The research was conducted at a single pharmaceutical manufacturer in Uganda. The stratified sampling procedure achieved broad coverage within that organization, but the findings should not be generalized statistically to the Ugandan pharmaceutical sector, sub-Saharan Africa, or organizations in other institutional settings. Context shapes the meaning of organizational behavior and the relationships among organizational variables [40]. The regulated manufacturing environment may have increased the salience of concentration, documentation, procedural responsibility, and information integrity. Multi-organization, cross-platform, and cross-occupational research should test whether relationships vary across regulatory requirements, task design, communication infrastructure, and organizational culture. These boundaries limit inference to theory-consistent associations within

the studied organization. They do not support causal, externally validated, sector-wide, or population-level conclusions.

A useful next stage is to move from composite-based cross-sectional associations toward temporally ordered and behaviorally anchored tests of the differentiated-use framework. Recent research demonstrates the value of distinguishing work-related from nonwork-related enterprise social media activity [41], using multi-wave and multisource designs to examine organizational policy as a boundary condition [42], and combining survey evidence with digital trace data when studying employee social media behavior [43]. Future studies should therefore test whether work ethics prospectively conditions within-person changes in task-oriented and problematic use, whether the relationships replicate across regulated and nonregulated organizations, and whether they predict supervisor-rated or operational performance indicators. Such designs would clarify temporal ordering, reduce dependence on common-source measurement, and determine whether the conditional relationships identified here generalize beyond the present organization.

7. Conclusion

This study examined whether differentiated forms of social media use reported by employees were associated with self-reported productivity and whether work ethics conditioned the relationships between work-related and problematic use and self-reported productivity in a Ugandan pharmaceutical manufacturer. Work-related and informational use were positively associated with self-reported productivity; problematic use was negatively associated; and socialization and entertainment did not explain unique variation after accounting for the remaining predictors. Work ethics was positively associated with self-reported productivity and strengthened the positive work-related-use association while attenuating the negative problematic-use association.

The study therefore advances a conditional account in which social media-use purpose and behavioral dysregulation are analytically separated, and work ethics operates as a dual boundary condition. The management implication is not blanket encouragement or restriction of social media. Organizations should distinguish task-supporting digital activity from behavior that interferes with concentration and work completion while avoiding personnel decisions based on the study-specific work-ethics measure.

Future research should test the framework using longitudinal and multisource designs, employee-context measures developed and validated before hypothesis testing, supervisor-rated or operational productivity indicators, and multisite samples spanning regulated and nonregulated organizations. Recent enterprise social media research demonstrates the value of separating work-related from nonwork-related behavior, examining organizational policy as a boundary condition, and supplementing survey evidence with behavioral or digital trace data [41], [42], [43]. These extensions would clarify temporal ordering, reduce common-source dependence, and establish whether the observed conditional relationships reproduce beyond the present organizational setting.

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Conflicts of Interest

The author confirms no conflicts of interest.

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