Relational Job Design Based Cognitive Pathways to Employee Entrepreneurial Behaviour

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ABSTRACT

Knowledge based work requires that employees know how to deal with ambiguity and to get ahead of it by being innovative, proactive and risk-taking. These three traits together constitute what is known as employee entrepreneurial behavior (EEB) which is a crucial competence in organizations that operate in dynamic environments. There is however a complex combination of cognitions and metacognitions that effective knowledge workers undertake to make sense of their environment; and these cognitive pathways are not yet fully understood. This is the gap that the current study aims to fill. Data were collected from 285 white collar workers and their supervisors across two sectors, manufacturing and services, in India. This data was modeled with structural equation modeling and hierarchical regression techniques. Leader member exchange and diversity belief are a leader related cognition and social structure-oriented metacognition respectively, that directly predict EEB. A robustness analysis is also conducted to lend credence to these findings. There are practical implications of this research for the cognitive re-design of jobs and for effective supervision strategies for knowledge workers. Future research directions and limitations are elucidated.

KEYWORDS

Metacognition, Employee Entrepreneurial Behavior, Task Formalization, Leader Member Exchange, Diversity Belief, Relational Job Design

INTRODUCTION

Innovative work behavior has a long and robust evidence base to justify being acknowledged as one of the prime employee behaviors that are desirable in the knowledge driven workplace. However, there is an alternative research stream which stresses that developing ideas and innovating is not enough, unless it is accompanied with some supportive and complementary behaviors that would ensure that the innovation is carried through (Jong, Parker, Wennekers, & Wu, 2015; Blanka, 2019). There have been calls to study 'entrepreneurial employees', who are seen as "individuals [who have the ability to] 'champion' new ideas from development to complete profitable reality" Scholars have grounded employee entrepreneurial behaviour in diverse literatures and organizational realities. It has been argued to be a behavior that "[involves] organizational learning, driven by collaboration, creativity and individual commitment" (Hayton, 2005), to be a risk-taking process (Antoncic & Prodan, 2008) and to be a set of capabilities that include the manipulation of opportunities and the use of networking behaviors (Macchitella, 2014). Borman & Motowidlo (1997) take a comprehensive look at the relationship between competencies and performance and argue that the measurement of performance itself is a complex issue as it may consist of both task and/or contextual performances. Moreover, depending on the profiles of different job families (Pearlman et al., 1980), this composition

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may span over a wide range. However, given that individual abilities, cognitions and traits must necessarily result in performance only through the mediation of the corresponding competency or behavioral profiles (Sanchez & Levine, 2012), it is reasonable to assume that determining and measuring an appropriate competency profile may be a good proxy for predicting future performance. The above discussion therefore points to the enhanced relevance of the composite construct that is EEB in the modern work environment. From a knowledge work perspective, it seems an indispensable and essential form of workplace behavior.

While there has been some work in grounding employee entrepreneurial behavior in organizational structure and processes (Chang et al., 2022); there is still a lack of clarity about the specific set of individual level cognitions that are responsible for triggering this behavior. It is relevant to understand how the employee makes sense of the environmental variables within the organization and concludes the need to exhibit such behavior. It is pertinent to remember that knowledge-based work, especially one that requires innovation, must necessarily also provide scope for some degree of collaboration at the workplace. Collaboration in turn requires that the individual must be capable of forming ideas on how to leverage social ties at the workplace for productivity purposes and how to form heuristics about which kind of social ties to foster. Given that diversity is acknowledged as a crucial demographic requirement for innovations and entrepreneurial projects to succeed, effective knowledge workers must be capable of assimilating diversity related cognitions as well. We argue that the job design and information processing literatures have sufficient complementary theoretical premise to offer guidance on conceptualizing these cognitive pathways (Parker et al., 2021). Our survey of literature, which we will discuss in further detail subsequently, leads us to infer that there are two interpersonal or relational cognitions that are drivers of employee entrepreneurial behavior. These are leader member exchange and diversity belief. The latter is in fact a metacognition or 'a cognition about a cognition' (Azevedo, 2020; Heyes et al., 2020). A third, structural variable which relates to a critical job aspect, 'task formalization', is an intra-personal cognition that moderates the impact of the aforementioned drivers. This study extends previous research in employee entrepreneurial behavior by linking this important performance criterion to job-relevant cognitions and metacognitions. Specifically, the two research questions (RQs) it seeks answers to are as follows: RQ1: What are the key relational job design based factors that directly predict employee entrepreneurial behavior? RQ2: How are the cognitive pathways leading up to EEB conditional on task cognition? There are implications for the cognitive re-design of jobs and for effective supervision strategies for knowledge workers.

The paper is organized as follows. The section immediately following this introduction, details how the theory of fit may serve to explain the various relationships that we offer to test. We also explain the concept of metacognition and associated theory. The method section outlines the computation of latent variable scores, the hierarchical regression analysis and the robustness analysis. The results and discussion sections complete the rest of the paper. Future research directions are enumerated.

THEORETICAL MODEL

The theoretical model hinges on two levels of cognition. First, there are the interpersonal cognitive pathways which link to leader and co-workers related cognition (leader member exchange and diversity belief respectively). The second set of pathways constitutes the task related cognition pathway which transpires at an intrapersonal level.

INTERPERSONAL COGNITIONS AND METACOGNITIONS

The job design literature, specifically the relational theory of job design (Grant, 2007 ; Parker et al., 2021) suggests that psychosocial factors are important in characterizing job profiles and good performance outcomes. It identifies three major areas as impacting daily workplace behaviours of employees: leader related variables, co-workers or social support system related variables and structural aspects pertaining to the job itself. All three may be visualized as either 'resources' or 'demands' depending on the particular cognitive foci that an individual employee utilizes. It is therefore important to understand how employee cognitions form and interact in respect of these three crucial aspects. This study uses the conceptual proxies of leader member exchange, diversity belief and task formalization to represent the three sets of predictors mentioned above. The subsequent paragraphs describe the cognitive reasoning that entrepreneurial employees adopt in making sense of these proxies.

LEADER MEMBER EXCHANGE

Uhl-Bien (2006) says that "leadership occurs when leaders and followers are able to develop effective relationships (partnerships) that result in incremental influence and thus gain access to the many benefits these relationships bring". This is also known in the literature as the Relational Theory of Leadership (Graen & Uhl-Bien, 1995). The theory suggests that the quality of the social relationships that prevail between the leader and the follower are important in determining whether work objectives get fulfilled or not. It is interesting to note that LMX per se makes no assumptions about the leadership 'style' of the leader. In other words, a resourceful employee may have the cognitive maturity to appropriately adapt themselves to the unique personal style of their own supervisor. This is a very useful skill because the leader's support has been acknowledged as a vital 'job resource' by theorists in an adjacent school, the Job Demands-Resources (JD-R) Model (Bakker, Demerouti, & Sanz-Vergel, 2014; Bakker, Hakanen, Demerouti, & Xanthopoulou, 2007; Hesselgreaves & Scholarios, 2014; Zeng et al., 2021). Leader-related cognition for the employee is essentially about trust. An employee must trust that the leader will always provide the support that is needed, especially when an initiative fails (Rhaiem & Amara, 2021). Trust such as this will bolster the personal resources of the employee, encourage them to speak up and thereby increase their duty orientation (DeConinck et al., 2021; Manix, 2022). Another theory that is often used in conjunction with JD-R to understand the behaviour of resources is the 'Conservation of Resources' (CoR) theory (Dong et al., 2020; Harris et al., 2011; van Woerkom, Bakker, & Nishii, 2016). CoR theory states that individuals generally protect against resource loss and strive to gain or accumulate new or additional resources where possible. Accumulation of resources in turn creates further opportunities for future resource gain. Some examples of personal resources are self-efficacy, organizational-based self-esteem, and optimism (Xanthopoulou et al., 2009). Empirical research has established comprehensive causal pathways by linking personal resources to job resources and job resources to personal initiative and innovativeness (Xanthopoulou et al., 2007; Hakanen, Perhoniemi, & Toppinen-Tanner, 2008) .

We submit that these enhanced personal resources would be useful to the individual employee in demonstrating behaviours such as innovative behaviour, risk taking and personal initiative or proactivity. Joining all this evidence together, it is hypothesized that:

H1: Leader member exchange is positively associated with employee entrepreneurial behaviour.

DIVERSITY BELIEF

Metacognitions qualify and secure the cognitive pathways that are unique to an individual because they are essentially a 'cognition about a cognition', that is, they define the way an individual might think about an issue. It has been suggested that metacognitions are hardwired into our brains and as such are relatively immune to faking (Heyes et al., 2020). It has also been suggested that metacognitions are deeply rooted in our cultural beliefs and therefore offer credibility in predicting behaviour. In the relational design of a job, especially for jobs that are innovation based and require employees to work collaboratively, it is important that an employee have positive ideas about working in a diverse group situation. Diversity belief (DB) thus speaks to the employee's belief(s) about the value of diversity to group functioning and is likely to influence a performance criterion such as EEB (Van Knippenberg & Haslam, 2003). There are several reasons for scholarly interest in diversity belief in recent times. Some researchers have challenged the earlier dominant paradigm in diversity; the earlier paradigm being that higher diversity leads to better performance. However, diversity has been found to have both functional and dysfunctional effects with respect to performance (Das, 2021). Further, at a more granular level, there are surface (objective) level diversities which might cause conflict in groups and thus generate negative outcomes. Objective diversities relate to race, gender, sexual orientation and other demographic similarities and dissimilarities that are easily observable. On the other hand, deep level (subjective) diversities have been found to generate synergies and positive outcomes (Harrison, Price, Gavin, & Florey, 2002) ; these are about diversities that are a bit more tough to fathom with superficial interaction, such as in education levels, experience levels and social status.

Scholars suggest that there are at least three theoretical perspectives that impinge on the value of diversity belief in predicting employee behaviour. The Social Categorization perspective holds that people follow the law of homophily in most situations as far as objective or observable diversities are concerned. That is, people make friends or associate with others who belong to the same race or gender or sexual orientation as themselves. The Information processing perspective, on the other hands posits that when it comes to highly information intensive work, people might ignore objective diversities and come together to harvest the complementary benefits of having a subjectively-diverse group. That is, for complex work, employees may be more interested in collaborating with co-workers who have good work-related qualifications or may be in hierarchical levels such that they have access to organizational resources. Van Knippenberg and others (van Knippenberg, 2017; van Knippenberg, De Dreu, & Homan, 2004) suggest that through the Categorization-elaboration model, diversity belief subsumes the social and informational contradictions such that Pro-DB facilitates work in an information intensive context. We argue that given that entrepreneurial projects generally involve high task ability and task motivation centered-ness on the part of employees, this relationship should be applicable. Further, A high or positive diversity belief becomes a proxy for an informationally and socially supportive environment and has been shown to moderate relationships between (subjective) diversity and behavioural consequents. Thus, literature shows that Pro-DB causes higher group identification (coming from subjective diversity) which in turn leads to engagement with co-workers and more information elaboration (van Knippenberg, 2017; van Knippenberg, De Dreu, & Homan, 2004). Using these premises, we argue that they apply favorably to EEB given that it requires employees to innovate, to engage more with social support system at work and to maintain balance between opposing knowledge tensions (exploration vs. exploitation behaviours) at work. As such, it is hypothesized:

H2: Diversity belief is positively associated with employee entrepreneurial behaviour.

INTRAPERSONAL TASK RELATED COGNITION

Unlike the previous two forms of cognitions which were to do with an employee's interpretation of social variables; task cognition occurs at an intrapersonal level, that is, it encompasses the employee's personal beliefs about their own job requirements. For instance, a highly introverted employee who believes in individual contribution rather than group contributions would be highly stressed if allotted to an entrepreneurial project, where they have to pitch ideas to others. They might much rather prefer to work on a solo project with clear work deliverables and little interference from co-workers. On the other hand, an extrovert and outgoing person may enjoy being in group innovation-based work where they can take leadership with specific initiatives and assume risks on behalf of the project so that the credit accrues to them and their group when the project succeeds. This is a typical cognitive interpretation that an entrepreneurial employee might make.

Task cognitions have a large research support base. Parker et al., (2021) have argued that work design needs to synthesize perspectives from human factors, learning, occupational health, and lifespan perspectives. There are several tasks and job cognitions such as job autonomy, job feedback, relational work aspects, job complexity, psychosocial demand, job knowledge etc. However, job complexity in terms of formalization and scriptedness of work has attracted rather much scholarly attention (Withey et al., 1983), especially in information-intensive work. The Action regulation theory (Hacker, 2003; Zacher, Hacker, & Frese, 2016) puts forth that more challenging work generally forces an individual to utilize higher levels of cognitive competencies (such as reqd. for EEB). The challenging nature of a job has been referred to variously as 'task analyzability', 'number of exceptions' (Perrow, 1967), 'task variety' (Withey et al., 1983) and 'task formalization'. It has been suggested that highly formalized tasks generally present low cognitive challenge to the employee and may not be intrinsically motivating. Consequently, such a job may not inspire an employee to show entrepreneurial and initiative taking behaviours. Further, research suggests that in such a situation, the motivational aspect of being in the leader's in-group becomes less salient in predicting good performative behaviours on the part of the employee (Dunegan et al., 1992) . We would argue that this cognitive aspect would apply in the case of EEB as well; therefore, taking all this evidence together, it is hypothesized that:

H3: Task formalization is negatively associated with employee entrepreneurial behaviour.

H4: Task formalization negatively moderates the relationship between leader member exchange and employee entrepreneurial behaviour.

Diversity beliefs are believed to be more or less stable traits in individuals (Briñol & DeMarree, 2012). It is highly unlikely that they would change radically over a person's lifespan. At the same time, however, being a construct that is anchored on the team, it may be contingent on the nature of work the team is engaged in. When the work is highly formalized, affording little room for improvisation to the employee, it is possible that they may seek extrinsic motivation at the workplace, in the general cohesiveness of the team, cutting across cultural biases. In these conditions therefore, in order to maintain a desired level of entrepreneurial behaviour, the above-mentioned work characteristics will strengthen the relationship between EEB and employee's diversity belief.

H5: Task formalization negatively moderates the relationship between diversity belief and employee entrepreneurial behaviour.

The conceptual model is presented in figure 1 below:

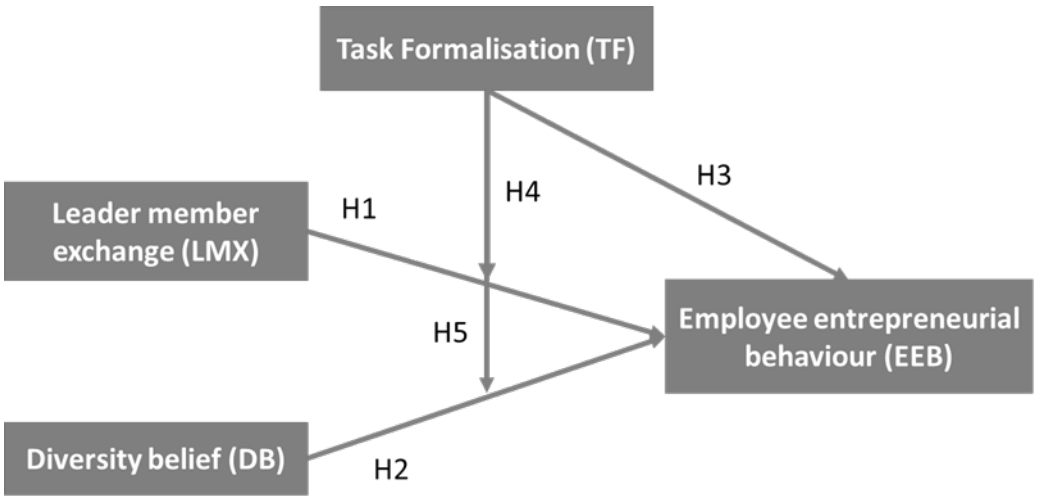

Figure 1. Conceptual Model

METHOD

DATA AND VARIABLES

Data were collected from 285 white collar workers across manufacturing (25%) and service (75%) sectors. Demographic-wise, males constitute 72% and females, 28% of the sample. Survey questionnaires were disbursed by both pen and paper and by internet using the Qualtrics platform. Responses to all variables were collected from the employees, except for the variable of employee entrepreneurial behavior. For EEB scores, supervisors were sent a link or questionnaire separately. This multi-source strategy of data collection serves to mitigate common method bias to a large extent (Spector & Brannick, 2010). Other mitigating strategies include randomization of questions and using scales with different number of points. Our manufacturing sector respondents constitute engineers and industrial scientists, while respondents from the service sector consist of software programmers, academicians and postal service employees. Individual level psychological differences that have been found to have a strong effect on workplace performance and therefore measured here as control variables are core self-evaluation (CSE) (Judge et al., 2003) and social desirability response bias (SDRB) (Hays et al., 1989). Social desirability is also a source of common method bias and has been tackled in this study by controlling for it (Schwarz et al., 2008). Instrument references (with number of items and points in scale in parentheses) used for data collection are as follows: (Jong et al., 2015) (9 items on a 5 pt. scale) for EEB, (Uhl-Bien, 2006) (7 items, with 4 point scale) for LMX, (Withey et al., 1983) (9 items on a 5 pt. scale) for task formalization, (Van Dick et al., 2008) (4 items on a 7 pt. scale) for diversity belief, (Judge et al., 2003) (12 items on a 5 pt. scale) for CSE and (Hays, Hayashi, & Stewart, 1989) (5 items on a 5 pt. scale) for SDRB.

MODELING TECHNIQUE

Partial Least Squares Structural Equation Modeling (PLS-SEM) technique by a two-step approach, was used to model EEB (which is the primary and only endogenous construct) as a reflective-formative construct (Anderson & Gerbing, 1988; Richter, Cepeda, Roldán, & Ringle, 2015; Rigdon, 2016). That is, the items of each of the three dimensions of EEB, which are IWB, PRO and RT in this case, are reflective while the dimensions or the first order constructs aggregate in a formative way. Reflective-formative

constructs are also referred to as Type 2 Hierarchical Component Models (Becker, Klein, & Wetzels, 2012). The rest of the variables in the study are standard first order constructs. For the bootstrapping procedure, number of resamples used per iteration were 5000, as anything less than this means that the errors will be deflated and also estimates may not be sufficiently stable (Hair Jr, Hult, Ringle, & Sarstedt, 2016). The latent variable scores of all the perception-based variables, extracted during the Structural Equation Modeling process are used to determine both the main and interaction effects through the hierarchical regression modelling approach. This approach was deemed suitable as it records the incremented variance explained in the dependent variable with each block of explanatory variables included in the model(s). The simple slope analysis for each moderating effect is depicted through graphs and a robustness analysis is included with EEB dimensions as dependent variables to substantiate initial findings (Stambaugh et al., 2017).

ANALYSIS AND RESULTS

DESCRIPTIVE STATISTICS

The internal consistency of the individual constructs are indicated by the Cronbach alpha (or Alpha) and Composite reliability (C.R.) (Hair Jr, Sarstedt, Hopkins, & Kuppelwieser, 2014). Convergent validity checks for the extent to which a given measure actually captures the construct it is meant to (Fiske, 1982). It is interpreted by the means of the average variance extracted (AVE) which should be more than a threshold of 0.49. Except Diversity Belief, which has a Cronbach Alpha of 0.445 and C.R. of 0.633, but a good AVE of 0.533; rest all constructs had Alpha > 0.7, C. R > 0.7 and AVE > 0.49; which is within the acceptable range (Taber, 2018). As such instrument psychometric quality assessments are satisfactory. Best practices in triangulating the best model fit with data are followed, as prescribed by Tanaka (1993) and Sedera et al. (2004). The descriptive statistics reported for the variables are as follows: mean, standard error of mean, standard deviation and the 25th, 50th and 75th percentile values. All the parameters are reported based on the conditioning variable of sector, that is, all statistics are reported for each of two sub-groups: manufacturing and service sector respondents. Service is coded as '0' while manufacturing is coded as '1'.

Table 1. Descriptive Statistics

	Sector	Mean	Std. Error of Mean	Std. Deviation	25th percentile	50th percentile	75th percentile
CSE	*0*	*0.203*	*0.07*	*1.017*	*-0.442*	*0.298*	*1.031*
CSE	*1*	*-0.6*	*0.078*	*0.66*	*-1.167*	*-0.66*	*-0.133*
SDRB	*0*	*0.133*	*0.068*	*0.988*	*-0.941*	*0.188*	*1.128*
SDRB	*1*	*-0.393*	*0.111*	*0.943*	*-1.269*	*-0.958*	*0.294*
DB	*0*	*0.026*	*0.073*	*1.063*	*-0.588*	*0.184*	*0.929*
DB	*1*	*-0.077*	*0.094*	*0.797*	*-0.588*	*-0.574*	*0.915*
LMX	*0*	*-0.027*	*0.068*	*0.996*	*-0.677*	*0.376*	*0.573*
LMX	*1*	*0.08*	*0.12*	*1.021*	*-0.677*	*-0.01*	*1.444*
TF	*0*	*-0.07*	*0.074*	*1.087*	*-0.498*	*0.233*	*0.846*
TF	*1*	*0.207*	*0.077*	*0.654*	*-0.221*	*0.29*	*0.566*
EEB	*0*	*-0.062*	*0.068*	*0.99*	*-0.831*	*-0.01*	*0.795*
EEB	*1*	*0.183*	*0.12*	*1.021*	*-0.487*	*0.296*	*1.053*
IWB	*0*	*-0.04*	*0.068*	*0.989*	*-0.748*	*-0.049*	*0.658*
IWB	*1*	*0.118*	*0.122*	*1.037*	*-0.755*	*0.29*	*0.997*
PRO	*0*	*-0.022*	*0.07*	*1.021*	*-0.808*	*0.165*	*0.696*
PRO	*1*	*0.065*	*0.111*	*0.946*	*-0.418*	*0.315*	*0.633*
RT	*0*	*-0.129*	*0.064*	*0.938*	*-1.046*	*-0.383*	*0.688*
RT	*1*	*0.383*	*0.129*	*1.091*	*-0.433*	*0.434*	*1.097*

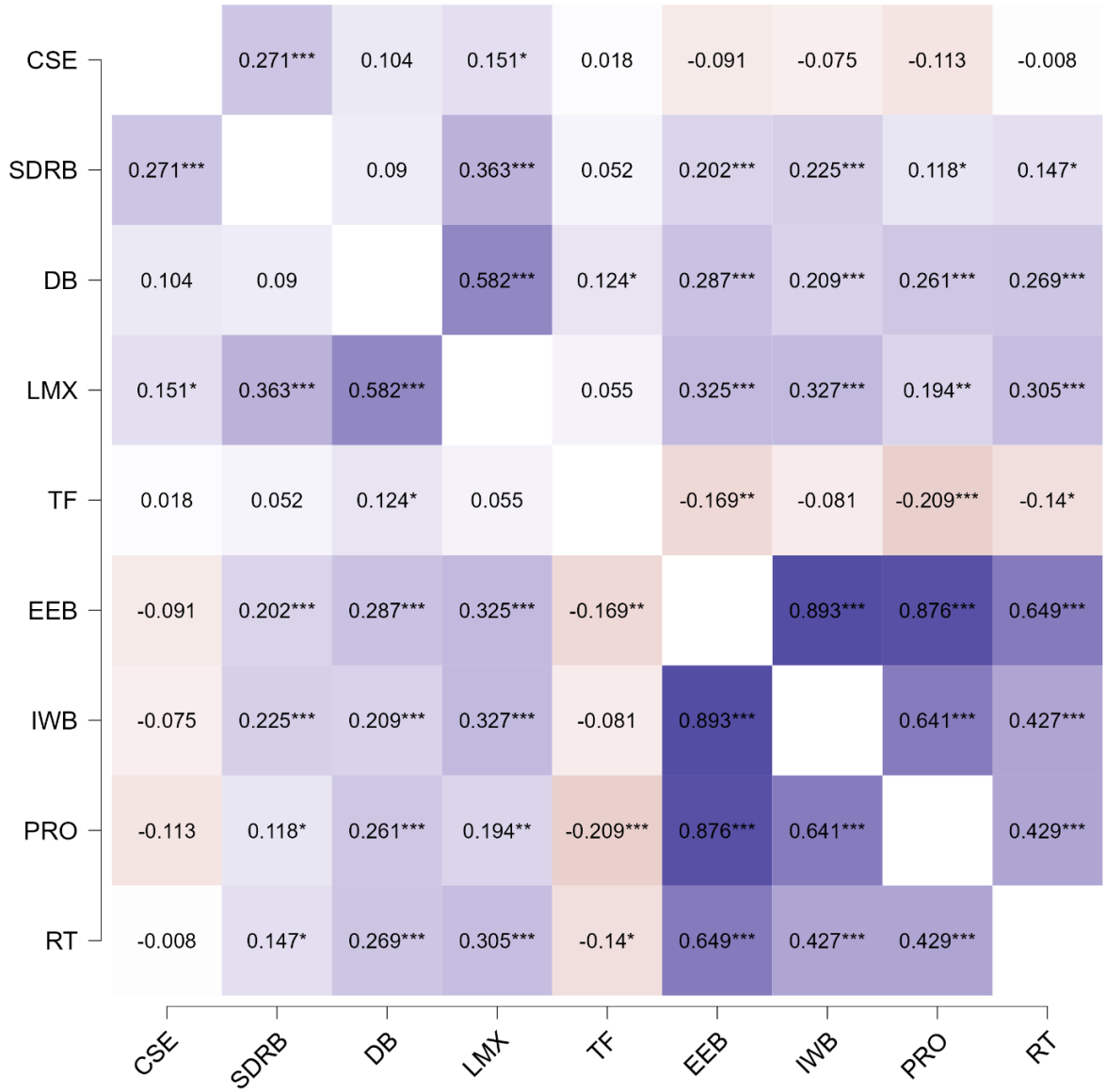

Figure 2. Correlation Heatmap

HYPOTHESES TESTING

Three consecutive models were run with EEB as dependent variable, to track the model fit and model performance as a result of entering more variables. Model M1 includes only the three control variables (CSE, SDRB and Sector dummy); M2 includes the direct effects for TF, LMX and DB in addition to controls and finally M3 includes the interaction effects in addition to controls and direct effects. As may be seen, M3 is the best fit model in terms of maximum explanatory power (Rsquared = 23.8%) among all the three models, as such it is our reference model for hypothesis-based inference. Other model related statistics reported are adjusted R-sq., F-value p-value (ANOVA) and RMSE. The RMSE is Root Mean Squared Error and lower values are better for model predictive ability. The Durbin Watson statistic is a test statistic to detect autocorrelation in the residuals from a regression analysis; an autocorrelation is likely to inflate correlation estimates in a model. A value between 1.5 to 2.5 for this statistic implies that there is no concern regarding autocorrelation. As seen in table 3, our models do

not present with the autocorrelation issue. All the p-values are less than 0.001 indicating that our models with the described variables are significantly better performing than the null model.

The acceptance criteria for hypothesis testing is the 95% confidence interval or p<.05. Hypothesis 1 proposed that leader member exchange would predict EEB. We find a positive and significant, small sized impact (B = 0.181, p=0.012). Note that Cohen rules that effect sizes around 0.2 are small, 0.5 is medium and 0.8 is large. It is inferred that **Hypothesis 1 is supported**. The second hypothesis proposed that diversity belief positively predicts EEB. In this case we again see a significant impact in the direction hypothesized (B = 0.234, p<.001), as such **Hypothesis 2 is supported**. For hypothesis 3, we tested if EEB decreased with increase in task structuredness. Results indicate that the impact is indeed negative and significant (B= -0.196, p<.001), therefore **Hypothesis 3 is supported**. The next two hypotheses are about interactions. It was expected that with higher task scripting, the leader's impact on employee entrepreneurship will weaken; we did not find a significant impact for this. In fact, there is weak support (90% confidence level) for an impact in the direction opposite to that hypothesized (B = 0.119, p = 0.068), which calls for further testing in the future. It is concluded that **Hypothesis 4 is NOT supported**. Finally, we hypothesized that diversity belief would positively moderate the LMX-EEB relationship, again a significant impact was not achieved (B = 0.057, p = 0.308). We therefore infer that **Hypothesis 5 is NOT supported**. One potential reason for these two null findings may lie in the gap between the conceptualization and interpretation of the concept of task formalization. It is possible that employees do not view structure in job description as a lack of autonomy or discretion, as the literature implies, but rather that they have a more complete idea of what their job entails. In other words, 'structured' work may also be interpreted as a higher level of 'job knowledge'. This interpretation would account for the positive moderation of the LMX-EEB relationship found in our study. One interesting finding pertains to the control variable of industry sector. It was observed that manufacturing personnel have significantly higher EEB compared to service personnel. This aspect presents a need for further investigation.

Table 2. Hierarchical Regression Analysis

	Model 1			Model 2			Model 3		
Coefficients	**B**	**S.E.**	**p**	**B**	**S.E.**	**p**	**B**	**S.E.**	**p**
(Intercept)	*-0.061*	*0.068*	*0.367*	*-0.062*	*0.063*	*0.325*	*-0.084*	*0.063*	*0.183*
Sector (1)	*0.242*	*0.142*	*0.09*	*0.246*	*0.135*	*0.069*	*0.278***	*0.134*	*0.039*
CSE	*-0.166*	*0.064*	*0.009*	*-0.195*	*0.059*	*0.001*	*-0.195***	*0.059*	*0.001*
SDRB	*0.249*	*0.061*	*< .001*	*0.184*	*0.061*	*0.003*	*0.153***	*0.062*	*0.014*
DB				*0.215*	*0.067*	*0.001*	*0.234****	*0.069*	*< .001*
LMX				*0.173*	*0.071*	*0.016*	*0.181***	*0.071*	*0.012*
TF				*-0.212*	*0.054*	*< .001*	*-0.196****	*0.054*	*< .001*
LMX*TF							*0.119*	*0.065*	*0.068*
DB*TF							*0.057*	*0.056*	*0.308*
Model Fit Statistics									
R^2	*0.074*			*0.216*			*0.238*		
Adjusted R^2	*0.064*			*0.199*			*0.216*		
RMSE	*0.969*			*0.897*			*0.887*		
Durbin-Watson Statistic	*1.461*			*1.461*			*1.416*		
F value	*7.479*			*12.76*			*10.78*		
p value (ANOVA)	*< .001*			*< .001*			*< .001*		

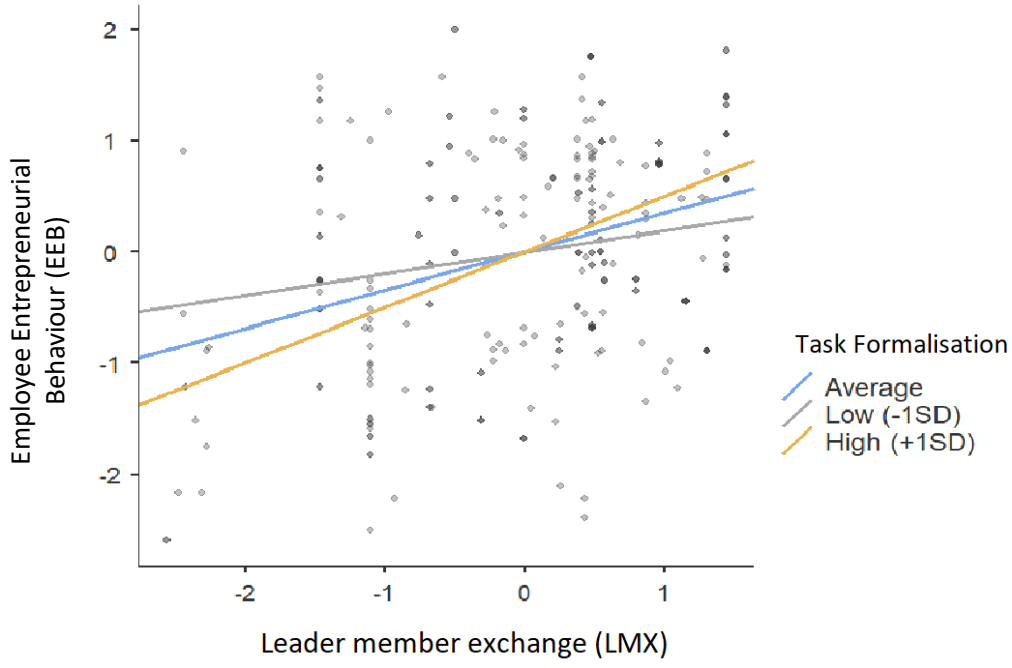

Figure 3. Moderation of LMX to EEB Relationship by TF

ROBUSTNESS ANALYSIS

To ascertain the robustness of our findings, we ran three additional models (see table 4) (Stambaugh et al., 2017). The saturated model with all the predictors and control variables were run with each of the three components of EEB as dependent variables. Innovative work behavior is the component that is explained the most at 19.7% (R squared value) and p-values for all three component models are significant. The Durbin-Watson statistic is within the acceptable range for all three models and presents no concerns. The manufacturing sector has a significantly large impact (B = 0.564, p<.001) on risk taking behavior of employees. This is an interesting finding, and an explanation may be that manufacturing employees have to be more cognizant of industrial safety issues, as such they must be prepared to take the risks required to deliver good performance. Task formalization is a significant predictor for pro-activity (B = -0.245, p <0.001) and risk taking (B = -0.163, p = 0.003), but not for IWB. The interaction factors do not show any effect. That is, findings regarding the lack of support for hypotheses 3 and 4 largely persist in this supplemental analysis as well. Overall, we may conclude that given the model fit values, the three components of EEB are explained well by the primary model specification.

Table 3. Robustness Analysis

	Innovative Work Behaviour			Proactivity			Risk taking		
Coefficients	**B**	**S.E.**	**p**	**B**	**S.E.**	**p**	**B**	**S.E.**	**p**
(Intercept)	*-0.06*	*0.065*	*0.354*	*-0.037*	*0.066*	*0.57*	*-0.151*	*0.065*	*0.02*
Sector (1)	*0.166*	*0.137*	*0.229*	*0.126*	*0.139*	*0.368*	*0.564*	*0.138*	*< .001*
CSE	*-0.178*	*0.06*	*0.003*	*-0.191*	*0.061*	*0.002*	*-0.08*	*0.06*	*0.187*
SDRB	*0.148*	*0.063*	*0.021*	*0.136*	*0.064*	*0.036*	*0.073*	*0.064*	*0.25*
DB	*0.112*	*0.071*	*0.117*	*0.293*	*0.072*	*< .001*	*0.19*	*0.071*	*0.008*
LMX	*0.251*	*0.073*	*< .001*	*0.021*	*0.074*	*0.777*	*0.188*	*0.073*	*0.011*
TF	*-0.093*	*0.055*	*0.094*	*-0.245*	*0.056*	*< .001*	*-0.163*	*0.055*	*0.003*
LMX*TF	*0.129*	*0.067*	*0.053*	*0.078*	*0.067*	*0.247*	*0.076*	*0.067*	*0.252*
DB*TF	*0.089*	*0.057*	*0.123*	*0.008*	*0.058*	*0.892*	*0.037*	*0.057*	*0.515*
Model Fit Statistics									
R^2	*0.197*			*0.176*			*0.196*		
Adjusted R^2	*0.174*			*0.152*			*0.173*		
RMSE	*0.91*			*0.923*			*0.911*		
Durbin-Watson Statistic	*1.573*			*1.424*			*1.538*		
F value	*8.482*			*7.354*			*8.434*		
p value (ANOVA)	*< .001*			*< .001*			*< .001*		

DISCUSSION

There are a number of theoretical implications embedded in our study. The first major contribution of this study is that it lends support to the theory of relational job design. Psycho-social factors at work such leader member exchange and relations with coworkers (captured through the diversity belief proxy) do indeed drive behaviors such as proactivity, risk taking and innovative work behavior. Digital work seems to have made cognitions more complicated as well as introduced new ways of working

with peers and supervisors (Gerards et al., 2021). Our research confirms the impact of the leader on entrepreneurial behavior, as found by others; however, it departs in that previous research found no relation between co-worker interactions and EEB, especially in digital forms of working.

The second theoretical contribution is that this study establishes employee entrepreneurial behaviour as a tangible meta-competence that can be influenced by task related cognitions and structural aspects of the job. The same findings also converge overall with the tenets of Action regulation theory (Hacker, 2010). This theory posited that higher cognitive challenges correlate positively with higher competencies, and we find that this holds true in the case of employee entrepreneurial behaviour. At the same time however, this study raises some questions about the construct level validity of the task cognition constructs themselves. The findings suggest that task formalization and 'job knowledge' (Hunter, 2017) may have some degree of construct level overlap and that task formalization may have face validity issues. An employee who is made aware of all the steps that they must take to successfully complete a task may view this process as knowledge-based empowerment rather than as a curtailment of autonomy. Another way to interpret this is that highly structured work may or may not be complex and thereby it may be difficult to ascertain the cognitive demands that it involves within. For instance, a structural engineer's work may be highly structured, yet it is highly complex and requires sufficient cognitive resources to execute. On the other hand, many postal service employees who have structured jobs may not feel them to be sufficiently challenging or that their competencies were being adequately utilized. We infer that extra-role or contextual performance criteria such as EEB must be linked closely with task activities to better reflect the reality of the cognitive reasoning involved therein. This inference dovetails with that of Escrig-Tena et al., (2022) who have established the cognitive links of job characteristics with employee well-being and engagement. Parker et al., (2021) too confirm similar relations of performance outcomes with job cognitions and suggest that understanding short term cognitive pathways is imperative if we must prevent cognitive decline in the long term.

MANAGERIAL IMPLICATIONS

The first set of managerial implications relate to the practice of job design in knowledge-based work. Job descriptions for prospective employees generally indicate competencies and skills required at length, but are vague in describing the specific activities involved, the length of time an employee would spend in a day or week on these different kinds of activities and the kind of cognitive challenges that they may expect to find. Further, most of the time, an employee has no information about the relational aspects of work such as work culture in the department, prior to joining. Managers should improve the practice of inventorying these aspects of various knowledge work profiles. If a profile is dynamic and likely to change over time in response to variables, longitudinal data may be collected and appropriately communicated. Improvement in these job redesign practices may serve to make for better attraction, selection and retention of knowledge workers.

The second managerial implication of this study is about supervision of knowledge workers. It is well known that often entrepreneurial employees in the knowledge sector have to make choices about which kinds of projects to pursue. An exploitation-based project offers little risk and a higher certainty of returns while an exploration-based project entails devoting organizational and departmental resources to untested and uncertain possibilities. It is largely up to a leader as to which kind of projects their subordinates would pursue. If an employee does not feel psychologically safe enough with their leader, they are more likely to shun exploration projects and take up exploitation-based activities. It is possible that the department and the organization may lose out on lucrative long run opportunities in this case. To avoid confusion regarding these situations, a leader must convey their expectations clearly to their employees about such potential projects and also delineate the

extent of resources and budgets available so that employees may take appropriate decisions. It is important to understand that an entrepreneurial employee is pro-active about crafting their own job and career as well. A personalized growth path can be key to keeping them on track. Also conveying the performance mandate clearly and frequently is vital to supervising them successfully, to maintaining motivation and to retaining them in the long term.

The final managerial implication relates to the management of diversity in knowledge-based organizations. Because navigating both objective and subjective diversities is so important in entrepreneurial work, line managers and HR managers should actively coordinate to provide training sessions to employees to address the latter's implicit metacognitive biases. Metacognitions may be hard to change but the employee may certainly be made aware of them so that they can consciously manage them (Azevedo, 2020).

LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

There are some limitations of our research. EEB is still evolving as a construct (Jong & Wennekers, 2008) and as such may lead to several more interesting as also contradictory behavioral relationships in the future. It is also possible that this meta-competency construct might have some limiting boundary conditions that have not been taken into account here. The study has a cross sectional research design, hence the conclusions with respect to causality must be generalized with caution, unlike that of longitudinal surveys or experimental studies (DeSimone & Harms, 2017). While our study involves a multi-source data collection strategy and takes into account social desirability bias; the fact remains that there is likely to be residual bias on account of most of the variables (except EEB) being self-reported.

In terms of future research possibilities, scholars might wish to examine in depth the robustness and predictive power of meta competencies such as EEB. Replications will help here. Second, there are several interactional relationships possible that may explain additional variance in individual performance. For instance, the interaction between job characteristics other relational aspects of the employee's environment may be a function of the organizational entity being a private organization versus government owned, this is something that may be tested in the future. Assessing these effects calls for more complex, nested research designs. Third, scholars may look at more stable and reliable constructs to study the impact of diversity on performance outcomes in the future. The metacognition of diversity belief does have predictive power with respect to EEB, however it has low scale integrity. Fourth, it is also possible to compare between subjective versus objective measures of diversity (Meyer & Schermuly, 2012) as also between superficial versus deep aspects of diversities (Farndale et al., 2015) and adjudge as to which is a better predictor of employee outcomes. Fifth, this study found a significant effect of sector or organization type on entrepreneurial behaviour. However, this sample was only limited to white collar workers and was skewed in favour of the service sector. Larger and more heterogeneous samples in the future can lend further credence to these preliminary findings. Future scholars may collect data about more aspects of job descriptions and from different occupations to investigate how these design principles predict entrepreneurship behaviour. The final research direction pertains to conceptualizing and testing EEB at the team level. Given that entrepreneurial success is so dependent on the social capital of the employee, this is a multilevel aspect worth looking into in the future.

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