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RESEARCH ARTICLE

Autonomous work motivation and job performance in an infrastructure megaproject: Does internal social responsibility matter?

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Abstract

Individual job performance is an under-explored issue in the project management literature. This study examines the relationship between work motivation and job performance in a mega hydropower project context. Drawing on self-determination theory, we theorize that work motivation positively affects job performance, and that this relationship is positively moderated by megaproject internal social responsibility (ISR). ISR refers to voluntary actions of a megaproject organization that target improving the physical and psychological working environment, which in turn aims at enhancing the wellbeing of employees. Following an explanatory and quantitative research design, a questionnaire survey was administered to project employees who worked on a mega hydropower project in Ethiopia. Using a field survey with valid responses from 200 project employees selected on the basis of a simple random sampling technique, the findings of our study, based on Partial Least Squares Structural Equation Modeling (PLS-SEM) using SmartPLS 4 software, reveal that ISR as perceived by project employees enhances the positive association between motivation and job performance. The study, however, did not find a direct relationship between the perceptions of ISR and job performance. The results of the present study are vital for understanding the nuanced boundary conditions under which employee motivation is more associated with job performance in a megaproject context, a topic which is not well addressed empirically in the project management literature. The paper discusses the theoretical and practical implications of these findings.

1. Introduction

Megaprojects, which are large-scale and complex public projects [1], have become an important means through which international and national long-term development goals are realized. Nowadays, megaprojects exist in almost all sectors of the world economy, most prominently in infrastructure [2]. With investment costs exceeding one billion dollars, megaprojects are characterized by complexity in design and implementation, an execution phase of more than five years, thousands of project employees, and involvement of multiple stakeholders [3]. Although the field of project management has evolved enormously over the years [4], disappointing outcomes such as cost

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overruns, slippage of time, and defects of quality remain prevalent in mega infrastructure projects [5]. This makes it of significant theoretical and practical importance to investigate how the performance of megaprojects can be improved. In connection with this, Wang et al. [6] underscore that the prevailing poor performance of megaprojects worldwide needs to be addressed in various ways. Improving individual-level job performance is imperative to contribute to solving the performance dilemmas of megaprojects [7]. In practical terms, Ireland [8] claims that improving individual level performance could reduce project times by up to 20%, and project costs by up to 10%. Therefore, the present study seeks to add more insights into efforts to improve project performance at the individual level.

The dominant discourse in project management focuses on performance at the project and/or team levels [9, 10], which of course is appropriate, but the micro-foundations of outcomes of these levels are often overlooked [11]. Though individual performance and its antecedents are well established research topics in the general management literature [12], these issues have not received considerable attention in a project context [13]. Thus, we argue that research on individual job performance in a temporary organization context represents an omission in the project management literature that deserves to be addressed. Some scholars [5, 14, 15] also highlighted the importance of more research on job performance at the individual level, since this influences project success [16].

An important factor driving individual job performance is motivation, which can be defined as unobservable energetic forces that arouse an employee to willingly and persistently perform well [17]. The Human Resource Management (HRM) literature has established that job performance is a function of motivation, ability and opportunity [17], which implies that work motivation is a vital element to enhance employee performance.

Self-determination theory (SDT) offers an explanation of the linkage between motivation and performance [18, 19]. SDT underscores that human beings are inherently motivated towards work-related accomplishments so long as they feel autonomous. The theory also highlights that people can learn to be unmotivated due to work conditions that distort inherent motivation [20]. Seiler et al. [21] show empirically that positive working conditions are of utmost importance for employees to exhibit intrinsic motivation, which in turn spurs job performance. A good working atmosphere is especially required and crucial in the construction industry, including a mega hydropower projects. The working environment in such mega projects is very demanding and complex, and is characterized by high risk, heavy workloads, tight schedules, and long working hours [9, 22]. This indicates that there could be organizational context factors which strengthen or dampen the relationship between work motivation and performance.

One such organizational context factor could be internal social responsibility (ISR), which comprises organizational initiatives and actions that focus on the well-being and welfare of employees [23, 24]. We expect ISR to moderate the relationship between motivation and job performance, because ISR has the potential for leveraging the work environment as a part of good management [25]. This would help to advance our understanding of the circumstances under which motivation influences job performance.

This paper studies the links between work motivation, project employees' perceptions of ISR, and job performance taking an important megaproject in Ethiopia, the Koysha Hydropower project (KHP) as its study context. The choice of this context is justified by the paucity of studies on mega infrastructure construction projects in developing countries such as Ethiopia [26]. The problems with infrastructure projects in Ethiopia in terms of delays and cost overruns have been documented in the literature [27]. It is also further justified by the particularity of primary data collection in Ethiopia, where two of the researchers are based. The objectives of this study are twofold. First, it aims to examine the effect of work motivation on the performance of project employees. Second, it investigates the extent to

which ISR plays a moderating role in the relationship between work motivation and job performance.

The subsequent sections of this paper are structured as follows. The next section provides a review of our theoretical foundations, and presents the research model along with the research hypotheses. The Research method section describes the research setting and the methods used in the study. This is followed by the results of the study. The Discussion section describes the research findings, the study implications, and limitations as well as suggestions for future research. Lastly, it finishes by presenting a conclusion.

2. Literature Review

This section discusses relevant literature on job performance, work motivation and internal social responsibility, which are the constructs used in the study. It subsequently presents the research model, along with hypotheses of the study.

2.1. Theoretical background

2.1.1. Job performance

Sonnentag and Frese [28] underscore that a conceptualization of job performance needs to address actions (or behaviors) and outcome aspects of performance. The behavioral aspect constitutes what an individual does in the work situation, while the outcome dimension of performance refers to the consequences of the individual's behavior, explained in terms of measurable deliverables. The present study captures the behavioral aspect of job performance, which is also referred to as task performance. In this regard, job performance refers to the proficiency with which incumbents perform duties specified in their work descriptions with the ultimate purpose of attaining organizational goals [29].

The context of the present study is a mega hydropower project. Such projects form a subset of the construction industry, and are characterized by interdependence, strong staff-tasks linkage, novelty of technology, long implementation periods, uncertainty of work systems, and the dynamic behavior of employees [9, 30, 31]. Taking this into account, we operationalize individual job performance by the proficiency and adaptability of individuals. This is in line with the works of Griffin et al. [32] and Rezvani et al. [5]. According to Rezvani et al. [5], 'Proficiency represents the quality of the work produced, meeting role requirements, learning new ways to perform a task and project objectives' while adaptability refers to the ability of an individual to manage changes and challenges that could happen in the workplace. Especially in a megaproject context these aspects of job performance can be assumed to be important [7].

2.1.2. Work motivation and self-determination theory

Work motivation can be defined as a set of forces that energize, direct and sustain work-related behavior. It arouses an individual to exert effort persistently towards accomplishment of job-related goals [13, 33, 34]. Similarly, Peterson [35] points out that motivation is an internal motive to achieve a goal or work toward the desired accomplishment. Motivation in a project setting entails energizing team members to achieve high levels of performance and to manage a dynamic work environment [36].

Though there are several needs-based and process-based theories of motivation [13], this study is guided by self-determination theory (SDT) since it offers the core principles underlying sustainable motivation in an organization. SDT argues that human beings have inherent psychological growth tendencies and self-determination potential [37]. It defines motivation along an amotivation - intrinsic (autonomous) motivation continuum unlike other theories of motivation, which treat motivation as a unitary and unidimensional resource [38, 39]. Amotivation represents a situation where an employee lacks the desire to act whereas controlled motivation refers to a type of motivation driven by external sources such as monetary rewards, and compliance behaviors. Attributed to internal sources, autonomous motivation, however, is volitional and the ability to demonstrate the required work-related attitudes

such as love for the job, and enjoying as a member of a given organization [20, 38].

SDT further highlights that an optimal functioning of both intrinsic and extrinsic motivation requires three basic psychological needs: autonomy, competence, and relatedness. Autonomy refers to the individual's need for a sense of freedom to engage in activities that fit to one's choice, interests and will; competence entails the need to be effective, successful and skillful in one's actions through the advancement of knowledge and skills; and relatedness denotes the need for belongingness and attachment to others, as well as the need for support, care and respect from others. SDT assumes that when individuals are satisfied with the three basic psychological needs they can have a subjective feeling that their behavior is congruent with their true selves [39, 40].

In this study, we focus on autonomous work motivation, which guides project employees to pursue a particular task/goal based on their interests or personal value fulfillment related to innate psychological needs.

2.1.3. Internal social responsibility

As part of the set of practices forming Corporate Social Responsibility (CSR), megaproject social responsibility refers to the policies and actions of a megaproject over its lifecycle for the well-being of the stakeholders including the local communities and employees [41, 42]. In general terms, social responsibility of a firm can be categorized as external (focusing on local community and environmental protection) or internal, which intends to benefit the internal stakeholders such as employees [24]. In this study, we use the term 'internal social responsibility' (ISR) to denote social responsibility of a megaproject that targets improving the wellbeing of project employees.

Brammer et al. [43] state that ISR refers to the adoption of ethical behaviors by an organization towards its internal stakeholders such as employees, shareholders and supervisory board. They indicate procedural justice as one aspect of ISR, which is concerned with the way an organization treats employees fairly, and in a socially responsible manner. Although there is a lack of consensus on what constitutes ISR, unlike that of external social responsibility [44, 45], we operationalize ISR as voluntary actions of a megaproject that target improving the physical and psychological working environment, which in turn aims at enhancing the wellbeing of employees. This is in line with the work of Cheah and Lim [24] and Turker [46].

The present study, thus, aims to contribute to the project management literature by providing empirical evidence on the interaction effect of ISR and motivation on job performance. In the following section, we provide a research framework and hypotheses of the study.

2.2. Conceptual model and hypotheses

2.2.1. Autonomous work motivation and job performance

Literature in a general organization has established that motivation positively influences employee performance [12, 47]. In pragmatic terms, motivation drives performance by influencing the direction, intensity, and persistence of effort. This means that autonomous work motivation dictates an employee's choices on whether to expend effort, the level of effort along with level of determination and persistence

More specifically, SDT states that autonomous work motivation leads to higher levels of job performance. Using the underlying assumptions of SDT, Tam et al. [16] empirically found that autonomous work motivation positively and significantly predicts labor productivity in the construction sector. In the same argument, autonomous work motivation is one of elements that could explain employee performance in a mega hydropower project context. Hence, we put forward the following hypothesis.

H1: Autonomous work motivation is positively associated with job performance.

2.2.2. The moderating role of internal social responsibility

A growing number of studies demonstrate that ISR dimensions are positively related to organizational outcomes such as job performance (both financial and non-financial performance), work turnover, job

satisfaction, organizational commitment, and absenteeism. For instance, a work by Al-Zoubi and Al-Tkhayneh [48] indicates that ISR practices in terms of education and training, human rights, safety and well-being, work life balance are correlated with job commitment. In the same way, studies by Schieg [49] and Zhou and Mi [50] point out that successful implementation of megaproject social responsibility initiatives results in positive benefits such as trust building, job satisfaction, and employee motivation. The consequence, however, will be negative if the initiatives are not fully put into action.

Strategic management literature documents the moderating role of Corporate Social Responsibility (CSR) in a permanent organization context. For instance, Lu et al. [51] found that CSR positively influences the association between internal corporate governance and firm performance. Focusing on the moderating role of internal CSR, Deng et al. [52] confirmed that employees with high perception of internal CSR are more likely to perform better in terms of labor productivity than those with low perception of internal CSR. These findings imply that positive perceptions of internal CSR practices help employees develop a positive attitude to an organization. As an aspect of organizational contextual factors, internal CSR activities such as concern for employees' health, safety, and wellbeing can make employees feel that they are recognized and valued by an organization [52].

In a megaproject context having dynamic structures, time-bound nature, and different employment relationships compared to permanent organizations [53, 54], employee motivation can be more impactful on job performance when a megaproject properly practices ISR that ensures employee wellbeing and fair procedures in the decision process. In other words, project employees are more motivated towards goal accomplishment and perform better in a good working environment [55], and ISR contributes to this. In line with SDT, good ISR performance could be a fertile ground for autonomous work motivation, which in turn increases employee performance. On the contrary, employees may learn to be unmotivated and reduce their efforts towards goal accomplishment under low levels of ISR [20]. On the basis of these considerations, we argue that the association between autonomous work motivation and job performance is more pronounced when employees favorably perceive the megaproject's ISR. This leads to formulation of the following hypothesis.

H2: ISR moderates the relationship between autonomous work motivation and job performance such that the relationship will be stronger when ISR is high than when it is low.

By combining the aforementioned arguments and hypotheses, the graphical representation of the research model is presented in Fig. 1.

3. Methods and Data

This section describes the research setting, research design, research approach, target population, sample size and sampling techniques, methods of data collection, as well as measures of the constructs and methods of data analysis.

3.1. Research setting

The context of this study is KHP, a mega hydropower project in Ethiopia, with an estimated capital investment of 2.5 billion Euros.

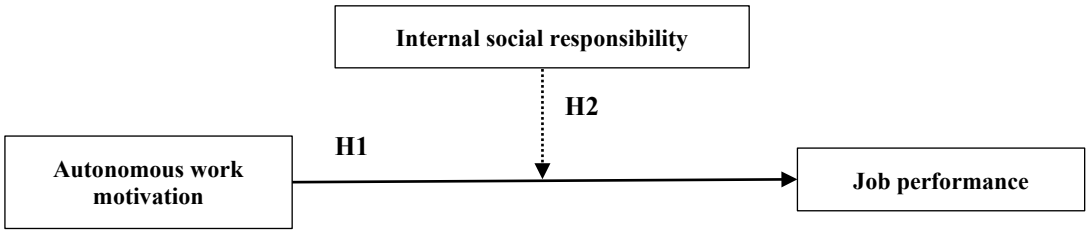

Fig. 1. The research model (Researchers' own synthesis based on Yang et al. [56])

Downstream of the Gibe III hydropower dam along the Omo-Gibe river basin, KHP is located in South West Ethiopia Region, approximately 540 Km from Addis Ababa. The project has been under construction since October 2016, and it has reached above 61% completion at the time of data collection. After completion, it is expected to produce 6,460 GWh/year energy with a generating capacity of 1,800 MW. The impoundment of the dam will create an artificial lake of 130 km long and 200 km^2 in area The project is being constructed by 'Webuild'- an Italian construction and civil engineering company, whereas the owner of KHP is Ethiopian Electric Power, a government-owned enterprise [41, 57].

3.2. Research design

The study employed a positivist philosophy and deductive approach, using a questionnaire survey strategy to collect data. It followed a cross-sectional time horizon whereby the data for all the study constructs were captured at a single point in time. This is an acceptable research design in project management as recommended by Pasian and Turner [58].

3.3. Target population, sample size and sampling techniques

This study's population is composed of project employees working for Webuild- the constructor of KHP. As of February 2024, the record of the Personnel Department of 'Webuild' shows that KHP has a total of 5,416 project employees, from which 3,160 employees worked exclusively on a day shift. By targeting project employees in a day shift (3,160) as a sampling frame, we obtained the sample size of 322 from a standardized table that displays the recommended sample size corresponding to a population size [59].

Equally important as the determination of the appropriate sample size, sampling design involves selection of sampling units from the target population [59]. In this regard, the researchers employed a simple random sampling technique to select the sample units from the sampling frame- all project employees who worked at the KHP during a day shift. Out of the required sample size (i.e. 322), 297 project employees voluntarily participated in the survey.

Along with the basic data cleaning, cases with outliers were detected and excluded from the data analysis. In this regard, univariate outliers were detected by computing Z scores for indicators of the respective study constructs. Thereby, cases with standardized scores in excess of ±3.29 were removed from the analysis. Detection of multivariate outliers was done using Mahalanobis distance at $p < .001$ in SPSS [60]. After eliminating outliers and responses with substantially missing data, we analyzed 200 completed valid responses. This is deemed an acceptable sample size to run structural equation modeling in Smart PLS4 [61]. The demographics of our sample are summarized in Table 1.

Table 1 shows that out of the 200 project employees, 168 (84.0%) were male while 32 (16.0%) were female; the majority of the respondents (97.5%) were Ethiopians. In terms of educational level, 29.5% (n = 59) attended secondary school, 26.5% (n= 53) had a first degree, 20.5% (n=41) completed level 4 from technical and vocational colleges, and the remaining 18% (n=36) and 5.5% (n=11) attended upper primary school or had a master's degree (or above) respectively. About two third of the respondents worked at dam construction or safety/quality work divisions while the remaining one third of the respondents worked at powerhouse/spillway or plant work divisions. In the sample, the average work experience was 4 years. These descriptions demonstrate that our sample constitutes a diverse demography of the target population working in the selected project company.

3.4. Data collection methods and procedures

The study utilized a questionnaire comprising well-structured and validated question items which were adopted from prior empirical works, as explained in the 'measures' section. Following a back-translation technique with support of a language specialist [62], the questionnaire was prepared in English as well as the Amharic language to ensure clarity among the respondents.

Table 1. Demographics

Variables	Value	Frequency	%
Sex	Male	168	84.0
	Female	32	16.0
	Total	200	100.0
Nationality	Ethiopian	195	97.5
	Moroccan	2	1.0
	Italian	2	1.0
	Chinese	1	0.5
	Total	200	100.0
Educational level	Secondary (Grade 9-12)	59	29.5
	First degree (BA/BSc)	53	26.5
	Level 4 completed or diploma holder	41	20.5
	Upper primary (Grade 5-8)	36	18.0
	Master's degree or above	11	5.5
	Total	200	100.0
Work divisions	Dam construction	67	33.5
	Safety and quality	64	32.0
	Power house and spillway	38	19.0
	Plant	31	15.5
	Total	200	100.0
Work experience (average in years)		4	

To make the data collection process easy and reliable, the questionnaire was digitalized into Kobo toolbox-an online-offline data collection software program. Subsequently, the data collection was conducted by four trained enumerators using smart mobile phones through Kobo Toolbox, in the period between 2 February and 11 February 2024.

3.5. Measures

All core constructs of this study (employee autonomous work motivation, ISR, and employee job performance) were measured by multiple items taken from validated measures of past empirical studies. For these constructs, participants were asked to indicate their agreement on a five-point scale from 1=strongly disagree to 5= strongly agree. Detailed information about the sources for measurement items is provided below.

Autonomous work motivation: For the motivation measure, we took four items from Godard [63] and one item from Keegan and Den Hartog [64].

Internal social responsibility: We used eight items to measure project employees' perceived ISR from the works of Brammer et al. [43] and Barlas et al. [65], as these items are relevant to a megaproject context.

Job performance: For the measure of job performance, we used six items from Rezvani et al. [5] who operationalized job performance by proficiency and adaptability in the context of large infrastructure projects, which are characterized by interdependence, ambiguity, and uncertainty. Proficiency entails the quality of the work produced, performing required roles, learning new ways to perform a task, and achieving project objectives. Adaptability represents the capacity of an individual to manage and cope with the changing working environment, particularly at crises.

Appendix A presents the measurement items for each of the constructs contained in the questionnaire.

Control variables: Sex/gender, educational level and work experience were included as control variables [43]. These control variables were entered into the structural model as: sex/gender of the

respondent as a dummy variable (0=female-reference group, 1=male); level of education as a dummy variable (0= Master's degree or above - reference group, 1= Else), and work experience as a metric variable.

3.6. Methods of analysis

This study mainly utilized Partial least squares structural equation modeling (PLS-SEM) with support of SmartPLS 4 software, which is capable of handling analysis of both direct and indirect relationships such as moderation effects at the same time [66]. Compared to other techniques of data analysis such as Covariance-based-SEM, PLS-SEM is considered appropriate for predication purposes, small sample sizes and non-normally distributed data [61]. The analysis process involved two main steps: Assessment of the measurement model, and assessment of the structural model.

Through the standard PLS-SEM algorithm, assessment of the measurement model entails examining the quality of measurement scales based on multiple criteria such as factor loadings, reliability, convergent and discriminant validity tests. Factor loadings show how well the indicators (measured items) are representatives of the respective underlying construct (latent variable). Construct reliability measures the consistency of responses across the indicators of a given construct. It is commonly assessed by Cronbach's alpha, composite reliability and Rho-a. The acceptable values for factor loadings and the stated reliability tests are over 0.70 [61].

Construct validity, in terms of convergent and discriminant validity, helps to assess whether the indicators measure what a researcher is supposed to study. On one hand, convergent validity shows the extent to which the indicators come together to make up the underlying construct, which is established through Average Variance Extracted (AVE), with a minimum value of 0.50. Discriminant validity, on the other hand, is used to assess whether each of the study constructs statistically differs from the other ones. The common methods to assess discriminant validity include the Fornell and Larcker criterion, the Heterotrait-Monotrait Ratio (HTMT), and Cross-loadings. According to the Fornell and Larcker criterion, discriminant validity is established if the zero-order correlation value is below the square root of AVE. According to the HTMT criterion, discriminant validity is established if the resultant values are less than 0.85. In terms of cross-loadings, the outer loading of each indicator on its associated construct needs to be larger than that of another construct. A given item is dropped if it is loaded well onto another construct [61, 67].

The second step in PLS-SEM is structural model assessment, which was done using PLS-SEM bootstrapping after all the requirements and assumptions of the measurement model were fulfilled. At this stage, all the paths in our research model, including those for the moderator and control variables, were drawn in the SmartPLS 4 interface. With regard to the bootstrapping general settings, the analysis considered 10,000 subsamples, two tailed test with 5% significance level, fixed seed as the random number generator, and bias corrected and accelerated bootstrapping to obtain confidence intervals [61, 68].

More specific to moderation analysis, we followed the two-stage approach recommended by Hair et al. (2022). In this approach, the first stage requires estimating the main effects model (i.e. the independent and the moderator variables) along with the control variables in the absence of the interaction term. The second stage involves creating a SEM model comprising the main effects, interaction term, and control variables, and then running the required analyses through PLS algorithm and bootstrapping.

Since this study was of a cross-sectional nature, addressing common-method bias requires adequate attention. For this purpose, we adhered to the recommendations outlined by Podsakoff et al. [69] prior to the data collection. Furthermore, we checked whether the dataset was distorted by common method bias by using Variance Inflation Factor (VIF) values of the inner model in the SmartPLS 4. In this exercise we found that all the VIFs are below 3.33 indicating that common method bias is not problematic in this study [70].

4. Results

This section presents results of the data analysis as generated by the SmartPLS 4 software. More specifically, the section has three sub-sections: assessment of the measurement model, explanatory power of the model, and structural model assessment along with hypothesis testing.

4.1. Assessment of measurement model

For the assessment of our measurement model, we ran the PLS-SEM algorithm on the basis of the reflective approach, which assumes that indicators or measures represent an underlying latent variable. In the first iteration of the PLS-SEM algorithm, the factor loading of one item (ISR5) of ISR became below the threshold value of 0.7 [71]. Thereby, we dropped this item from the model and then we reran the PLS algorithm. At this iteration, factor loadings for the three constructs of the study were within the recommended values (Fig. 2).

On the basis of PLS-SEM algorithm outputs, Table 2 presents the number of items for each construct, values from reliability test and AVEs.

Table 2 reveals that the values of Cronbach alpha and reliability tests exceed 0.7, which indicate that the measurement model is trustworthy and the data are reliable. Besides, the values of AVE are greater than 0.5, which confirms that convergent validity is established. Thereby, our measurement model meets the criteria for both reliability and convergent validity.

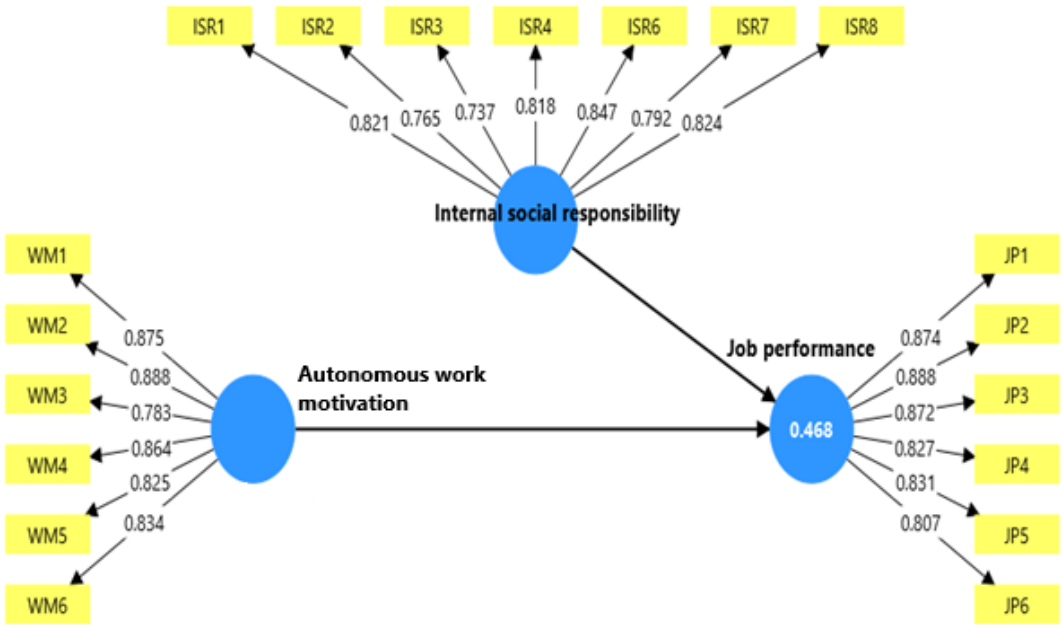

Fig. 2. Graphical output from the PLS-SEM Algorithm

Table 2. Number of items, Cronbach's alpha, composite reliability and average variance extracted

Constructs	No. of items		Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	AVE	Mean	SD
	Original	Retained						
Autonomous work motivation	6	6	0.920	0.924	0.938	0.715	4.11	.44
ISR	8	7	0.907	0.913	0.926	0.642	2.71	.92
Performance	6	6	0.924	0.936	0.940	0.724	4.17	.37

Notes: ISR= Internal Social Responsibility; AVE= Average variance extracted; SD= Standard deviation

The study applied Fornell-Larcker (FLC) and cross-loadings to assess discriminant validity. In this regard, Table 3 presents the outputs from the Fornell-Larcker (FLC) test in which discriminant validity is established when the AVEs is larger than the shared variance between the constructs.

As indicated in Table 3, the square roots of the AVEs (diagonal values in bold) are higher than the corresponding components' correlations (off-diagonal values), which implies that discriminant validity is established. In alignment with the FLC criterion, the factor loadings for the retained items presented in Appendix B are well loaded on their respective underlying constructs, which implies that a cross-loading is not an issue between constructs.

4.2. Model goodness evaluation

Before undertaking hypothesis testing, the goodness of a measurement model needs to be established, usually by examining the values of R-squared (R^2), F-square (F^2), and Q-square (Q^2). The R^2, also referred to as in-sample predictive power, represents how much of the variation in endogenous construct (dependent variable) is explained by the collective action of the exogenous constructs. Having values that range from 0 to 1, a higher R2 indicates a greater explanatory power. As a rule of thumb, R^2 values of 0.75, 0.50, and 0.25 respectively show substantial, moderate, and weak predictive power of the model. The F^2 represents the effect size by which each of the exogenous constructs including the interaction term (in case of moderation analysis) can influence the endogenous variable; it also shows the extent to which this influence is robust. As a general guideline, F^2 values of 0.02, 0.15, and 0.35 represent small, medium, and large effect sizes, respectively. For moderation analysis, however, the F^2 values higher than 0.005, 0.01, and 0.025 can be described as low, moderate, and high effects, respectively. Generated from the blindfolding procedure in SmartPLS 4, the Q^2 value denotes the predictive accuracy of the structural model. For evaluation purposes, Q^2 values higher than 0.025, 0.15, and 0.35 respectively show small, medium, and large predictive relevance of the model [61, 71, 72]. Table 4 displays the values of R^2, F^2, and Q^2 for the model of this study.

The findings in Table 4 reveal that the model has an R^2 value of 0.504, which denotes a moderate explanatory power of the model. The value indicates that about 50% of the variation in the job performance of the project employees is explained by their work motivation and the moderation effect (i.e. the interaction effect of ISR and motivation). The F^2 values show that both the direct effect of work motivation (0.483), and the moderation effect (0.109) on job performance are large, though the direct effect of the moderator variable (i.e. ISR) is negligible.

Table 3. Discriminant validity: Fornell-Larcker criterion

	Work Motivation	Internal social responsibility	Job performance
Autonomous work motivation	*0.845*		
Internal social responsibility	0.591	*0.801*	
Job performance	0.682	0.355	*0.851*

Notes: the diagonal elements (in italic) represent the square root of the AVE; off-diagonal elements are the zero-order correlations among the constructs.

Table 4. Model goodness

Predictor(s)	F^2
Autonomous work motivation	0.589
Internal social responsibility (ISR)	0.010
Interaction term: Autonomous work motivation * ISR	0.111
Outcome (endogenous variable)	Job performance
R^2	0.521
Q^2	0.355

Table 4 also reports that the Q^2 value for the endogenous construct is 0.472, which implies that the predictive relevance of the model is large.

4.3. Structural model assessment and hypothesis testing

Structural model assessment in PLS-SEM is concerned with assessment of the path relationships of the latent variables on the basis of the hypotheses, which requires following a bootstrapping procedure with a recommended sub-samples of 10,000 in Smart PLS 4 [61]. Fig. 3 presents the structural model (inner model) from PLS-SEM with values of the path coefficients and p-values in the bracket as well as the values of explanatory power (R-square) for the dependent variable (i.e. job performance).

Table 5 presents the outputs from bootstrapping using PLS-SEM related to the direct effects of autonomous work motivation as well as the control variables on job performance. The findings in Table 5 show that none of the control variables captured by the model (sex, education and work experience) were statistically related to job performance ($p > 0.005$). Hypothesis 1 postulates the association between autonomous work motivation and job performance. As predicated, autonomous work motivation is positively and statistically associated with job performance ($\beta = 0.722$, $p < 0.001$). Therefore, Hypothesis 1 is supported.

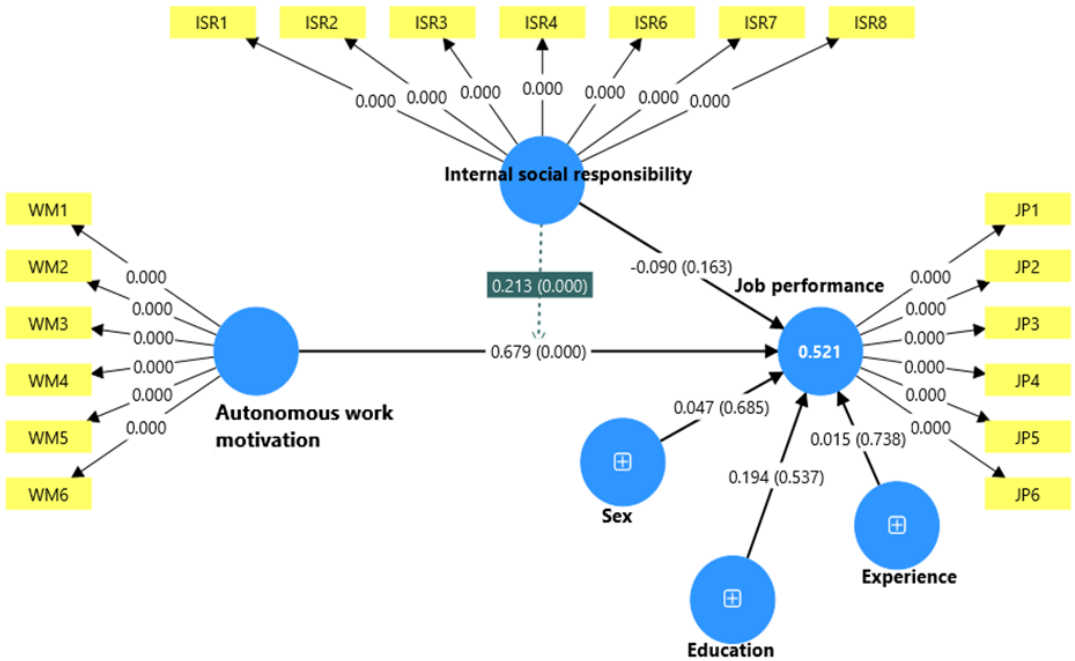

Fig. 3. Graphical outputs from PLS-SEM bootstrapping with path coefficients and p-values in the bracket, and R-square for the dependent variable

Table 5. The direct effect of work motivation on job performance

Paths	Beta (β)	SE	t-value	P value
Effects of control variables				
Sex -> Job performance	0.001	0.122	0.006	0.995
Education -> Job performance	-0.054	0.340	0.160	0.873
Experience -> Job performance	-0.003	0.045	0.064	0.949
Main effects				
Autonomous work Motivation -> Job performance	0.722	0.055	13.037	0.000
ISR -> Job performance	-0.076	0.063	1.194	0.233

With regard to the direct effect of ISR on job performance, the findings in Table 5 depict that ISR is found to be non-significant. A non-significant direct effect of ISR on job performance is addressed by Al-Zoubi and Al-Tkhayneh [48], who argued that if social responsibility activities are not fully implemented, the consequence could be even negative. Nevertheless, further research is needed to clarify the reasons behind the non-significant association between ISR and job performance.

Hypothesis 2 examines the moderating effect of ISR in the relationship between autonomous work motivation and job performance. This requires undertaking a moderation analysis whereby the outputs from a two-stage procedure in SmartPLS 4 as recommended by Hair et al. [61] are printed in Table 6. Accordingly, the results of Step 2 in Table 6 report the moderating effect of ISR (Motivation*ISR). As proposed, the interaction between motivation and ISR is significant (β=0.213, $p < 0.001$). As depicted in Step 1 of Table 6, without inclusion of the moderating effect (moderation*ISR), the R^2 value for job performance is 0.468, which implies that 46.8% of the change in job performance is accounted by main effects and the control variables. With inclusion of the moderating effect (interaction term) in Step 2, the R^2 increased to 0.521. This indicates that the ISR-motivation interaction uniquely accounts for 5.3% of the explained variance in performance. Thus, the findings from the moderation analysis support to Hypothesis 2.

5. Discussion

The present study provides evidence regarding a boundary condition that affects the association between work motivation and job performance in a megaproject context by employing PLS-SEM in SmartPLS 4. Drawing on Self-Determination Theory (SDT), we examine whether a megaproject ISR plays a moderating role in the relationship.

In line with our hypothesis, the study demonstrates that autonomous work motivation does directly and positively predict individual job performance in a temporary organization context. This finding is incongruent with the meta-analytic research by Van Iddekinge et al. [12] and empirical study by Moon et al. [73].

The most important finding of this study relates to the moderating role of perceived ISR as an important contextual factor. As predicted, our findings show that ISR moderates the direct and significant relationship between motivation and job performance. The simple slope analysis suggests, as graphically evidenced in Fig. 4, that ISR strengthens the positive relationship between motivation and job performance. Plotted lines in Fig. 4 illustrate the effect of motivation on job performance for those scoring 1 standard deviation above the mean on the measure of ISR (high ISR) and for those scoring 1 standard deviation below the mean on the measure of ISR (low ISR).

Table 6. The moderating role of ISR

	(Step 1) Job performance	(Step 2) Job performance
Sex	0.001	0.047
Education	-0.054	0.194
Experience	-0.003	0.015
Autonomous work motivation	0.722***	0.679***
Internal social responsibility (ISR)	-0.076	-0.090
Interaction term: Motivation*ISR		0.213***
N	200	200
R^2	0.468	0.521
ΔR^2	-	0.053

Notes: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

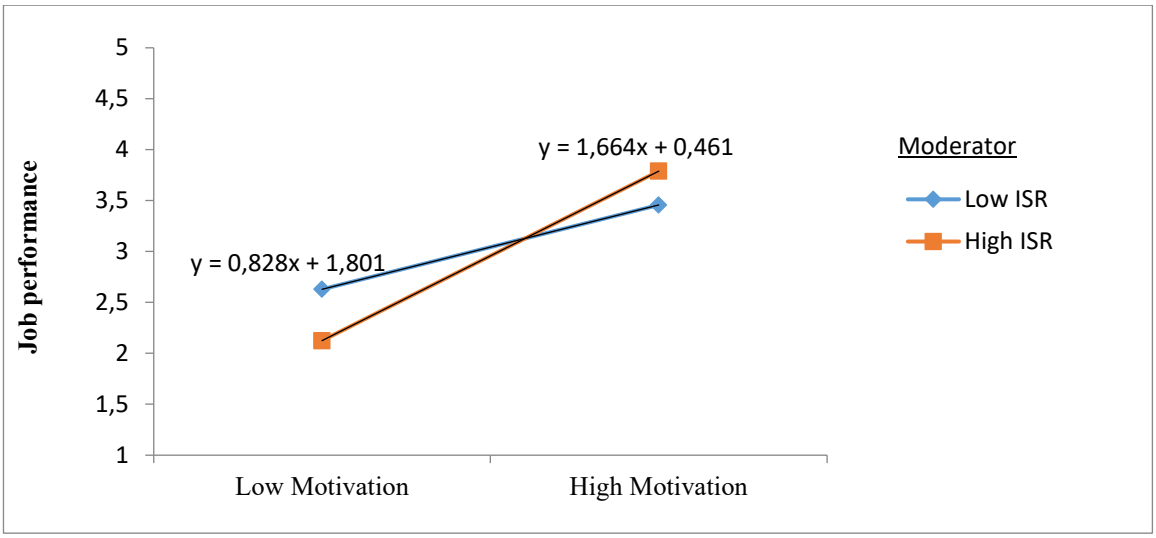

Fig. 4. Interaction of motivation and ISR in predicting job performance

Fig. 4. depicts that the effect of motivation on performance is stronger when ISR is high whereas the effect is a weaker when ISR is low. This shows that the relation between motivation and job performance tends to be stronger for project employees with high ISR than for employees with low ISR. Likewise, performance is highest of all when both motivation and ISR are also high. The Figure further illustrates the overall tendency for employees with high levels of perceived ISR to have higher levels of job performance than employees with low levels of ISR. This positive and significant moderation effect shows that if project employees perceived ISR as a positive circumstance, the effect of motivation on job performance is stronger. These findings confirm one of the assumptions of SDT, that underlines that contextual factors have the potential to drive or hinder autonomous work motivation, which in turn shape what kind of behavior individuals will perform [38, 74]. Our identification of ISR as one such contextual factor strengthens the SDT framework.

5.1. Theoretical and practical implications

The findings of the present study have several theoretical and practical implications. From a theoretical perspective, four implications are noteworthy.

To begin with, our study can be considered as a micro-level contribution to the explanation of project performance, unlike the conventional project management literature which emphasizes factors at the macro level of a project [9, 10]. However, individual job performance is an important contributor to project success, and requires attention, as suggested by Goetz and Wald [53]. These authors suggested that the differences between project-based and permanent organizations may have a profound effect on factors influencing individual job performance. The present study contributes to the project management literature by zooming in on a micro-level factors influencing project performance, using individual performance as the core outcome variable of the study.

Second, this study addresses the role of internal social responsibility, a topic which has received little attention in the organizational and project management literatures. For example, Turker [46] and Saeed and Arshad [45] indicate that the management literature has focused on external CSR aspects (in terms of community involvement and environmental protection), with less attention to internal CSR. A recent work by Cheah and Lim [24] also underscores that corporate social responsibility studies disproportionally emphasize external aspects, neglecting the internal dimension.

Therefore, the present study supplements previous works [24, 46], by showing the importance of internal social responsibility.

Third, our study explores a previously untested boundary condition in the relation between motivation and job performance. This in turn contributes to the project management literature by addressing the role of soft factors such as motivation and ISR, which are relatively neglected areas [13]. That is why several studies [10, 21, 75] claim that poor performance of megaprojects can be attributed to inadequate attention to human factors such as motivation.

Finally, the finding that ISR strengthens the relationship between autonomous work motivation and job performance provides empirical evidence to self-determination theory, which posits that people learn to be unmotivated due to work conditions that distort inherent motivation [20]. In this sense ISR strengthens SDT, as the predicted and empirically confirmed positive moderation reveals that the mechanisms assumed to be at work according to SDT are indeed plausible. The identification of ISR as a boundary condition for SDT points at an important category of work conditions that merits further exploration.

From a practical perspective, the findings of the study have also several implications. First, the finding that autonomous work motivation is positively and significantly related to job performance shows that project companies and project managers need to strategically design and implement motivational mechanisms. In particular, megaprojects need to build a culture of high quality work motivation that comes from within employees, by supporting employees to satisfy their three psychological needs for autonomy, competence and relatedness. While this study has focused on the need for autonomy, the other two needs also should be acknowledged. Concrete and actionable strategies include clarifying project goals and the value of tasks at the project, team and individual levels, which is vital to instill a sense of purpose in employees and which would also contribute to greater autonomy. Furthermore, experience sharing programs, training and team-building programs could be undertaken to satisfy competence needs. Managers of megaprojects should create a work environment in which employees feel respected and valued by others, including coworkers and leaders, in order to satisfy relatedness needs. The fulfillment of each of the three psychological needs would thus drive autonomous work motivation, which in turn leads to high job performance [20, 39].

The second practical implication relates to the finding that ISR strengthens the relationship between motivation and job performance. This highlights the need to address ISR. Thus, megaprojects should balance their conventional activities and interventions targeting the benefits of project employees, since socially responsible firms are those which are accountable to their employees [24]. In this regard, megaprojects could incorporate ISR in to their human resource plan instead of considering it as a mere philanthropic activity. As suggested by Fuentes-García et al. [76], megaprojects need to incorporate ISR into their conventional human resource management, which would contribute to a healthy and conducive working environment. Schieg [49] also underscores that successful implementation of CSR activities depends on having a written CSR strategy, and having appointed a "Corporate Responsibility Officer".

The third practical implication of the study relates to the role of government in promoting CSR in general and ISR in particular. Our study's finding on ISR reveals that the perceived average ISR practices scored 2.71 on a five-point scale (see Table 2), which suggests that the practices of ISR in the case megaproject are very low. This calls for intervention by governments, particularly in developing countries. This is in line with the recommendations by Wirba [77] who underscores the importance of ISR frameworks initiated by the governments to help strengthen CSR through awareness raising, cooperation, soft legislation, and compulsory resources. In this way voluntary actions can be facilitated and encouraged, and measures to track and implement corporate responsibility can be mandated. Moreover,

establishing a ministerial department to coordinate the CSR agenda is advisable.

5.2. Limitations and suggestions for future research

We acknowledge that this study has several limitations which require caution when interpreting the findings; some of the gaps of this study could be addressed by future research.

The first limitation is concerned with the data on job performance, obtained by self-assessment instead of supervisory performance ratings, which raises a question about external validity. Self-rating was employed in line with prior research [32, 78], which reported a substantial correlation between self-ratings and managers' ratings of performance. Nevertheless, we suggest that future research could utilize supervisor ratings in order to mitigate possible biases of self-ratings.

The second limitation relates to our operationalization of motivation, which was focused only on the dimension of autonomous work motivation. Nevertheless, SDT also considers amotivation, and the four forms of controlled motivation such as extrinsic motivation, introjected regulation, identified regulation, and integrated regulation [38]. Therefore, future research could consider a multi-dimensional construct of motivation to capture both the autonomous and controlled dimensions of work motivation in line with SDT.

Third, we measured ISR as perceived by the employees. This measure is suitable given our interest in how ISR (as perceived by the employee) influences his or her job performance (by positively moderating the relation between work motivation and job performance). However, ISR might be partly rhetorical rather than substantive, and could even replace employees' voice and collective rights [79]. For this reason, we suggest that future studies employ not only perceptual, but also more objective measures of ISR.

Fourth, the study considered a narrow definition of ISR, mainly focusing on firm's interventions that enhance the overall employee wellbeing and welfare. We did not cover other dimensions such as education and training, and human rights as suggested by Al-Zoubi and Al-Tkhayneh [48], since CSR in developing countries is at an infant stage and mostly seen as an act of philanthropy [77, 80, 81].

Fifth, intermediating variables in the motivation - performance relation have been left untouched in the project management literature. Therefore, future empirical studies might unpack this relationship by considering possible mediators and moderators, which further could improve our understanding of the relation between motivation and job performance in a megaproject context. In connection this, we also invite future research to consider the position of the respondents in terms of line workers, middle managers and top level management as a control variable, since this could influence the motivation and perceived ISR.

Lastly, it is important to mention that the study was limited in scope, as it was confined to only one megaproject in one country. This could constrain the generalizability of the findings even though the predictive power of our model was large. Thus, we encourage researchers to further validate and extend our model by considering multiple megaprojects.

6. Conclusion

The present study provides empirical evidence by examining the direct effect of work motivation, and the interaction effect of motivation and ISR on individual job performance in a mega hydropower project study setting. The study findings reveal that autonomous work motivation is positively and significantly associated with individual job performance. Even more interestingly, the study shows that ISR plays a strengthening role in the positive relation between motivation and job performance.

The study findings highlight the importance of motivation and ISR (which are soft factors) in driving individual job performance, which could in turn obviously influence project success. This study thus informs decision-makers, researchers, and practitioners in the field of project management to give sufficient attention to these soft factors. In line

with SDT, it is reasonable to affirm the vitality of autonomous work motivation in project organizations, which could be enhanced through, among others, positive feedback, supportive dialogue and equal treatment so as to enhance autonomous work motivation [20].

The findings regarding the strengthening role of ISR suggest that megaproject organizations need to address the social needs and well-being of their employees as a source of human capital, instead of practicing ISR as a mere philanthropic act. In this connection, project organizations could develop initiatives that satisfy specific needs and preferences of employees, arrange voluntary programs that focus on work-life balance, implement wellness practices, and offer voluntary opportunities for employees to develop their own talent [82].

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Author Contributions

D.A. Aga: Conceptualization, Methodology, Formal analysis, Investigation, Writing-Original draft, Writing- Review & Editing, Visualization. B.B. Beyene: Conceptualization, Methodology, Investigation, Writing-Review & Editing, Project administration. N. Noorderhaven: Conceptualization, Methodology, Writing-Review & Editing, Supervision.

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Data Availability Statement

The data presented in this study are available on request from the corresponding author.

Ethics Committee Permission

Ethiopian Civil Service University, Research Evaluation Committee approval was obtained on 20 November 2023.

Conflict of Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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Appendix A

Measurement items for the study constructs.

Autonomous work motivation.

No	Items	Code
1	I always put as much effort as possible into my work.	WM1
2	I am highly committed to do the best job I can.	WM2
3	For me, a good day at work is one in which I have performed to my utmost.	WM3
4	I try to work as hard as I can.	WM4
5	I intentionally expend a great deal of effort in doing my job.	WM5
6	I always give 100% where my work is concerned.	WM6

Internal social responsibility.

No.	Items	Code
1	The Company usually makes fair decision about employees.	ISR1
2	The Company offers equality of opportunity to all employees	ISR2
3	The Company encourages you to speak out any workplace concerns	ISR3
4	The Company cares about the welfare of employees.	ISR4
5	The Company pays fair wages to its employees.	ISR5 (deleted)
6	The Company offers its employees security during their work performance.	ISR6
7	The Company treats its employees fairly without discrimination or verbal and other abuse.	ISR7
8	The Company offers a pleasant working environment (e.g., flexible work schedule).	ISR8

Job performance.

No.	Items	Code
1	I carried out the core parts of my job well	JP1
2	I completed my core tasks well using the standard procedures	JP2
3	I ensured my tasks were completed properly	JP3
4	I adapted well to changes in core tasks	JP4
5	I coped with changes to the way I have to do my core tasks	JP5
6	I learned new skills to help me adapt to changes in my core tasks	JP6

Appendix B

Factor loadings of items of the constructs.

Items	Autonomous work motivation	Internal social responsibility	Job performance
WM1	0.875		
WM2	0.888		
WM3	0.783		
WM4	0.864		
WM5	0.825		
WM6	0.834		
ISR1		0.821	
ISR2		0.765	
ISR3		0.737	
ISR4		0.818	
ISR6		0.847	
ISR7		0.792	
ISR8		0.824	
JP1			0.874
JP2			0.888
JP3			0.872
JP4			0.827
JP5			0.831
JP6			0.807