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## Article

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# Factors affecting “employees’ creativity”: the mediating role of intrinsic motivation

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## Abstract

This article examines a particular set of influences on the creativity of individual researchers at an Ethiopian agricultural research institute. One set of influences is "work orientations," and the others are "domain-relevant skills" and "creativity-relevant processes." The study posits that another important influence, intrinsic motivation, is a mediating influence between these factors and creativity. The study moves beyond past research by examining the influences together in a structural equation model. The data were collected from 307 researchers working with an agricultural research institute in different centers in Ethiopia. Partial Least Squares (PLS) path modeling, SmartPLS3, was used to empirically test the proposed hypotheses. The findings suggested the significantly positive direct effects of creativity-relevant processes, career orientation, and calling orientation on employees’ creativity. Moreover, the results of mediating effects showed significant indirect effects of domain-relevant skills, creativity-relevant processes, career orientation, and job orientation via intrinsic motivation on enhancing employees’ creativity. However, the results did not confirm the direct effects of domain-relevant skills and job orientation on employees’ creativity. In addition, the results did not confirm the hypothesis that the mediator, intrinsic motivation, had a statistically significant effect on the relationship between job orientation and employees’ creativity. Finally, for managers and decision-makers who prioritize employees’ creativity, these findings will deepen their understanding of the holistic role of intrinsic motivation in nurturing employees’ creativity.

**Keywords:** Creativity, Intrinsic motivation, Domain-relevant skills, Creativity-relevant process, Job orientation, Career orientation, Calling orientation

## Introduction

Creativity is often regarded as a vital source of competitive strength for organizations (Ferreira et al., 2020), since it has become valued across diverse tasks, professions, and industries (Kršlak & Ljevo, 2021; Lee et al., 2019; Shalley et al., 2004). Within organizations that value diversity, change, and adaptation in particular, creative employees are regarded as a valuable resource (Liu et al., 2017). In fact, many academics contend that organizations seeking to gain a competitive edge must prioritize boosting the creative performance of their workforce. Employee creativity contributes significantly to organizational innovation, effectiveness, and survival (Ivcevic et al., 2021). For organizations aiming to lay a strong foundation for creativity and innovation, having creative

employees is a crucial requirement (Fuchs et al., 2021). Among the major theories are the componential theory of creativity and innovation in the corporate setting (Amabile, 1988), the interactionist theory (Woodman, 1993), and the multiple social domains theory (Ford, 1996).

In recent years, researchers have advanced the idea of work orientations from the perspective of individual expectations for work and subjective evaluation, which highlights the person's subjective perspective and work's purpose (Fetzer & Pratt, 2020a, 2020b). It divides work orientation into three categories: job orientation, career orientation, and calling orientation (Bellah et al., 1996). Although scholars have made some progress on the concept of work orientation, there are still some limitations. Some scholars argue that many assumptions about work orientations lack empirical support (Cai et al., 2018) and claim that the field is largely theoretical (Pratt et al., 2013) and in need of insight into the mechanisms through which work orientations operate (Amabile & Pratt, 2016; Lee et al., 2019). Given the limitations of earlier research, one goal of this study is to examine the connection between work orientations and employees' creativity.

In the literature, the relationship between intrinsic motivation and creativity is commonly stated (Auger & Woodman, 2016; Yuan et al., 2019). Intrinsic motivation is considered essential for creativity, because without it, instead of knowledge or skills, one cannot engage in and persist in creative activities (Fischer et al., 2019). Many studies have focused only on the direct relationship between motivation and employees' creativity, such as reward (e.g., Eisenberger & Rhoades, 2001; Eisenberger et al., 2020; Fischer et al., 2019; Yoon et al., 2015). Moreover, previous studies have examined the direct relationship between many variables and employees' creativity, with mixed results. Therefore, additional study is required to investigate potential mediators that may have an impact on the nature of the relationship (Su et al., 2020; Tan et al., 2019).

The objectives of this study are manifold, and our research contributes to the literature on personal components of creativity, work orientations, and employees' creativity by introducing a unique conceptual model that integrates emerging constructs to explain how personal factors and work orientations can potentially improve employees' creativity. This study also examines the mediating role of intrinsic motivation in increasing individual creativity when these employees acquire expertise, creative thinking skills, and career orientation. To the best of our knowledge, no empirical study in the management literature has examined the role of personal components of creativity and work orientations in improving employees' creativity in the presence of mediation by intrinsic motivation.

### Literature review

Research suggests that employees' creativity is influenced by many determinants, including motivation (Liu et al., 2016), personality and thinking styles (Wu et al., 2014), as well as creative personal and role identities (Fischer et al., 2019), and work orientation (Liv et al., 2020). Though there has been considerable research on employees' creativity via psychological, organizational, and work factors in isolation (Amabile & Pratt, 2016), the question remains: how do these determinants work collectively to contribute to employees' creativity? Despite evidence that these characteristics can all contribute to the creative process, the literature that focuses on these elements often does not take

their overall influence into account. Indeed, in their review on creativity and innovation, Anderson et al. (2014) highlighted the need to further explore employees' creativity and specifically how these determinants might work in combination to foster employees' creativity. That must be done by testing multiple determinants simultaneously, as this study does.

An employee's level of creativity is influenced by the kind and quantity of their knowledge of their field (i.e., domain-relevant skills), as well as the creative process itself (creativity-relevant processes) (Cai et al., 2019; Tanjung et al., 2022). Domain-relevant skills pertain to factual knowledge and expertise in a particular field that can be influenced by formal and informal education, as well as people's perceptual, cognitive, and motor skills (Hennessey, 2019). According to Amabile (1983, 1988), the level of training in creative skills and strategies for producing new ideas, experiences in creative activities, and possessing particular personality traits are likely to positively affect creativity-relevant processes, which have to do with the tacit knowledge to generate creative ideas as well as the cognitive styles and work styles for the production of creative ideas.

#### **The relationship between individual creativity components and employees' creativity**

Based on the revised model of Amabile's componential model, there are three key components of individual creativity: domain-relevant skills, creativity-relevant process, and intrinsic motivation.

First, domain-relevant skills have been highlighted by creativity theorists as a crucial mechanism linking individual and environmental determinants to employee creativity (Amabile, 1988). Particularly, the abilities that support employee creativity are frequently domain-specific (i.e., the factual knowledge and the technical skills required in a given domain; (Amabile et al., 1996). Domain-relevant skills provide the cognitive pathways for problem resolution in addition to aiding in the identification of problems. The stronger the domain-relevant skills, the greater the number of options for creating something new or coming up with a novel mix of concepts (Amabile et al., 1996). It follows that an employee's abilities in the creative process depend on their domain-relevant skills (Amabile & Pillemer, 2012). An individual who possesses more domain-relevant skills is more likely to comprehend the underlying causes of issues and to combine and recombine various knowledge sets to come up with creative ideas (Liu et al., 2017).

Second, at the individual level, creativity-relevant skills are important drivers of creative performance (Amabile, 1983, 1997). The creativity-relevant process includes both divergent and convergent thinking skills that are necessary for coming up with unique and valuable ideas (Birdi et al., 2016). Employees with divergent thinking abilities might come up with a variety of alternate answers or strategies that are different from those typically used (Scott et al., 2004). Employees with convergent thinking skills can assess the merits of novel concepts or identify the source of a problem (Grohman et al., 2006). According to Fischer et al. (2019), creativity-relevant skills determine the variety and flexibility of cognitive approaches that employees use to pursue solutions or solve challenges.

The third, intrinsic task motivation, is characterized by a high regard for individual investment and involvement (Ryan & Deci, 2017). Numerous meta-analyses have demonstrated a considerably positive relationship between intrinsic motivation and creative

performance (Cerasoli et al., 2014; de Jesus et al., 2013; Liu et al., 2016). The dynamic componential model of creativity and innovation in organizations (Amabile & Pratt, 2016) also underlines this strong relationship theoretically. In addition, Grant and Berry (2011) discovered that the extent to which work includes helping others has a positive impact. Therefore, based on the explanation above, it is believed that there is a positive relationship between individual creative components and employees' creativity.

**H<sub>1</sub>:** individual creativity components: (a) domain-relevant skills, (b) creativity-relevant processes, and (c) intrinsic task motivation are positively related to employees' creativity.

### **The relationship between work orientation and employees' creativity**

Work orientations are "internalized evaluations about what makes work worth doing" (Pratt et al., 2013, p. 175). Work orientations are similar to our own personal "accounts" of how we view our work and, more precisely, what we value in it. These accounts develop as a result of people internalizing social norms that come from many social forces, such as family, religious institutions, the media, educational institutions, and other social influences like organizational leaders (Pratt et al., 2013). Consequently, it is easy to see how job orientation and creativity are related.

The majority of experts acknowledge the three types of work orientation: job, career, and calling orientations (Willner et al., 2020). Job orientation is a person's perception that their relationship with work is one of material exchange, and their intrinsic motivation is predicated on their capacity to base their effort on the corresponding material returns and financial gain (Liv et al., 2020). While the career orientation reflects the person's perception that the goal of their work is to advance their careers, obtain status, etc., and pursue greater promotion opportunities (Kolodinsky et al., 2018). Calling orientation emphasizes that the connection between a person and their work is more based on their own personal success, fulfillment, and commitment (Liv et al., 2020). Amabile and Pratt (2016) argues the notion that progress in creative work will be more meaningful, and thus more motivating, to some workers than others. For this reason, it is important to understand employees' work orientations.

**H<sub>2</sub>:** work orientation: (a) job, (b) career, (c) calling are positively related to employees' creativity.

### **The relationship between individual creativity components, creativity and intrinsic motivation**

According to studies, three things in particular foster creativity: motivation, skills, and creativity-relevant processes (Amabile & Pratt, 2016; Hirst et al., 2009; Richter et al., 2012). In general, motivation is understood as "the heart of organizational behavior" (Gagné, 2014, p. 414), the performance and productivity of employees are significantly impacted by their motivation (Cerasoli et al., 2014; Yuan & Woodman, 2021). Intrinsic motivation is affected by both individuals' domain-relevant skills and creativity-relevant processes (Newman et al., 2018). Employees who believed that they possessed more skills in creativity, identifying problems, and introducing and assessing solutions reported higher levels of patent submissions, besides having a superior quantity and originality of ideas, as rated by experts (Birdi et al., 2016). Amabile maintained that intrinsic motivation is the central tenet of creativity; when a task is exciting, engaging,

and demanding, employees are more creative (Amabile & Pillemer, 2012). It follows that intrinsic motivation may play a mediating role in the link between individual creativity components and employees' creativity.

**H<sub>3</sub>:** Intrinsic motivation mediates the relationship between individual creativity components (a) domain-relevant skills and (b) creativity-relevant process.

### **The relationship between work orientation, creativity and intrinsic motivation**

Amabile and Pratt (2016) argue that work orientations are likely to be associated with creativity in at least three ways. First, work orientation primarily affects motivation, which in turn drives the creative process. Second, leaders' assertions about creativity will not inspire people unless they perceive their own inventive and creative work as worthwhile (Zhang et al., 2020). This argument goes on to say that how an employee handles work will largely determine whether they find the organizational leaders' claims about how important creativity is to be "meaningful" in the first place and, thus, inspiring (Fischer et al., 2019). Third, work orientations may affect persistence and, thus, the degree to which people persevere in the progress loop, but some orientations are likely to be more beneficial in that regard than others. This is similar to meaningful work more generally (Amabile & Pratt, 2016).

One of our central research objectives was to more fully explore the intrinsic motivation principle, especially given the dearth of research and mixed results of the few existing studies. For example, Fetzner and Pratt (2020a, 2020b) found that intrinsic motivation did not mediate the effect of career orientation on creativity, but Scandura (2017) found that intrinsic motivation mediated the effect of career orientation on individual creativity. More recently, Duan et al. (2020) found that intrinsic motivation only partially mediated the effect of calling orientation on individual creativity. Therefore, it is expected that intrinsic motivation influences the relationship between work orientation and employees' creativity (Fig. 1).

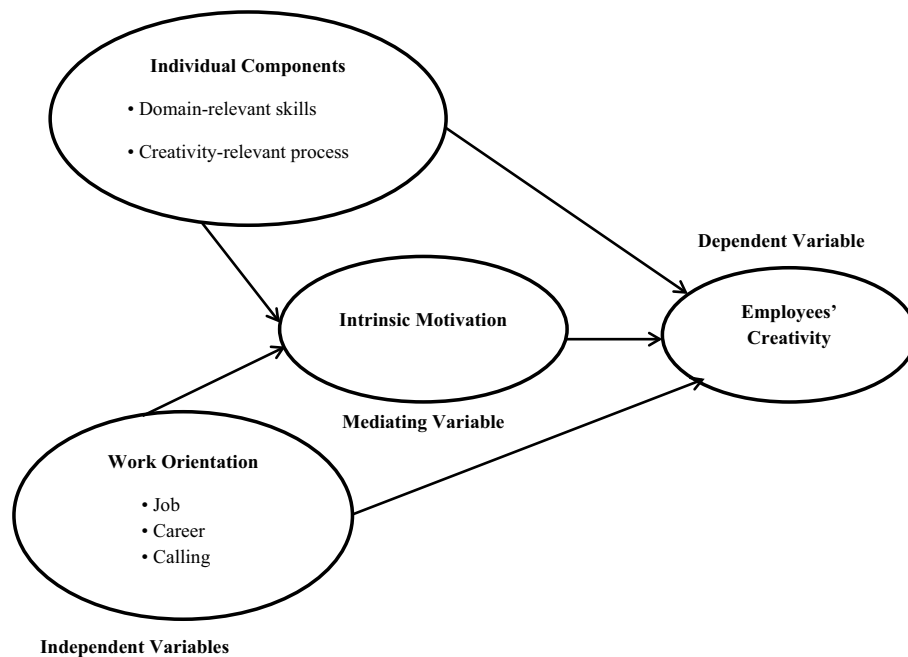
**H<sub>4</sub>:** Intrinsic motivation mediates the relationship between work orientations (job, career, and calling) and employees' creativity.

## **Methodology**

### **Sample and data**

The sample for this study was calculated with a 95% confidence level using Taro Yamane (Yamane, 1973) formula (EIAR has a total of 1317 researchers, of whom 378 are BSc, MSc, 797 are DVM, and 136 are PhD). Substitute numbers in the formula; the number of samples is  $n = 306.814$ ; however, the sample size formulas indicate the required number of responses. To account for individuals who cannot be reached, many researchers commonly add 10% to their sample size. In addition, a 30% increase in the sample size is frequently used to account for nonresponse (Israel, 1992). Thus, to obtain reliable data, researchers increased the sample size to 400 respondents.

400 questionnaires were distributed to collect data for this study; 342 of them were returned, but 35 of them were incomplete. The majority of these respondents responded to only a few of the survey's questions and missed the others. 19 cases with 20% or more missing data were excluded from the analysis. A further 16 cases demonstrated less than 20% missing data and a very low standard deviation. A closer



**Fig. 1** Hypothesized interactions of personal components and work orientations on employees' creativity

look revealed that these respondents had given the identical answer to nearly every question on the survey and, therefore, were considered to be of low value and were also excluded from further analysis. In total, 307 questionnaires were properly filled out with no missing data.

The study's target population included all 17 of the EIAR centers. These centers were chosen for the study, because they reflect the Ethiopian economy's diverse agricultural institutions. To identify the respective respondents for each of the EIARs a three multi-stage proportionate systematic random sampling method as proposed by (Ragab & Arisha, 2017) was used. Purposive sampling was used to choose the EIAR researchers in the first stage. In the second stage, stratified sampling was used to establish four strata: first, BSc; second, MSc; third, DVM; and fourth, PhD degree levels. The third stage entailed proportionate systematic random sampling depending on the year of experience of employees'. Full-time employees who work 8 h per day are the focus. Employees with varied job titles were included in the sample to guarantee that a variety of jobs were available to cover various work-related activities.

In the sample, the majority (63.8%) of the respondents were "men," while 36.2% were "female." In terms of age, the majority (67.8%) of the respondents were younger than 35 years. 15.0% were 36–40 years, 14.0% were 41–45 years, and the least, 3.3%, were above 45 years. About 59.0% of participants had a master's degree, followed by 28.7% who hold a bachelor's degree, 11.7% with a PhD, and 0.7% with a DVM. In terms of work experience, the majority of respondents (38.1%) were 7 to 9 years, followed by 30.3% who were 4 to 6 years, 21.2% who were over 10 years, and the least (10.4%) were less than 3 years.

### Instruments and measures

The survey strategy is popular in the social sciences and associated with a deductive research approach (Rahi, 2017). According to Jenny Rowley (2014), when a researcher wants to profile a sample in terms of statistics or determine the frequency of beliefs, attitudes, processes, behaviors, experience, or forecast, a questionnaire is utilized. A questionnaire is the most appropriate method to collect data for this research, because it is easier to achieve responses from a huge number of employees in a short period (Rahi, 2017; Rowley, 2014). In addition, Sekaran and Bougie (2019) stated that it is easier to reach people in different geographical areas. As the research method is quantitative, it is perfect to use a survey questionnaire for inquiry mode (Khalid et al., 2012; Rahi, 2017; Rahi et al., 2019). The data collected might be observed to generate results that are more generalizable (Rowley, 2014).

The questionnaire was divided into three main sections:

- 1) Demographic information: four items contain all the demographic details that distinguish between the participants, including gender, age group, educational level, and years of experience in the functional area.
- 2) Individual creativity components: Amabile (1988) stated that all three elements of individual creativity (domain-relevant skills, creativity-relevant processes, and intrinsic task motivation) are crucial. No one element is enough for creativity. Thus, all factors were assessed as follows: (a) domain-relevant skills: three items developed by Tierney (1997) were used to measure domain-relevant skills. Employees were asked about their confidence in their capability to be creative. An example item is "I feel that I am good at generating novel ideas." (b) Creativity-relevant processes: five items developed by Sawyer (1992), four were used to measure creativity-relevant processes. Employees were asked about their certainty in terms of the procedures they must use at work. An example item is "I know how to divide my time among the tasks." (c) Intrinsic task motivation: four items were developed by Eisenberger and Rhoades (2001) and adopted to assess the extent to which participants considered their work interesting, enjoyable, boring, and unpleasant. An example item is "My job is interesting."
- 3) Willner et al. (2020) developed work meaning, consisting of five orientations: job (financial compensation), career (advancement and influence), calling (prosocial duty), social embeddedness (belongingness), and busyness (filling idle time with activities). However, research in this field (e.g., Wrzesniewski et al., 1997) has focused on the tripartite concept (job, career, and calling orientations) developed by Bellah et al. (1996). (a) The job factor was assessed on a 5-item scale. An example item is "If I had enough money, I would not look for work." (b) The career factor was assessed on a 5-item scale. An example item is "I would like to advance in the professional hierarchy of my field and receive additional duties and responsibilities." (c) The calling factor was assessed on a 5-item scale. An example item is "I enjoy talking about my future work with others" all were adopted from Willner et al. (2020).
- 4) Six items were developed by Amabile et al. (1996) and used to measure creativity. An example item is "My area of this organization is creative." The instrument used a four-point scale to rate and assesses items based on different factors and creativity.



According to Holmes and Mergen (2014), in a four-point scale, the middle option does not exist. This type of scale is called a 'forced choice' method, because the neutral option is deleted (Allen & Seaman, 2007). The main reason for using a four-point scale is that the KEYS questionnaire uses the same ratings. The researchers were used: 1 = Never, 2 = Sometimes, 3 = Often, 4 = Always.

### **Statistical procedure**

We employed partial least squares structural equation modeling (PLS–SEM), a variance-based structural equation modeling technique. PLS–SEM is based on maximizing the explained variance of the endogenous latent variables. For exploratory and predictive studies, in particular, it is appropriate (Manley et al., 2021). This study followed the standard evaluation guidelines for reporting PLS–SEM results (e.g., Hair et al., 2017, 2021; Henseler et al., 2016). PLS–SEM differs from covariance-based structural equation modeling (CB–SEM) in several important ways. For example, PLS–SEM differs from CB–SEM in that it does not impose minimal criteria or constrictive assumptions on measurement scales, sample sizes, or distributional assumptions (Hair et al., 2017; Sarstedt et al., 2021). The following justifications support the use of PLS–SEM in this study:

First, we used personal components and work orientation to predict employees' creativity, responding to the call to use PLS–SEM as a prediction-oriented approach (Manley et al., 2021). Second, the study model shows a relatively complex structure with a number of manifest latent variables and the presence of multi-dimensionality (i.e., mediators) in the constructs included in the model (Hair et al., 2017; Sarstedt et al., 2021). Third, it is believed that the model's structural relationships are still in the early stages of theory development or extension, enabling the exploration and development of new phenomena (Richter et al., 2015). Fourth, the latent variable scores were used in the subsequent analysis of predictive relevance, particularly in the two-stage technique for mediation analysis (Sarstedt et al., 2020; Wong, 2016). Finally, this study benefited from the advantages of PLS–SEM in terms of less rigorous requirements or restrictive assumptions, which enabled us to create and estimate our model without imposing additional constraints (Hair et al., 2019).

### **Analysis and results**

Under standard evaluation guidelines (Hair et al., 2017), PLS–SEM analysis and interpretation have three stages: (1) assessing the reliability and validity of the measurement model; (2) assessing the structural model; and (3) assessing the structural equation modeling or global model fit.

### **Measurement model**

A measurement model is a statistical model that links unobservable theoretical constructs, operationalized as latent variables, and observable properties, i.e., data about the world. By providing researchers and practitioners with a set of tools for making explicit and evaluating assumptions, measurement modeling fosters more transparency and accountability. Direct measurement constructs rely on samples of behavior, such as responses to test items or observations of behavior, while indirect

measurement constructs rely on samples of behavior, such as responses to test items or observations of behavior (Bandalos, 2018). The evaluation of the measurement model in PLS–SEM was based on the individual indicator reliability, composite reliability (CR), average variance extracted (AVE) and discriminant validity of the constructs.

To measure the reliability, we have used Cronbach's alpha (CA) and composite reliability (CR). The results for CA and CR are presented in Table 1 for calling factor (0.825, 0.875), career factor (0.902, 0.928), creativity self-efficacy (0.743, 0.852), creativity (0.894, 0.919), intrinsic motivation (0.814, 0.879), job factor (0.917, 0.937), and creativity-relevant process (0.955, 0.965), respectively. CA and CR values higher than 0.70 are considered acceptable (Hair et al., 2011), and this study confirms that the values are within an acceptable range.

We examined convergent validity to obtain AVE values. As suggested by Henseler et al. (2016), an AVE value  $\geq 0.50$ , which means that  $\geq 50\%$  of the indicator variance should be accounted for. We looked at convergent validity to get AVE values, and all of them were greater than the 0.50 criterion (for the calling factor, career factor, creativity self-efficacy, creativity, intrinsic motivation, job factor, and creativity-relevant process, respectively, the AVE values were 0.585, 0.720, 0.660, 0.656, 0.645, 0.748, and 0.671, respectively). Consistent with this recommendation, all constructs had AVE values that exceeded the 0.50 threshold (see Table 1). We also assessed the Fornell–Larcker and heterotrait–monotrait (HTMT) ratios to test discriminant validity (Fornell & Larcker, 1981). Recently, the HTMT ratio has surpassed Fornell and Larcker (Henseler et al., 2016). Table 2 shows that the values of Fornell and Larcker's tests are larger than the correlations among the variables. As per the Henseler et al. (2015) criterion, the HTMT values were below the threshold of 0.90 (see the values in Table 3). These results confirm the discriminant validity of this study.

#### Assessment of structural model

We assessed the issue of multicollinearity in the data using the variance inflation factor (VIF). Becker et al. (2015) recommended that the values of VIF must be  $< 5$ , and this study found inner and outer model VIF values within the suggested range, depicting no issue of multicollinearity in the data (see Tables 4 and 5). Next, the structural model was evaluated using the standardized root mean square residual (SRMR) values should be lower than 0.08 for a sample size greater than 100 (Henseler et al., 2016). As a result, we found a significant model fit for this study (0.076). Endogenous latent variables with coefficients of determination ( $R^2$ ) 0.75 or 0.5 can be described as substantial or moderate, respectively (Hair et al., 2010, 2019). Table 6 shows that  $R^2_{\text{(Creativity)}} = 0.731$  and  $R^2_{\text{(Intrinsic Motivation)}} = 0.580$ , the structural model had satisfactory in-sample predictive power, consistent with prior research in this area (Ali et al., 2019; Fischer et al., 2019). Moreover, the value of  $Q^2$  should be higher than zero. Hence, this study's results were both within the significance level, and the study model's predictive relevance was achieved (Falk & Miller, 1992).

**Table 1** Measurement model

Construct	Item code	Loading	Outer weights	CA	CR	AVE	
Calling orientation				0.825	0.875	0.585	
	CallingF1	0.727	0.213				
	CallingF2	0.717	0.322				
	CallingF3	0.732	0.208				
	CallingF4	0.84	0.254				
Career orientation	CallingF5	0.799	0.31				
				0.902	0.928	0.72	
	CareerF1	0.81	0.209				
	CareerF2	0.839	0.237				
	CareerF3	0.896	0.241				
Domain-relevant skills	CareerF4	0.8	0.23				
	CareerF5	0.893	0.26				
				0.743	0.852	0.66	
Creativity	CreSeE2	0.886	0.425				
	CreSeE3	0.817	0.355				
	CreSeE1	0.726	0.269				
					0.894	0.919	0.656
	Creativity1	0.729	0.198				
	Creativity2	0.861	0.205				
Intrinsic task motivation	Creativity3	0.83	0.221				
	Creativity4	0.871	0.206				
	Creativity5	0.813	0.208				
	Creativity6	0.743	0.198				
Intrinsic task motivation				0.814	0.879	0.645	
	IntTaM1	0.827	0.289				
	IntTaM2	0.774	0.311				
	IntTaM3	0.884	0.329				
Job orientation	IntTaM4	0.719	0.319				
				0.917	0.937	0.748	
	JobF1	0.92	0.234				
	JobF2	0.848	0.247				
	JobF3	0.857	0.196				
Creativity-relevant process	JobF4	0.894	0.308				
	JobF5	0.802	0.164				
				0.835	0.89	0.671	
	ProCla1	0.843	0.289				
ProCla2	0.755	0.288					
ProCla3	0.87	0.306					
ProCla4	0.803	0.34					

Average variance extracted (AVE); Cronbach's alpha (CA); Composite reliability (CR); Domain-relevant skills (CreSeE); creativity-relevant process (ProCla); job orientation (JobF); career orientation (CaerF); calling orientation (callingF); intrinsic motivation (IntTaM)

**Structural equation modeling**

The modified model and the hypotheses only included the indirect relationships, because examining the mediating effects involves first testing the direct relationships. Thus, the following hypotheses were tested using PLS–SEM.

**Table 2** Discriminant validity (Fornell–Larcker criterion)

	CallingF	CareerF	CreSeE	Creativity	IntTaM	JobF	ProCla
CallingF	<b>0.765</b>						
CareerF	0.753	<b>0.849</b>					
CreSeE	0.717	0.554	<b>0.812</b>				
Creativity	0.735	0.795	0.595	<b>0.81</b>			
IntTaM	0.672	0.72	0.573	0.756	<b>0.803</b>		
JobF	− 0.072	− 0.052	− 0.114	− 0.014	− 0.088	<b>0.865</b>	
ProCla	0.66	0.506	0.668	0.575	0.542	− 0.16	<b>0.819</b>

Domain-relevant skills (CreSeE); creativity-relevant process (ProCla); job orientation (JobF); career orientation (CaerF); calling orientation (callingF); intrinsic motivation (IntTaM)

**Table 3** HTMT (heterotrait–monotrait ratio)

	CallingF	CareerF	CreSeE	Creativity	IntTaM	JobF	ProCla
CallingF							
CareerF	0.825						
CreSeE	0.896	0.658					
Creativity	0.830	0.883	0.712				
IntTaM	0.787	0.837	0.722	0.886			
JobF	0.104	0.073	0.129	0.073	0.104		
ProCla	0.802	0.572	0.831	0.662	0.654	0.175	

Domain-relevant skills (CreSeE); creativity-relevant process (ProCla); job orientation (JobF); career orientation (CaerF); calling orientation (callingF); intrinsic motivation (IntTaM)

**Table 4** Collinearity statistics (outer VIF values)

	VIF		VIF		VIF
CallingF1	2.036	Creativity1	1.676	JobF1	4.941
CallingF2	1.475	Creativity2	4.006	JobF2	2.329
CallingF3	2.009	Creativity3	2.594	JobF3	5.001
CallingF4	3.082	Creativity4	4.148	JobF4	3.739
CallingF5	1.805	Creativity5	2.296	JobF5	4.151
CareerF1	2.127	Creativity6	1.877	ProCla1	2.709
CareerF2	2.238	IntTaM1	4.456	ProCla2	1.513
CareerF3	4.08	IntTaM2	1.603	ProCla3	2.936
CareerF4	1.943	IntTaM3	4.634	ProCla4	1.612
CareerF5	3.807	IntTaM4	1.42		
CreSeE1	1.36				
CreSeE2	1.711				
CreSeE3	1.539				

Variance inflation factor (VIF); Domain-relevant skills (CreSeE); creativity-relevant process (ProCla); job orientation (JobF); career orientation (CaerF); calling orientation (callingF); intrinsic motivation (IntTaM)

**H1:** Intrinsic motivation mediates the relationship between individual creativity components: (a) domain-relevant skills and (b) creativity-relevant processes, and employees’ creativity.

**H2:** Intrinsic motivation mediates the relationship between work orientations (a) job, (b) career and (c) (calling and employees’ creativity).

**Table 5** Collinearity statistics (inner VIF values)

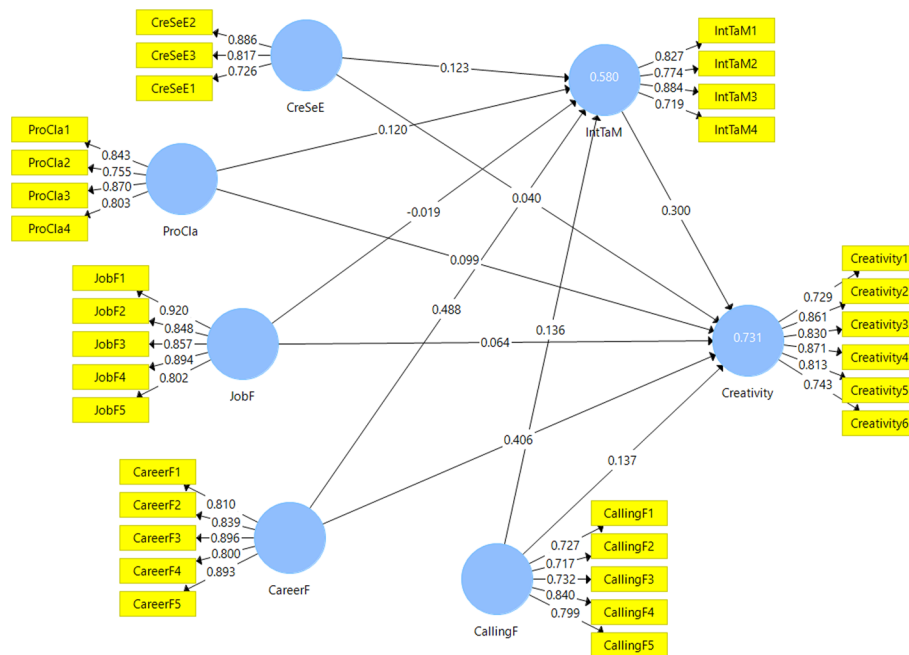
	CallingF	CareerF	CreSeE	Creativity	IntTaM	JobF	ProCla
CallingF				3.623	3.586		
CareerF				2.889	2.318		
CreSeE				2.431	2.396		
Creativity							
IntTaM				2.382			
JobF				1.031	1.023		
ProCla				2.122	2.088		

Variance inflation factor (VIF); Domain-relevant skills (CreSeE); creativity-relevant process (ProCla); job orientation (JobF); career orientation (CaerF); calling orientation (callingF); intrinsic motivation (IntTaM)

**Table 6** Saturated model results

Construct	R <sup>2</sup>	R <sup>2</sup> Adjusted	Q <sup>2</sup> predict	SRMR
Creativity	0.731	0.726	528	0.076
IntTaM	0.58	0.573	419	

Standardized root mean square residual (SRMR); determination of coefficient (R<sup>2</sup>); cross-validated redundancy (Q<sup>2</sup>); intrinsic motivation (IntTaM)



**Fig. 2** Structural model results. Domain-relevant skills (CreSeE); creativity-relevant process (ProCla); job orientation (JobF); career orientation (CaerF); calling orientation (callingF); intrinsic motivation (IntTaM)

The sizes and significances of the path coefficients that reflect the hypotheses were examined. The significance of the path coefficients was calculated using the bootstrapping procedure (with 5000 bootstrap samples). Figure 2 provides the structural model

results. Table 7 provides the path coefficients, standard deviation, *t*-statistics, and *p* values.

According to the PLS–SEM findings, (H1<sub>a</sub>) testing the direct effects of creative self-efficacy, which reflects domain-relevant skills, and employee creativity revealed a non-significant relationship ( $\beta=0.041, t=0.817, p=0.414$ ). While the indirect effects of intrinsic motivation on domain-relevant skills and employee creativity were significant ( $\beta=0.047, t=2.122, p=0.034$ ). It was concluded that intrinsic motivation fully mediated the relationships between creative self-efficacy, which refracted domain-relevant skills, and employees’ creativity. Thus, H1<sub>a</sub> was supported.

(H1<sub>b</sub>) found a significant relationship between process clarity, which reflects creativity-relevant skills, and employee creativity ( $\beta=0.099, t=2.429, p=0.015$ ). In terms of mediating effects, there were positive indirect effects of process clarity on employee creativity ( $\beta=0.046, t=2.082, p=0.038$ ) which reflects creativity-relevant skills via intrinsic motivation. Therefore, it was concluded that intrinsic motivation partially mediated the relationships between process clarity, which reflected domain-relevant skills, and employees’ creativity. Thus, H1<sub>b</sub> was supported.

The findings indicate that (H2<sub>a</sub>) job orientation has no significant relationship with employee creativity ( $\beta=0.061, t=1.934, p=0.054$ ). In terms of the mediating effects, the result showed no indirect effects of job orientation, via intrinsic motivation on creativity ( $\beta= - 0.006, t=0.528, p=0.598$ ). Thus, H2<sub>a</sub> was not supported. (H2<sub>b</sub>) career orientation has significant and positive effects on employees’ creativity ( $\beta=0.406, t=7.312, p=0.000$ ), and the indirect effects of intrinsic motivation between the career orientation and employees’ creativity were significant with ( $\beta=0.145, t=5.005, p=0.000$ ) which shows partial mediation in the model. Moreover, (H2<sub>c</sub>) calling orientation has significant and positive effects on employees’ creativity ( $\beta=0.138, t=2.056, p=0.041$ ), and the indirect effects of intrinsic motivation between the career orientation and employees’ creativity were significant with ( $\beta=0.052, t=2.001, p=0.046$ ), which shows partial mediation in the model. Thus, both H2<sub>b</sub> and H2<sub>c</sub> were supported.

**Conclusions and discussion**

The current study investigated the mediating effects of intrinsic motivation and on employee creativity triggered by employee creativity factors in the EIAR. A few pieces of literature support the findings of this study about the non-significant direct relationship between domain-relevant skills and their employees’ creativity, despite the claimed findings being inconsistent. Several empirical studies, for example, have investigated the

**Table 7** Hypothesis constructs

Effects	Indirect relationships	Beta	STDEV	t-Vales	PValues	Decision
H1 <sub>a</sub>	CreSeE—> IntTaM—> Creativity	0.037	0.018	2.122	0.034	H1 <sub>a</sub> ; supported
H1 <sub>b</sub>	ProCla—> IntTaM—> Creativity	0.046	0.019	2.082	0.038	H1 <sub>b</sub> ; supported
H2 <sub>a</sub>	JobF—> IntTaM—> Creativity	-0.006	0.012	0.528	0.598	H2 <sub>a</sub> ; not supported
H2 <sub>b</sub>	CareerF—> IntTaM—> Creativity	0.145	0.029	5.005	0.000	H2 <sub>b</sub> ; supported
F2 <sub>c</sub>	CallingF—> IntTaM—> Creativity	0.052	0.023	2.001	0.046	H2 <sub>c</sub> ; supported

Domain-relevant skills (CreSeE); creativity-relevant process (ProCla); job orientation (JobF); career orientation (CaerF); calling orientation (callingF); intrinsic motivation (IntTaM)

relationship between domain-relevant skills and employee creativity, with some studies revealing a positive relationship (e.g., Amabile, 1989; Cai et al., 2019; Da Costa et al., 2015; Tanjung et al., 2022), and others revealing a non-significant relationship (Muñoz-Doyague et al., 2008; van Broekhoven et al., 2020). The insignificance of the direct relationship's result and the above-reported mixed findings could be attributed to the influence of other variables on the relationship between the two variables. Eder and Sawyer (2008), describing the contradictory findings and the positive and negative effects, suggested that researchers should keep looking into the work environments that help or hinder these relationships. This further supported the need to look at the variables that mediate the connection between domain-relevant skills and employees' creativity.

The findings of this study revealed that intrinsic motivation fully mediated the relationship between domain-relevant skills and employees' creativity. Providing more evidence for the mediating impact discovered in this study, Dul et al.'s (2011) finding suggested that although personal traits influence an employee's creativity, it can also be strengthened at the workplace. Birdi et al. (2016) further support the finding of full mediating effects, reporting that, if change is to occur in the workplace, no matter how smart or knowledgeable an individual is, he or she must be willing to participate in the creative process. The high motivation enhanced engagement in creativity-related activities, which in turn improved self-rated creativity (Tan et al., 2019). The findings not only shed light on mechanisms that underlie the domain-relevant skills linkage, but they also highlight the importance of intrinsic motivation and employees' creativity in the relationships.

The statistical analysis revealed a significant direct relationship between creativity-relevant processes and employees' creativity. Results for this hypothesis are in line with past studies, reporting a positive relationship between creativity-relevant processes and individuals' creativity (Amabile & Pillemer, 2012; Chang et al., 2018; Emami et al., 2023; Stojcic et al., 2018). Moreover, the results indicate that intrinsic motivation has a significant mediating effect between the relationships of creativity-relevant skills and employees' creativity. This finding confirms the previous research findings (Chen et al., 2015; Li et al., 2020; Paulus & Nijstad, 2019). Thus, the findings revealed that the mediating effects demonstrated a significant indirect influence of creativity-relevant processes on employee creativity via intrinsic motivation.

The statistical analysis showed a non-significant direct relationship between job orientation and employees' creativity. Furthermore, the results of mediating effects revealed no indirect effects of job orientation on employee creativity via intrinsic motivation. Thus, H<sub>2a</sub> hypothesis was not supported. Other factors could alter both the direct and indirect relationship between those variables, explaining the non-significant relationships discovered in this study. However, it is plausible that if job orientation does emerge in broader cultural narratives about work, the increased value placed on creativity may be the trigger for such an orientation. Furthermore, research by Amabile and others has demonstrated that extrinsic rewards can function in conjunction with intrinsic motivation or not (Amabile, 1993; Amabile & Pratt, 2016) and that job orientation provides a lens for understanding the meanings people attach to extrinsic motivation.

The results indicate a significant direct relationship between career orientation and employees' creativity. Moreover, the result of mediating effects showed an indirect effect

of career orientation via intrinsic motivation on employees' creativity. In the literature, there have been conflicting results, with some findings showing a positive relationship between career orientation and individuals' creativity (e.g., Scandura, 2017; To et al., 2015), while others are unable to establish a significant relationship (e.g., Fetzner & Pratt, 2020a, 2020b; Wang et al., 2022). The findings of the partial mediating effect, which demonstrated a positive indirect effect of career orientation via intrinsic motivation on employees' creativity, support the argument of some researchers that career orientation by itself is insufficient for an individual's creativity. The literature provides strong support for the current study's findings. For example, Matsuo (2022) stated that when employees' feel in charge of their work, they are better able to see problems from many angles and come up with different ideas when searching for solutions. This is because developmental occupations and goals support their creative activities.

Finally, the statistical analysis of this study showed a significant direct relationship between calling orientation and employees' creativity. In addition, the results indicate that intrinsic motivation has a partial mediating effect between the relationships of calling orientation and employees' creativity. A result of the present study regarding the significant relationship between calling orientation and employees' creativity is partly supported in the literature. For instance, Grant and Berry (2011) noted that for those with kinship or service orientations, engagement with beneficiaries, both inside and outside the organization, should be the most significant. The best incentive for people with passion orientations is the work itself, so reducing barriers that hinder creative employees from deeply engaging themselves in their work is probably the key (Fetzner & Pratt, 2020a, 2020b). However, no empirical study on the direct relationship between calling and creativity has been reported in the literature (Amabile & Pratt, 2016; Duan et al., 2020). Thus, this is the first study to have examined these direct relationships based on the dynamic componential model. Recently, very few studies have examined the mediating impact of intrinsic motivation on the relationships between calling orientation and employees' creativity. Of these studies, some showed results that partly aligned with the present study. For example, Duan et al. (2020) study found that employees who exhibit purposeful work and prosocial behavior in the workplace are likely to be relatively driven to come up with original ideas.

## **Conclusion, implication, and limitations**

### **Conclusion**

Studies are still in the early stages of understanding the importance of work orientations, their relationship to motivation, and their impact on employee creativity. This survey aims to contribute to these areas of inquiry. Overall, the quantitative, cross-sectional research findings serve to clarify the impacts of personal components, work orientations, and intrinsic motivation on employees' creative performance. Based on the findings and discussion of the same, it is evident that creativity-relevant processes positively affect employees' creativity. However, the direct effect of domain-relevant skills on employees' creativity was non-significant. The result of this non-significant effect does not imply that domain-relevant skills are any less significant. Instead, it shows a less pronounced importance compared to other significant independent variables. We observed that intrinsic motivation fully and partially mediates the relationship between



domain-relevant skills and creativity-relevant skills with employees' creativity, respectively. In addition, our results validate that dimensions of work orientations such as career and calling orientations have a significant impact on employees' creativity; this study's findings are the first to look at this relationship in the workplace.

### **Implications**

The empirical results from the PLS–SEM analysis have significant managerial and practical implications for organizations based on how personal factors and work orientations affect the enhancement of employees' creativity. First, the findings supported the positive impact of creativity-relevant skills, career orientation and calling orientation on employees' creativity. However, because not every employee has intrinsic task motivation, employers cannot rely only on an employee's ability, knowledge, and work orientation. To promote creativity in a directed manner and make use of these often available employees' potential, intrinsic motivators should also be considered. In particular, leaders should understand that enhancing people's creativity is difficult without motivation (Deci et al., 2017; Ryan & Deci, 2017). Thus, leaders should pay attention to adopting organizational policies that foster creativity to achieve their maximum potential benefits. Second, decision-makers need to recognize that employing creative individuals and expecting creative performance are not adequate for organizations. One of a manager's main tasks is to encourage the availability of various mechanisms that are related to employees' motivation and creativity. Finally, these findings demonstrated the significance of intrinsic motivation in the relationships between different factors that foster employees' creativity.

### **Limitations**

This study, like any empirical study, contains limitations that provide opportunities for further research. First, while the majority of the hypothesized relationships are supported by the empirical findings, the study is still in part exploratory. It should be noted that the research evidence pointing toward the effect of work orientations on creativity is fairly new, and, like the research that preceded it, this research may not tell the whole story. Second, our study relied exclusively on the self-reporting method of data collection, which did not provide us with an "outside" or "independent" perspective on participants' views. Participants may describe themselves differently for a variety of conscious and unconscious reasons, making self-reported data susceptible to inaccuracies (Roth et al., 2022). Third, in the current study, the idea of creativity as a single construct relating to idea generation was covered (Amabile et al., 1996, p. 1), while some studies have analyzed and compared various forms of creativity and their affecting elements, such as radical and incremental creativity (Madjar et al., 2011). Thus, there is a need for future studies that examine such types of creativity and their influencing factors. Fourth, the current study focused only on the individual level. Amabile (1997) stated that the model can be applied to individuals and small teams. According to Nijstad and De Dreu (2002), understanding what impedes or encourages creativity and group innovation is crucial, since groups are important organizational building blocks in the workplace. It is, therefore, necessary to analyze the same model using a different unit of analysis, such as a team, to better understand the variables that affect group creativity. Finally, the role

of the extrinsic motivation factor could also be examined to explain individual creativity in future research. Some other mediating variables could be introduced to better explain this model.

#### Abbreviations

AVE	Average variance extracted
CA	Cronbach alpha
CaerF	Career orientation
CallingF	Calling orientation
CB-SEM	Covariance based structural equation modeling
CR	Composite reliability
CreSeE	Domain-relevant skills
EIAR	Ethiopia institute of agricultural research
IntTaM	Intrinsic motivation
JobF	Job orientation
PLS-SEM	Partial list square-structural equation modeling
ProCla	Creativity-relevant process
UoG	University of Gondar

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#### Author contributions

The theoretical foundation, research design, survey execution, data evaluation, and discussion were done by YMY. YMY wrote the first draft of the manuscript. The critical review and manuscript editing were provided by DAG and ATD. DAG and ATD have provided their written consent to the submission of the manuscript in this form. All authors read and approved the final manuscript.

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#### Availability of data and materials

Data sets for this study are available, and the same can be obtained from the corresponding author on reasonable request.

#### Declarations

##### Competing interests

The authors declare that they have no competing interests.

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