

# Ethical leadership and employee creativity among engineering employees: evidence from a developing economy

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## Abstract

**Purpose** – Based on the trait activation theory, the current study systematically integrates how autonomy interacts with proactivity to influence the relationship between ethical leadership style and employee creativity.

**Design/methodology/approach** – Using simple random sampling and questionnaires, a sample of 475 engineering employees of 3 leading telecommunication companies in Ghana were obtained. The analysis was done using structured equation modeling (SEM), using SmartPLS.

**Findings** – The results showed that ethical leadership style provides employees with job autonomy which facilitates individual creativity. Employee proactivity also moderates a positive relationship between autonomy and creativity such that high-proactive employees are well placed to produce more creative outcomes when given autonomy. At the individual level, personal characteristics determine the degree of creativity.

**Practical implications** – The current study implies that telecommunication companies should put in more efforts to train and encourage leaders to be ethical in leaders' dealings with employees and employees must be rewarded for taking initiative.

**Originality/value** – With a focus on the integrative approach from a developing economy, this work is novel in exploring how contextual and personal features impact creativity.

**Keywords** Ethical leadership, Job autonomy, Proactivity, Self-efficacy, Creativity

**Paper type** Research paper



## Introduction

Telecommunication in Ghana is very competitive. This has brought about the need for employees to offer excellent services to clients. Since creativity is needed in a competitive environment, there is an urgent need for employers to provide a creative climate and for

*Informed Consent:* Informed consent was obtained from all individual participants included in the study.

COMPLIANCE WITH ETHICAL STANDARDS

*Conflict of Interest:* The authors declare that they have no conflict of interest.

employees to exhibit personal characteristics that enhance creativity. Studies have shown that a creative workforce in products, work processes and services is vital to the competitiveness and survival of an organization (Anasori *et al.*, 2023; Bavik and Kuo, 2022; Golden and Shriner, 2019).

Driven by the fact that stimulating employee creativity has become a necessity in today's turbulent, competitive and complex business environment (Lv *et al.*, 2021), organizations are continually devising varied means of fostering employee creativity. Leadership is considered one of the most significant factors that hinder or promote creativity (Bavik and Kuo, 2022; Phuong and Takahashi, 2020; Wadei *et al.*, 2020). Leaders function as significant attachment figures, affecting follower motivation and behavior (Shen *et al.*, 2023), especially among employees in the engineering profession (Farr and Brazil, 2009).

Creativity-related studies have found that factors such as abusive supervision (Akram *et al.*, 2022), employer–employee shared values (Spanjol *et al.*, 2015), intrinsic motivation, problem-solving abilities, cognitive style, individual personality, physical environment and organization culture play key roles in the cultivation and execution of creativity (Hornig *et al.*, 2016). The consensus on the significance of this trait has motivated a thorough and in-depth study to identify and validate contextual and personal factors as respective predictors and intermediaries of creativity. Although a number of studies have examined the combined effect of personal and contextual characteristics on employee creativity (e.g. Liu *et al.*, 2021; Sung *et al.*, 2017; Tai and Mai, 2016), few studies examined the intermediate processes through which personal characteristics enhance creativity. In addition, most of the studies have focused on developed economies such as the USA or European to draw out lessons for developing countries. Other studies worthy of note are rooted in Asian countries (Li *et al.*, 2022; Liu *et al.*, 2021; Sung *et al.*, 2017) with none coming from developing economies in Africa. The studies demonstrated that personal, cognitive and contextual factors play different roles to influence creativity.

The current study is based on the integrative approach because creativity results from an interaction between an individual and the contextual environment. While personal characteristics are made up of cognitive and personality factors, contextual characteristics can be grouped into organizational and job contexts. Therefore, the purpose of the study is to bring out the intermediate processes by which contextual factors and personality factors respectively predict and intermediate to promote individual creativity. One construct that is closely associated with individual creativity is carefully selected from each dimension: ethical leadership style from the organization context, job autonomy from the job context and proactivity from the personal characteristics.

Despite significant progress in understanding how and when leadership behaviors are more effective, further research is needed to explore the process and boundary conditions of leadership on creativity (Hughes *et al.*, 2018). Ethical leadership style is used as a predictor because it is a supportive leadership style that influences individual followers and provides them with empowerment and autonomy that enhance individual creativity. The personal characteristic such as proactivity is used as moderator simply because it influences the extent to which individuals apply various strategies that may facilitate creativity. Additionally, assuming a unitary form of employee creativity among individuals with different characteristics is regarded as unrealistic (Sung *et al.*, 2017). Generally, the integrative perspective shows that human behavior is a product of continuous multi-directional processes of interactions between person and situation (Wu *et al.*, 2014).

The objectives of the present study are two folds. The first objective is to investigate the interplay between ethical leadership style, autonomy and proactivity on creativity in non-Western context. Although Anderson *et al.* (2004) outlined that individuals from non-Western cultures may respond differently to organizational conditions, earlier reviews (e.g. Shalley *et al.*, 2004; Zhou and Hoever, 2014) noted that the vast majority of studies that examined the impact of contextual and personal characteristics on creativity were conducted on organizations in the USA or the other Western nations, leaving a research gap for

emerging economies. Further, scholars (Joo *et al.*, 2014a; Zhou and Hoever, 2014) have advocated for more integrative studies on creativity from diverse cultures in order to increase generalizability. Although a few studies (e.g. Anning-Dorson, 2018; Sanda and Arthur, 2017) have been done in Ghana, they did not involve the integrative approach. A study by Hale and Fields (2007) also found a significant difference in leadership among respondents from Ghana and the USA. Studies (Dul and Ceylan, 2011; Zhang and Lee, 2020) have also demonstrated that the socio-organizational and physical work environments contribute to employee creativity. The present study thus contributes by using the integrative approach to examine how both contextual and personal characteristics interplay to enhance creativity in an emerging economy. Emerging economies differ from developed ones on many fronts and this has implications for developing and implementing strategies to be creative and competitive (Anning-Dorson, 2018). Driven by the fact that context matters in management (Boso *et al.*, 2013), and the evidence that culture has an influence on employee decision-making and evaluations (Mesoudi, 2011), the Ghanaian context provides a unique environment to explore the effect of leadership styles on creativity.

The second objective is to focus on leadership and creativity among engineering employees. There has been criticism on a lack of context-specificity on leadership research (Liden and Antonakis, 2009). Berson and Linton (2005) demonstrated that the influence of leadership on employees such as engineers and scientist performing complicated tasks is greater than other professional groups that engage in less-complex jobs. Minh *et al.* (2017) demonstrated that the engineering profession requires a high level of leadership to produce creative and innovative work behavior because the work is more knowledge based and less rigidly defined. Also organizations that are engineering intensive such as those in the telecommunication industry operate in a business environment characterized by radical change and uncertainty (Powell and Pazos, 2017) which calls for employees to be proactive and self-efficacious to facilitate creativity. Although previous studies (Berson and Linton, 2005; Minh *et al.*, 2017; Powell and Pazos, 2017) tackled leadership and creativity among employees in engineering organizations, it was not from the integrative perspective with same variables as this study. Hence, this study fills a gap and contributes to existing knowledge in a context-specific manner by focusing on ethical leadership and creativity among engineering employees using the integrative approach. The theoretical framework is dependent on the trait activation theory that individual-level creativity is a phenomenon that is affected by both contextual and individual variables.

The remainder of the paper begins with the theoretical review of relevant literature and hypotheses development. This is closely followed by the research methodology and data analysis. Finally, there is the discussion of results with implications, limitations and future research direction.

## Theoretical review and hypotheses development

### *Trait activation theory*

Trait activation theory conceptualizes the personality–creativity relationship, which explains how specific personality traits evoke particular performance in the workplace (Tett and Burnett, 2003) and stresses that a particular trait needs a relevant context to reveal behavior. The characteristics of a specific behavior require trait-relevant situational clues to incite its expression (Tett and Guterman, 2000). According to the trait activation theory (Tett and Guterman, 2000), personal characteristics are dependent on situational cues such as social, organizational and job characteristics for the performance of trait-related behaviors. Personal characteristic such as proactivity is contingent on job autonomy, which is provided by ethical leaders, to enhance employee creativity.

*Ethical leadership, job autonomy, and creativity*

Ethical leadership is a positive form of leadership that motivates subordinates to adopt positive psychological states (Avolio *et al.*, 2009) and engages in behaviors that are beneficial to the organization (Bedi *et al.*, 2016; Ng and Feldman, 2015). As an essential leadership theory ensuring organizational sustainability (Brown and Trevino, 2006), it has been found to have a positive relationship with job satisfaction (Freire and Bettencourt, 2020) and employee well-being (Sarwar *et al.*, 2020). Ethical leaders engender a positive relational context that promotes subordinate trust in the leader (Le and Nguyen, 2023). Ethical leaders are thus credible and attractive role models whose attitude and behavior signal to employees the desired behaviors and attitudes that are expected and rewarded in the workplace (Trevino *et al.*, 2014). They encourage employee perception of job autonomy, task significance and create opportunities for feedback (Piccolo *et al.*, 2010; Walumbwa *et al.*, 2017).

Ethical leadership offers subordinates the opportunity to express themselves and give them high levels of autonomy and influence over decision-making (Liu *et al.*, 2021) such as the discretion, independence and freedom to schedule work. Previous studies (Shakil *et al.*, 2021; Volmer *et al.*, 2012) demonstrated that employees with a good social connection with their leaders, involving trust and mutual awareness together with a high job autonomy, show more creativity in the performance of their duties. Since ethical leaders encourage employee perception of autonomy, and with the notion that creativity is enhanced when individuals have high autonomy to perform the day-to-day work activities (Liu *et al.*, 2021), employees who have control over their work in terms of pace, procedure and method are more responsible and develop a more active approach to work. Consequently, they come up with new ideas to implement working procedures and solve problems. Ethical leaders, by providing autonomy, inspirational motivation and intellectual stimulation, encourage employees to adopt exploratory and generative thinking processes that have the likelihood to stimulate and support employees to contend with problems and challenges. The perceived autonomy consequently leads to employee creativity. Hence, the study explores the relationship between ethical leadership, autonomy and creativity such that ethical leadership has a positive relationship with autonomy and, in turn, a positive relationship with creativity.

*H1.* Autonomy mediates the influence of ethical leadership on creativity

*The moderation of proactivity*

Due to the changing nature of the business and work environment (Prajogo, 2016), there is a crucial need for a proactive workforce. Proactive work behavior is defined as the process whereby an employee recognizes potential problems or opportunities in the work environment and self-initiate change to bring about a better future work situation (Parker and Collins, 2010). Grant and Ashford (2008) have shown that behavior across many domains can be done more or less proactively. Previous studies (e.g. Belschak and Den Hartog, 2010; Parker and Collins, 2010) have focused on classifying different kinds of proactive behaviors such as career initiative, taking charge and making suggestions at work (for reviews, see Wu *et al.*, 2013). Parker *et al.* (2010), in a similar manner, identified a consistent form of motivational processes such as reason to, energized to and can do that are applicable to various forms of proactivity. As shown by Parker *et al.* (2010), proactivity involves the mechanism of proactive envisioning, planning and enacting. Employees with proactive behaviors engage with their work at a deeper level, persistently pursue solutions to challenges they encounter and have the tendency to take self-initiated behaviors to impact on the world around them (Bakker *et al.*, 2012). They have the potential to accomplish more positive work outcomes through their elevated work engagements (Wang *et al.*, 2017; Yagil and Oren, 2021). They are masters of their destiny (Seibert *et al.*, 2001) and have a consistent likelihood to intentionally change themselves and the organization in a meaningful way.

Ma *et al.* (2022) demonstrated that proactive behaviors interact with job autonomy to positively impact work outcomes.

Permata and Mangundjaya (2021) found that antecedents, such as autonomy, affect proactive behavior. Proactive work behavior has been conceptualized as an autonomous set of actions performed by employees and promoted by the job or individual characteristics (Bindl and Parker, 2010; Tornau and Frese, 2013). This is because autonomous employees have a greater tendency to feel responsible for their work and to develop a sense of determination over their work (Fuller *et al.*, 2006). Since autonomy leads individuals to set challenging goals and devote more effort to accomplishing such goals, it fuels proactive behavior (Greguras and Diefendorff, 2010), supporting the trait activation theory. Employees working in high autonomous jobs show greater proactive behavior than those in low autonomous jobs (Ma *et al.*, 2022).

Creativity is contingent on the willingness of the employee to proactively engage with creative challenges and also to persist in attempts to meet these challenges in the presence of roadblocks or obstacles (Richter *et al.*, 2012). Proactive employees have the likelihood of displaying initiatives to change procedures in conducting jobs and organizational behaviors and persevere until meaningful changes occur in their goal achievement. They also display initiatives beyond normal job requirements which bring about creativity (Kim *et al.*, 2010). Kim *et al.* (2009) outlined that the degree to which employees possess proactivity is related to their creativity. The more proactive an employee is, the greater the tendency to show creative behavior (Joo *et al.*, 2014a, 2014b; Tai and Mai, 2016). Highly proactive employees recognize opportunities, act upon their own suggestions or ideas to bring about change and take proactive actions leading to creative performance (Du *et al.*, 2021). Additionally, employees with high-proactive behaviors show more positive reactions to social-organizational environments which may escalate their creative behaviors (Du *et al.*, 2021; Dul *et al.*, 2011). Since autonomy fuels proactivity and the notion that the extent to which employees have proactive behavior determines the level of creativity, the study postulates that the more proactive an employee is, the higher the creativity. Hence, proposes the next hypothesis as follows:

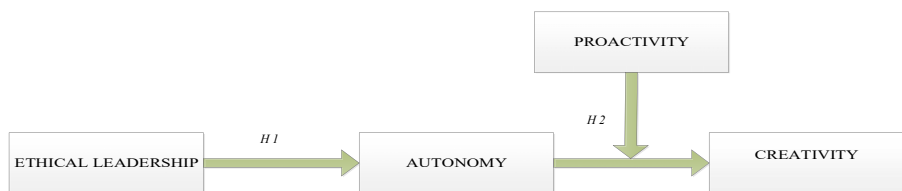
- H2. Proactivity positively interacts with autonomy in contributing to creativity, such that the relationship between autonomy and creativity is stronger when proactivity is high.

The theoretical model is shown in Figure 1.

## Research methodology

### Sample composition

The target respondents for the study are engineers in Ghana’s telecommunication industry. The Ghana Business Directory ([ghanaweb.com](http://ghanaweb.com)), a database that contains up-to-date information and contact of firms in various sectors, was used to obtain the contacts of the



Source(s): Authors own work

Figure 1.  
Theoretical model

telecommunication companies. Contacts were then made with the human resource management departments of the telecommunication companies explaining the purpose of the study and to seek consent. Although five companies were contacted, only three gave their consent. Through the human resource management departments of the three companies, informed consent was obtained from the employees. The study sample includes engineering employees working in three leading telecommunication companies operating in the two major cities, Accra and Kumasi, of Ghana. The telecommunication industry in Ghana is regarded as one of the significant economic sectors accounting for 2% of Gross Domestic Product, 10% of government income and 7% of investments in Ghana (Taukobong, 2015). Engineering employees in the telecommunication companies were chosen because it is a high-tech industry where work has become more knowledge based and less rigidly defined (Minh *et al.*, 2017). Also it is one of the sectors where technological change is rapid and there is high competition among the players (Phelps, 2010). As a result, employee creativity plays a major role in the success and survival of the telecommunication companies. Data were collected by the research team through daily visits which lasted for a month in each company. A designated box was placed in each company where filled questionnaires were deposited for final collection. The convenience sampling technique where respondents were available and willing was used in administering questionnaires which were employee reported. This technique was chosen in order to ensure high-internal validity and to make the findings trustworthy (Andrade, 2021). In total, 517 questionnaires were distributed to engineering employees who were available at the time of collecting data, out of which 483 were collected. After the deletion for missing values, 475 respondents' filled questionnaires were used (response rate of 91.9%). This study considers the sample size adequate based on suggested sample size estimation by Sekaran and Bougie (2016). Out of the 475 respondents, 60.2% were female, 54.7% between the ages 26–30, 62.1% had a bachelor's degree and 42.5% had job tenure of 4–7 years. Since the study used the convenience sampling method, one of the best-known methods for reducing non-response bias (Groves, 2006) and with the relatively high response rate, a scheduled follow up of respondents through telephone calls was not conducted. Instead, data were obtained from the human resource management departments that allowed for the comparison of respondents and non-respondents on the demographic variables such as gender, age, education and job tenure. Using *t* tests, this study found that respondents and non-respondents did not differ in terms of gender, age and education but did differ significantly in terms of tenure ( $t = -2.17, p < 0.05$ ); respondents were slightly lowly tenured ( $M = 2.52$  years) than non-respondents ( $M = 2.78$  years). Because respondents and non-respondents did not differ in terms of gender, age and education, this study concludes that respondents' characteristics were similar to non-respondents, minimizing all possible risk of non-response bias.

### Measurements

The measurement model is made up of 4 constructs and 19 indicators. All the variables were anchored on a five-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree) with uniformity for all respondents. The specific measures are given below. The various items of the questionnaire are provided in the [annexure](#).

*Ethical leadership.* The study assessed ethical leadership with Brown *et al.* (2005) scale. Due to organizational obligations for a short survey and the desire for a high response rate, this study used a shortened five-item version as used by Ren and Chadee (2017). Previous studies (e.g. Russell *et al.*, 2004; Stanton *et al.*, 2002) have shown that an item selection procedure based on quality indices permits to accurately and efficiently measure constructs in the organization context. A sample item reads "My leader makes fair and balanced decisions." Cronbach's alpha for ethical leadership was 0.862.

*Job autonomy.* Job autonomy was measured with a three-item scale developed by [Morgeson and Humphrey \(2006\)](#) and used in a previous study by [Wu et al. \(2018\)](#). A sample item reads “My job allows me to make a lot of decisions on my own.” Cronbach’s alpha for job autonomy was 0.763.

*Creativity.* The five-item creativity scale from [Ganesan and Weitz \(1996\)](#), used in a previous study by [Coelho and Augusto \(2010\)](#), was utilized. Consistent with previous studies, (e.g. [Cai et al., 2019](#); [Shalley et al., 2009](#)) in the organizational management research, the study employed self-report measure of creativity because employees are more aware of the subtle things they perform in their jobs that make them creative ([Janssen, 2000](#)). Also a study by [Axtell et al. \(2000\)](#) found self-report measures of creativity to correlate (0.62) with supervisor ratings of creativity. A sample item reads, “On the job, I am inventive in overcoming barriers.” Cronbach’s alpha for creativity was 0.888.

*Proactivity.* Proactivity was measured with [Claes et al.’s. \(2005\)](#) six-item scale that was used in a previous study by [Hu et al. \(2018\)](#). A sample item reads “If I believe in an idea, no obstacle can prevent me from making it happen.” Cronbach’s alpha for proactivity was 0.890.

### Data analysis

In order to assess the internal consistency of the constructs, the descriptive statistics and the reliability analysis, the study used Statistical Package for the Social Sciences (SPSS) version 25.0. Then, to analyze the research model and to study the relationship between the various variables and the weight that they place on each other, the study used the structural equation modeling (SEM), Partial Least Squares (PLS) in SmartPLS 3.0 ([Ringle et al., 2015](#)). The study chose PLS for two reasons: (1) the predictive focus of the model, and practically, PLS-SEM has no limitations when integrating one or more interacting term(s) into a path model, and (2) the non-normality of the data. Since some of the values of skewness and kurtosis exceeded 2 and 3, respectively, as outlined by [Kline \(2011\)](#), the data were considered as violating normality. According to [Sosik et al. \(2009\)](#), PLS does not require normality of data distribution because the PLS algorithm transforms non-normal data in accordance with the central limit theorem ([Beebe et al., 1998](#); [Cassel et al., 1999](#)), making it more suitable than other techniques such as Linear Structural Relations (LISREL). Following the recommended two-staged analytical procedures for SEM, the study tested the measurement model (validity and reliability) and then examined the structural model ([Hair et al., 2013](#)). In testing the significance of the path coefficients and the loadings, a bootstrapping method (5,000 resamples) was used ([Hair et al., 2013](#)). Bootstrapping yields more robust predictions, produce a large set of statistic estimates for finding confidence intervals, computes accurate confidence intervals and accounts for the non-normality of data ([Preacher and Hayes, 2008](#)).

### Findings and results

*Common method bias (CMB).* Since the reliance on a self-report may generate concerns about common method variance (CMV) in the analysis, this study used both procedural and statistical methods to control and test for CMV by following the state-of-art indications in previous researches (e.g. [Podsakoff et al., 2012](#); [Spector, 2006](#)) to detect and address CMV. As a means to reduce both evaluation apprehension and social desirability bias, a cover letter highlighting the aim of the study as merely for academic purposes, emphasizing voluntary participation and stressing that there were no wrong or right answers, was attached to the questionnaire. Respondents were assured of maximum protection on conditions of anonymity and confidentiality. As such, they were directed to place the filled questionnaire into a collection box that was provided by the research team instead of hand-delivering them to the researchers. Harman’s One-Factor Test was also used to check

the possibility of CMV because it is the most widely used method with other methods seemingly not faring better than Harman’s test (Bozionalos and Simmering, 2022). The eigenvalues show no single factor accounted for >50% of the variance. The first factor accounted for 41.5% of the variance. Additionally, CMV was checked based on Bagozzi *et al.* (1991). Since there are no highly correlated variables ( $r > 0.90$ ) as shown in Table 1, and based on Harman’s One-Factor Test, there is no alarming evidence of common method bias (CMB).

*Measurement model.* Table 1 shows the mean, standard deviation and correlations between the study variables. The pattern of correlations is such that, all the four constructs have significant and positive correlations among each other.

Following the suggestions of Henseler *et al.* (2015), this study tested the discriminant validity using the multitrait-multimethod matrix and the heterotrait-monotrait (HTMT) ratio of correlations. For this criterion, if the HTMT value is greater than 0.90 (Henseler *et al.*, 2015), then discriminant validity is a problem. As shown in Table 2, the HTMT values were not greater than 0.90 showing that discriminant validity is not a problem for this study.

In testing the model for convergent validity, the study assessed the factor loadings, the composite reliability (CR) and average variance extracted (AVE). As shown in Table 3, all the item loadings exceeded the suggested value of 0.6 (Chin *et al.*, 2008). CR and AVE values also exceeded the recommended values of 0.7 and 0.5, respectively (Hair *et al.*, 2013).

*Structural model.* Based on the guidelines suggested by Hair *et al.* (2013), the current study assessed the structural model, as shown in Figure 2, by looking at the  $R^2$ , beta and corresponding  $t$ -values through PLS-SEM algorithm function and bootstrapping (bias-corrected and accelerated) procedure with a resample of 5,000. Bootstrapping was applied in order to obtain inference statistics for all model parameters using a two-tailed distribution. When running bootstrapping, the study used the no sign change option (e.g. Streukens and Leroi-Werelds, 2016) and drew a sufficiently high number of bootstrap samples. This is

Variable	Mean	SD	1	2	3	4	5	6	7
1. Ethical leadership	3.76	0.60							
2. Autonomy	4.04	0.55	0.55**						
3. Creativity	3.99	0.56	0.57**	0.52**					
4. Proactivity	3.99	0.51	0.51**	0.57**	0.55**				
5. Gender	1.40	0.49	-0.03	-0.02	-0.03	-0.04			
6. Age	2.11	0.80	-0.03	-0.10*	-0.03	0.01	0.03		
7. Education	2.84	0.61	0.00	0.03	0.05	0.07	-0.05	0.06	
8. Tenure	2.52	0.79	0.01	0.03	0.07	0.07	-0.05	0.27**	0.12*

**Note(s):** Gender: 1 = female, 2 = male; Age: 1 = below 25, 2 = 26–30, 3 = 31–35, 4 = 36–40 and 5 = more than 40; education: 1 = high school, 2 = diploma/higher national diploma, 3 = bachelor, 4 = postgraduate and tenure: 1 = less than 1 year, 2 = 1–3 years, 3 = 4–7 years, 4 = 8–10 years and 5 = more than 10 years. \* $p < 0.05$ ; \*\* $p < 0.01$

**Source(s):** Authors’ own work

**Table 1.**  
Mean, standard  
deviation (SD) and  
correlations

Variable	1	2	3	4
Ethical leadership				
Autonomy	0.606			
Creativity	0.680	0.648		
Proactivity	0.604	0.611	0.647	

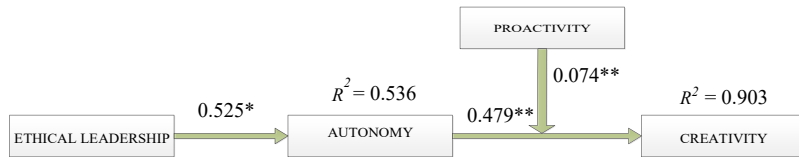
**Source(s):** Authors’ own work

**Table 2.**  
Heterotrait-  
Monotrait (HTMT)

Construct	Item	Loadings	AVE	CR
Ethical leadership (EL)	EL1	0.765	0.561	0.862
	EL2	0.646		
	EL3	0.662		
	EL4	0.669		
	EL5	0.959		
Autonomy (AT)	AT1	0.751	0.524	0.763
	AT2	0.799		
	AT3	0.793		
Creativity (CR)	CR1	0.678	0.615	0.888
	CR2	0.826		
	CR3	0.736		
	CR4	0.851		
	CR5	0.817		
Proactivity (PR)	PR1	0.825	0.575	0.890
	PR2	0.686		
	PR3	0.765		
	PR4	0.770		
	PR5	0.804		
	PR6	0.691		

**Table 3.**  
Reliability of  
constructs

**Note(s):** AVE = average variance extracted and CR = composite reliability  
**Source(s):** Authors' own work



**Figure 2.**  
Structural model

**Note(s):** Path coefficient and path significance \* $p < 0.05$ , \*\* $p < 0.01$   
**Source(s):** Authors own work

because when running bootstrapping in SmartPLS to check the indicator weights' significance and relevance, it is required to draw a sufficiently high bootstrap sample to obtain the  $p$  values and bias-corrected and accelerated confidence intervals. According to [Streukens and Leroi-Werelds \(2016\)](#), the final analysis should draw on at least 5,000 samples. In addition to the basic measures mentioned above, the study also looked at the predictive relevance ( $Q^2$ ) and the effect size ( $f^2$ ). The  $R^2$  value for autonomy and creativity are 0.536 and 0.903, respectively, which is higher than the 0.26 value that indicates a substantial model ([Cohen, 1988](#)). Since  $p$ -values show the significance of the relationship but not the size of the effect, the study assessed the effect sizes ( $f^2$ ). In measuring the effect sizes, [Cohen's \(1988\)](#) guidelines, which are 0.02, 0.15 and 0.35 for small, medium and large effects, respectively, were followed. [Tables 4 and 5](#) showed that all the relationships had medium effects except one (low effect). Apart from the  $R^2$  and  $f^2$ , the predictive sample reuse technique ( $Q^2$ ) also shows an effective predictive relevance ([Chin et al., 2008](#)). Based on the blindfolding method – a procedure that omits a part of the data matrix, estimates the model parameters and predicts

the omitted part (Ringle *et al.*, 2020) –  $Q^2$  was obtained using the cross-validated redundancy procedures. A  $Q^2$  less than zero means the model lacks predictive relevance while a  $Q^2$  greater than zero means the model has predictive relevance. Based on the above threshold, this study proves to have an acceptable predictive relevance for autonomy ( $Q^2 = 0.249$ ) and creativity ( $Q^2 = 0.903$ ). The structural model test result is shown in Figure 2 below:

*Mediation analysis.* Based on the mediation test method outlined by Chin (2010), the study performed the direct and indirect effects using bootstrapping with 5,000 resamples and a 95% confidence interval. With suggested settings from Chin (2010), the indirect effect of ethical leadership style through autonomy on creativity was tested. Based on the conventional significance of  $p < 0.05$ , this study supported the hypothesis. Additionally, a Sobel test was also performed to check the mediating role. The results show that the indirect effect of ethical leadership style on creativity is significant through autonomy, supporting hypotheses 1. Table 4 shows the test results of the mediating effect.

*Moderation analysis.* In analyzing the moderating role of proactivity on the relationship between autonomy and creativity, the study applied the PLS product indicator approach. As shown by Chin *et al.* (2003), PLS gives more exact estimates of moderator effects by accounting for the error that weakens the estimated relationship. To test the possibility of the moderating effect, the predictor and moderator were multiplied (e.g. autonomy\*proactivity) to create an interactive construct to predict the outcome. Based on the 1.96 threshold level of  $t$ -value, the study supported the hypotheses. As depicted in Table 5, the estimated standardized path coefficients for the effect of the interaction construct on creativity proved significant, with  $t$ -value greater than 1.96, supporting the hypothesis. This shows that proactivity moderates the relationship between job autonomy and creativity, i.e. the higher the level of proactivity, the stronger the relationship between autonomy and creativity.

**Discussion of results**

The current study examined the relationship between both contextual and individual factors and engineering employees’ creativity and makes some contributions to the leadership–creativity literature among engineering firms. The first contribution lies in addressing the relatively under-studied interplay between ethical leadership, autonomy and proactivity on creativity in a Ghanaian context. Second, it contributes to the context-specificity of leadership

Independent variable (IV)	Dependent variable (DV)	Mediator (M)	Path coefficient IV $\diamond$ M	Path coefficient M $\diamond$ DV	Path coefficient IV $\diamond$ DV	Sobel test Z-test	Decision
Ethical leadership	Creativity	Autonomy	0.525** $p < 0.01$ $f^2 = 0.271$	0.479** $p < 0.01$ $f^2 = 0.921$	0.187** $p < 0.01$ $f^2 = 0.120$	10.26 $p < 0.01$	H1: Supported

**Note(s):** Path significance: \* $p < 0.05$ , \*\* $p < 0.01$   
**Source(s):** Authors’ own work

**Table 4.**  
Mediating effect

Hypotheses	Path coefficient	$t$ -value	Decision	f square
H2: Autonomy*Proactivity $\diamond$ Creativity	0.074	2.637**	H2: Supported	0.168

**Note(s):** Critical  $t$ -values. \*1.96 ( $p < 0.05$ ); \*\*2.58 ( $p < 0.01$ )  
**Source(s):** Authors’ own work

**Table 5.**  
Moderating effect

research. With a focus on engineering employees, it has argued and empirically supported how well ethical leadership style influences creativity. The creativity potential of an organization dwells in the abilities, skills and knowledge of its workforce comprising both leaders and employees (Kelley *et al.*, 2011). This is specifically true in high-tech industries such as the telecommunication industry where the work is less rigidly defined and more knowledge based. In this regard, employees contribute to improve organizational competitiveness through their ability to generate new ideas and use them as building blocks for better services and work processes.

The findings of this study support earlier studies (Kalyar *et al.*, 2020; Li *et al.*, 2022; Liu *et al.*, 2021; Tenzer and Yang, 2020) which found that leaders must provide their employees with a creative work environment and must also encourage them to be creative. Further, it also supports earlier studies from Europe (Freire and Bettencourt, 2020) and Asia (Li *et al.*, 2022; Shafique *et al.*, 2019) which found ethical leadership as one of the major leadership styles that significantly impact on creativity. Comparatively, no significant difference was found between the results of this study and earlier studies conducted from different parts of the world.

Although previous studies indicated the impact of ethical leadership style on creativity (Kalyar *et al.*, 2020; Li *et al.*, 2022; Liu *et al.*, 2021; Wadei *et al.*, 2020) in different occupations and geographic regions, this study is one of the few studies that have combined ethical leadership style with an individual factor in a single study and does so in a novel setting. While ethical leadership style influences employee creativity through autonomy, the relationship between autonomy and creativity is dependent on a personal characteristic such as proactivity as a moderator. The relationship is stronger either when proactivity is high. When employees show low levels of proactivity, autonomy has little effect on creativity.

#### *Theoretical implication*

The findings of the study are consistent with earlier studies (Li *et al.*, 2022; Wang and Cheng, 2010) on the interactionist perspective of creativity, meaning that creativity is enhanced by the joint effect of both contextual and individual factors. Although ethical leadership style that provides employees with autonomy and addresses the underpinnings of creativity is a potent means for encouraging employee creativity, employees produce the most creative outcomes when they possess appropriate creativity-relevant personal characteristics such as proactivity. Employees with high proactivity may be more willing to persist through the creative process in order to come out with the required novel and useful ideas (Zhang and Bartol, 2010).

The findings also support the *first hypothesis* that autonomy mediates the relationship between ethical leadership style and creativity which supports an earlier study by Liu *et al.* (2021). Leadership styles that provide employees with autonomy enhance the creativity of the individual employee, supporting the fact that leadership styles directly or indirectly affect employee behavior and attitudes (Li *et al.*, 2022; Shakil *et al.*, 2021). When ethical leaders support job autonomy, it gives employees the freedom to develop and pursue creative ideas which effectively addresses the dilemmas that both leaders and followers may have. The positive relationship between ethical leadership style and creativity demonstrated by this study confirms that when ethical leaders provide job autonomy, encourage employees to take initiatives and give opportunities for employees to share their views, they influence their employees to be engaged in creative behavior in the workplace. Further, the positive association also suggests that when leaders embed their moral values in the work, stimulate employees to unleash their potentials and provide them with autonomy, their followers have a greater likelihood to exert more creative work behaviors.

By theorizing and testing autonomy as a mediator, the study offered additional insight on how autonomy provides employees with the necessary resources to experiment.

Depending on the level of job autonomy, the employee will experience the psychological state of responsibility for outcomes of the work (Patanakul *et al.*, 2016; Shakil *et al.*, 2021), consequently, leading to creativity. For creativity to occur, employees need a level of discretion over the performance of their tasks in order to come out with creative outcomes. This form of discretion is provided by ethical leaders which facilitates employees' self-esteem and also helps organizations to get rid of bureaucratic hurdles that prevent employees from exercising their creativity. Leadership style that produces support for autonomy, such as ethical leadership, is instrumental in fulfilling the employees' psychological needs and enhances their intrinsic motivation (Jaiswal and Dhar, 2017). On the contrary, when leaders are controlling, it undermines employees' intrinsic motivation and shifts the focus of attention away from work tasks and toward external concerns which reduce their creative performance. Employees with high autonomy decide how their jobs are done such as the pace, procedure, timing, method and overall decision-making of their work activities (Parker *et al.*, 2001) and have less restriction that may prevent them from proposing, promoting and implementing new ideas.

The current study confirms that proactivity is a significant individual moderating variable that impacts on the relationship between leadership and employee outcomes which supports earlier studies (Adhyke *et al.*, 2023; Ma *et al.*, 2022; Song *et al.*, 2022). Proactive employees are less constrained by their environment, actively involved in work activities, recognize opportunities and take proactive actions that would ultimately lead to creativity. The more proactive engineering employees are, the more likely they manipulate the environment, engage in initiatives and pursue their goals persistently. They are also more motivated to actively solve problems, enact changes and pursue opportunities that enable them to be more creative, supporting the *second hypothesis*. Creative behaviors depend on the disposition of the employee toward risk. With high levels of proactivity, employees are more likely to take risks, display initiatives surpassing normal job expectations, display initiatives to change procedures in conducting organizational tasks and persevere until meaningful change occurs in the pursuit of their goals, making them more creative (Kim *et al.*, 2010; Seibert *et al.*, 2001). In situations where leaders do not provide employees with autonomy, a high job creativity requirement may be harmful to employees with high proactivity because it may confine their motivation to be proactive (Kim *et al.*, 2010).

Additionally, the findings of the study also imply that the trait activation theory which stresses that trait-relevant situational factors, such as employment and social and organizational characteristics, inspire personal behavior (Tett and Guterman, 2000) which is a significant theory in addressing employee creativity. The contextual factors that correlate with personal traits play a significant role in promoting employee creativity. The employees with high autonomy and high-proactive personality trait tend to have a high motivation to be creative than those with low autonomy and low personality trait.

#### *Practical implications*

As far as implications go, the result of the study is highly relevant to engineering organizations which rely on employees' creativity as assets to broaden market share and promote organizational competitiveness and effectiveness. Practically, this study shows that promoting ethical leadership practices bring about creativity among engineering employees through job autonomy. Through ethical leadership, the attitudes and behaviors of subordinates change positively. Accordingly, cultivating ethical leadership practices among leaders by investing more resources to promote ethical managers would facilitate employees' job autonomy, ultimately resulting in creativity.

Since creativity is one of the means for engineering organizations to obtain and maintain competitive advantage in the global market, and with the study confirming ethical

leadership style as a significant antecedent, it is essential for engineering managers to know more about the causal relationship that exists between this leadership style and engineering employees' creativity. The current study implies that engineering managers should put in more efforts to train and encourage leaders to provide employees with the autonomy for creative outcomes. The degree of autonomy is a significant consideration in job design. Through ethical leadership styles, employees in the engineering profession could be allowed to determine their own pace, procedure, method and effort to accomplish their work activities. They should also be given the time and freedom to experiment with creative problem-solving in order to build a sense of confidence in their ability to perform creative activities.

Additionally, since creativity is a result of both contextual and personal characteristics, engineering managers should pay particular attention to the sort of individuals they hire and to the kind of environment they create for these potentially creative individuals. Engineering managers should also create a creative organizational culture in order to attract creatively talented employees. When there is no creative organizational culture, proactive employees may be unwilling to take risks and to be creative because they have no idea whether or not the organization supports it, suggesting that creativity should be part of the company's mission and vision (Tai and Mai, 2016). In every corporate event or employee meeting, there should be a conversation evolving around proactivity and how it is encouraged. Engineering managers can include it in the learning and development programs of the organization and can also provide some form of incentives to employees in the form of monetary rewards for taking initiatives.

#### *Limitations and future research*

First, the study restricted the research field and samples to engineering employees in the telecommunication industry within a country. Although there is enough evidence of creativity among such employees, any generalization of the findings herein to other sectors requires caution, since the findings cannot be said to be representative of all employees in all countries. Indeed, studies in cultural dimensions reveal that differences in national culture have an essential influence on employee decision-making and evaluations (Mesoudi, 2011).

Another worthy limitation is the use of the cross-sectional self-report survey. The cross-sectional design does not permit the determination of the causal ordering of linkages among the studied variables in the model. However, PLS-SEM purports to show causal-modeling capabilities. The external validity of the design can also be considered as a merit of the chosen approach. Further, using self-reports in management has also seen a lot of criticism because such surveys inflate correlations between the measured variables due to CMV. However, the study followed the state-of-art analysis outlined by Podsakoff *et al.* (2012). The analysis showed that CMB isn't a serious problem for the study. Another form of bias that might have impacted the study is social desirability bias, since respondents might have entertained the fear of evaluation apprehension. However, the study took measures to reduce this by attaching a cover letter highlighting the aim of the study for academic purposes, emphasizing voluntary participation and stressing that there were no wrong or right answers to the questionnaire. Respondents were also assured of maximum protection on conditions of anonymity and confidentiality and were directed to place the filled questionnaire into a collection box that was provided by the researchers instead of hand-delivering them to the researchers.

Further, the survey for this study was based on stated preferences. As a result, this study directs future studies to conduct it with revealed preferences in order to enhance the validity of the results.

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### Further reading

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### Annexure

#### Items of the questionnaire

#### Ethical leadership (EL) - Brown *et al.* (2005)

- My leader listens to what employees have to say;
- My leader has the best interests of employees in mind;
- My leader makes fair and balanced decisions;
- My leader when making decisions asks, "what is the right thing to do?" and
- My leader sets an example of how to do things the right way in terms of ethics.

#### Job autonomy (JA) - Morgeson and Humphrey (2006)

- My job gives me a chance to use my personal initiative or judgment in carrying out the work;
- My job allows me to make a lot of decisions on my own and
- My job provides me with significant autonomy in making decisions.

#### Creativity (CR) - Ganesan and Weitz (1996)

- I try to be as creative as I can in my job;
- I experiment with new approaches in performing my job;
- When new trends develop, I am usually the first to get on board;
- My boss feels that I am creative in performing my job and
- On the job I am inventive in overcoming barriers.

#### Proactivity (PR) - Claes *et al.* (2005)

- If I see something I don't like, I fix it;
- No matter what the odds, if I believe in something I will make it happen;

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BIJ  
31,4

I love being a champion for my ideas, even against others' opposition;  
I excel at identifying opportunities;  
I am always looking for better ways to do things and  
If I believe in an idea, no obstacle will prevent me from making it happen

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