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Examining Workers Motivation in Construction Project with Structural Equation Modelling
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Examining Workers Motivation in Construction Project with Structural Equation Modelling
--Manuscript Draft--

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Manuscript Classifications:	30.2.18 Engineering Management; 30.2.18.3 Engineering Project Management; 30.2.4 Civil, Environmental and Geotechnical Engineering
Abstract:	The work motivation for construction project workers shall be explored so that the work can be maximally obtained as well. Thus the continuity of the company's life will be guaranteed. The purpose of this research is to find out how much influence the independent variable is: employee pay, employee performance, communication, employer, local cultural, trust, work experience, and job satisfaction, to the dependent variable, namely: work motivation of construction project workers. This type of research is causal research that aims to prove the causal relationship or relationship influences and is influenced by the variables studied. Data is being analysed using the Structural Equation Modelling (SEM). The results showed that the independent variable, namely the variable of employee pay, employee performance, communication, employer, local culture, work experience, and job satisfaction, had a positive effect on work motivation. Yet, trust had a negative effect on work motivation.

Examining Workers Motivation in Construction Project with Structural Equation Modelling

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Abstract: The work motivation for construction project workers shall be explored so that the work can be maximally obtained as well. Thus the continuity of the company's life will be guaranteed. The purpose of this research is to find out how much influence the independent variable is: employee pay, employee performance, communication, employer, local cultural, trust, work experience, and job satisfaction, to the dependent variable, namely: work motivation of construction project workers. This type of research is causal research that aims to prove the causal relationship or relationship influences and is influenced by the variables studied. Data is being analysed using the Structural Equation Modelling (SEM). The results showed that the independent variable, namely the variable of employee pay, employee performance, communication, employer, local culture, work experience, and job satisfaction, had a positive effect on work motivation. Yet, trust had a negative effect on work motivation.

Public Interest Statement: The work motivation for construction project workers is the enthusiasm of workers to produce maximum performance so that companies benefit more and guarantee employee welfare more. In this research, we attempt to determine the dominant variable influencing the work motivation of construction project workers and determining the non-dominant variable influencing the work motivation of construction project workers. We find evidence that local culture and work experience have a dominant influence on the workers motivation of construction project. At the same time, trust and communication seemed to be insignificant on the workers motivation of construction project.

Keywords: work motivation, workers, human resources, construction projects, structural equation modelling (SEM).

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Sahadi received a doctorate degree from the Diponegoro University. He was a research fellow at Janabadra University. His research interests are ranging from construction management and project management, among others. He received awards from the Commission of Higher Education. He has published more than 20 articles in both national and international conferences and academic journals. He has worked with private sectors as well as regional government through public consultation and consulting projects.

Edy Sriyono holds a master's degree from Gadjah Mada University as well as a Ph.D. degree from Diponegoro University in Civil engineering. He has 31 years of experiences as a lecturer, research, and consultant ain the field of resources management. His current research interests are resources management.

Disclosure statement:

No potential competing interest was reported by the authors.

1 Introduction

Work motivation for construction project workers is the work spirit possessed by workers when working at the project site, in order to complete the project. Each employee's work motivation must be known because it is closely related to work productivity or work results achieved by each worker. Why work motivation on construction project workers needs and must be examined, because human resources construction projects are resources that are needed by the project, if there are no human resources, the project cannot run smoothly, it can even be stopped even though human resources must still be supported by other resources. The number of human resources in a project is quite large, ranging from workers, builders, chief craftsmen, foremen, implementing assistants, executors, site engineers. The experts and project managers, all work together to realize the project. Of the human resources needed by the project the most are workers and artisans, while the project manager is only one person, while the site engineer in a project is only a few people. A project if there are no workers, the building cannot be realized; therefore the lowest project workers are very valuable. (Please give a quote for this narrative)

Human resources, including construction workers, are unique factors of production and, if properly cultivated, can produce added value to other resources, so human resources must be the focus of development in general and the development of construction in particular.

Work motivation is the enthusiasm of workers desired by the company to achieve its objectives, that is, to obtain maximum work results, in other words to obtain high productivity, so that the company in carrying out its life is more guaranteed or more stable. Motivation is one of the key factors that influence productivity (Barg, Ruparathna, Mendis, & Hewage, 2014).

Efforts to increase high productivity in workers, then workers must be guaranteed working conditions while working, please note the condition of tired workers. Experiments show that the proposed physical fatigue assessment method can provide an automatic assessment of the level of physical fatigue. Then, a series of experiments demonstrated a potential method for assessing the level of physical fatigue of various conditions of construction tasks such as site layout and work break schedules (Yu et al., 2019).

Worker's motivation or enthusiasm must always be maintained so that the worker in any condition always has motivation or has high enthusiasm, so that productivity is high, and finally project work can be completed earlier than the specified schedule and the project is successful. High motivation actually has a better perception of health and work outcomes (Dill, Erickson, & Diefendorff, 2016).

Much motivation is carried out research at manager level, rarely research motivation at worker level. While workers are also important to know the level of morale or work motivation. So that the number of construction workers who are quite numerous and dominate the entire work of construction projects can be addressed by their work productivity. An important need to increase the motivation of project managers is a major concern for organizations. We develop and evaluate an integrated model of factors that influence the motivation of project managers, 'Motivational Factor Inventory' (MFI) (Seiler, Lent, Pinkowska, & Pinazza, 2012).

Workers are human resources whose jobs are the lowest compared to other human resources, but the construction of a magnificent building will not be realized without the existence of small workers whose numbers dominate like them. But it is often that only expert and managerial levels are often trained to obtain certificates of expertise, in fact a worker is very rare to have the opportunity to detraining to get a certificate. Project management (PM) is one of many jobs following the path to professionalization which includes voluntary certification (Blomquist, Farashah, & Thomas, 2018).

Work spirit or work motivation for the workforce does not get enough attention either by treating or getting a certificate, but it is rarely done, more is the project manager, project leader and so on. For this reason, it's time for the enthusiasm of the workers to be noticed and known, in this study, the morale of the project workers will be revealed. We find that motivation to lead is related to formal leadership guidance through increased leadership self-efficacy (Joo, Yu, & Atwater, 2018).

The morale or work motivation of the construction workers, apparently is not solely due to the need for money, so financial intensive is indeed necessary, because everyone needs money, but that is not the main thing. Observers of the construction industry touted the use of financial incentives as motivators and commitments to the project, apparently financial incentives are less important for motivation and performance than relationship improvement initiatives (Rose & Manley, 2011). Research Rose & Manley (2011), only examined the relationship of 4 (four) variables, namely, financial variables, project environment, motivation, and performance but in this study examined more than 4 (four) variables.

Research that takes motivation and financial variables is basically unprofitable, because financial variables are not the only effect on motivation variables. Continued motivation through the introduction of financial incentives, is one of the most frequently discussed consequences but there is little potential for unfavorable research from performance-based financing, (Lohmann, Muula, Houlfort, & Allegri, 2018).

Our findings show that nurses who have high intrinsic and extrinsic motivation actually have better perceptions of health and work outcomes (that is, less likely to say they will leave, less fatigue, less negative physical symptoms) than they who have high prosaically motivation, who are more likely to report work fatigue (Dill et al., 2016).

Based on the description above, it can be summarized that the dependent and independent variables are work motivation, financial incentives, project environment, performance, work fatigue, relationship improvement and leadership initiatives.

According to previous research the dependent variable is work motivation, while the independent variables that influence the dependent variable, namely: financial incentives, project environment, work fatigue, performance, relationship improvement initiatives, and leadership. Furthermore, the independent variables can be summarized as follows: financial incentive variables are included in the worker's payment variable. The fatigue variable, and the project environment, is included in the artisan performance variable. The performance variable is entered into the Builder Performance variable. The relationship improvement initiative variable is included in the communication variable. The leadership variable is included in the employer's superior variable. So the independent variables in previous studies after summarized amounted to 4 (four) variables. 1. Handyman variable, 2. Handyman variable, 3. Communication variable, 4. Employer superior variable.

The current study is the dependent variable work motivation, while the independent variables that influence the dependent variable in the old research there are 4 (four), namely: 1. the variable worker payment, 2. the performance variable, 3. communication variables, 4. variable supervisor handyman. Then added new variables namely: 5. local cultural variables, 6. trust variables, 7. work experience variables, 8. job satisfaction variables.

The purpose of this study was to determine the independent variables, namely: 1. variable payment worker, 2. performance variable, 3. communication variables, 4. variable employer superiors. 5. Local cultural variables, 6. Trust variables, 7. work experience variables, 8. Job satisfaction variables have a positive effect on the dependent variable, namely: work motivation variable.

Then determine the dominant variables that influence the dependent variable, namely, work motivation variables and determine the variables that are not dominant or the smallest effect on the dependent variable, namely the work motivation variable in construction projects.

2 Literature review

The success of a construction project is largely determined by a minimum of 5 (five) resources including, human resources, financial resources, material resources, equipment resources, and work methods. Human resources are resources that play an important role in the implementation of construction projects, because the other 4 (four) resources are dominated by human resources. If the project is carried out to completion and meets the criteria it can be on time, right on cost and on right quality is said to be successful. The success of the project depends on the training of practitioners when the level of implementation is achieved, while human factors play an important role in achieving successful projects, (Al-Hajj & Zraunig, 2018).

2.1 Workers Salary Variable

Jenny Säve-Söderbergh (2019), conducted a study with the title: Gender gaps in salary negotiations: Salary requests and starting salaries in the field. The purpose of this study is that this paper provides new evidence of gender disparities in negotiations about behavior and in subsequent results from negotiations of high unique employee salaries between recent college graduates and prospective employers. The results of this study are that this gender gap is small, but it should be noted given the homogeneity of the sample. In particular, this study highlights the importance of negotiating behavior for accounting for lower salary requests for gender salary gaps that are reduced or even covered in subsequent initial salaries, (Säve-Söderbergh, 2019).

Everyone works for sure to find money to meet living needs, because everything must be bought with money, without money life will not last long. But good relations between the workers take precedence. Observers of the construction industry touted the use of financial incentives as a motivator and commitment to the project, apparently financial incentives are less important for motivation and performance than relationship improvement initiatives (Rose & Manley, 2011). The construction workers in addition to need money for living expenses also need to improve their skills and expertise so that the next time working there is an increase in wages. Provide training and development needs for employees. Performance appraisals are carried out for the following things: Provide information about the performance of the ranks. Decisions about salary revisions, confirmations, promotions and demotion (Marawar, 2013).

2.2 Handyman Performance Variable

Zhipeng Zhou (2020), conducted a study with the title: Application of item response theory to measure the safety response competency of workers in subway construction projects. The main objective of this study is to use item response theory (IRT) against a quantitative framework to measure the competency of the safety response of individual workers at subway construction sites. The results of this study are the Ten situational questions in the questionnaire analyzed and classified according to the parameters of discrimination and difficulty, which are useful for adjusting safety training programs for field workers with unequal safety response competencies in subway projects, (Zhou & Guo, 2020).

Hossein Karimia (2019), conducted a study with the title: The influence of craft workers' educational attainment and experience level in fatal injuries prevention in construction projects. The purpose of this study is that Building is based on controlling the consequences of human error as a more

productive approach compared to fighting for elimination, this study examines the effect of education and the level of experience of construction craft workers in Indonesia reducing the results of human error. The results of this study are that this study suggests industry leaders, managers and construction stakeholders that one of them is a fundamental solution to the chronic problem of high fatality rates in construction projects investing in process recruitment, education programs, rigorous training and detention of craft workers, (Karimi & Taghaddos, 2019).

Mahmoud Habibnezhad (2020), conducted a study with the title: Neurophysiological testing for assessing construction workers' task performance at virtual height. The aim of this study is Neurophysiological Testing to assess construction worker performance tasks at virtual heights Falling from heights is a leading cause of death and injury at construction sites. As the loss of balance of the fundamental effects on falls, it is important to understand the behavior of postural arrangements during the construction of tasks at height, especially those that require proper focus in an upright position (therefore, dual task demands focus). The results of this study are to show that the visual combination associated with elevation of double task depth and low complexity impairs task performance due to visual disturbances caused by height and motor responses that are driven by anxiety, (Habibnezhad et al., 2020). Tom Ka Man Wong (2020), conducted a study with the title: Critical factors for the use or non-use of personal protective equipment among construction workers. The purpose of this study is that this study uses a qualitative approach to explore the attitudes and experiences of construction workers towards the use of personal protective equipment (PPE) and examine the underlying reasons why construction workers use or avoid the use of PPE in the workplace. The results of this study are that several practical recommendations for increasing the use of PPE among construction workers are discussed based on the findings of this study, (Wong, Man, & Chan, 2020).

Wonil Lee (2020), conducted a study with the title: Workforce development: understanding task-level job demands, resources, burnout, and performance in unskilled construction workers. The purpose of this study is to study how task demands and personal resources affect the productivity of construction workers the unskilled and security performance. The results of this study are subjects with high fatigue and high involvement showing high productivity but low safety performance. Thus, exhausted workers have a greater chance of failing to obey safety, (Lee, Migliaccio, Lin, & Seto, 2020).

2.3 Communication Variable

Communication is an important thing to do because the construction project organization is a very complex organization because it involves a lot of resources involved in it. Relationship between workers, relations between workers and superiors, relations between workers and outsiders, and so on. Communication problems at the place can occur minimized by taking into account measures to reduce noise, honesty between workers and supervisors, reduction at the place of intimidation, and encouragement of communication and creativity among workers. This finding is useful for construction companies, developers, construction and project managers, and others towards increasing productivity and profits (Olanrewaju, Tan, & Kwan, 2017). Communication is very necessary in completing construction projects, especially jobs that are fundamental, projects that are very complex in the number of work items are also very large, so communication is needed to explain the work items in large numbers or will ask questions between workers and superiors. Communication is needed to effectively communicate the areas of cost, scope and time, and quality, which is the result of the interrelation between scope, cost and time. Communication is a function that integrates cost, scope, and time to achieve quality products and can be seen as having basic functions (BG Zulch, 2014).

2.4 Leadership

Benita Zulch (2014), conducted a study with the title: Leadership communication in project management. The purpose of this research is to identify important characteristics that must be possessed by a construction project manager to ensure successful communication. The results of this study are in the form of conclusions and recommendations: Knowledge of the characteristics and leadership styles that are followed by construction project managers will contribute to solving communication problems. The project manager must summarize the situation and then adjust the style according to that specific situation, (Benita Zulch, 2014).

Samuel Ekung (2014), conducted a study with the title: Leadership Traits of Construction Project Managers' And Their Impact On Project Outcome. The aim of this research is Project management; in recognizing that leadership can contribute to successful project outcomes has stopped specifically identifying leadership traits as significant contributors to project success. The results of this study are that this study also identifies effective communication, accessibility, intelligence and competence, among others, as relevant leadership characteristics. But the challenge is how to integrate the different characteristics in delivering a project. Construction project managers are instructed to always try to change intuitively between various leadership traits, when work and people change, (Ekung, Ekung, & Ujene, 2014).

2.5 Local Cultural Variables

Hans Kjetil Lysgård (2019), conducting research with the title: The assemblage of culture-led policies in small towns and rural communities, The aim of this study is to study how local culture-led policies are built in small Norwegian cities and rural communities as 'a collection of cellular global policy discourse that is mixed and translated through local traditions, local practices, materialization, and institutionalization. The results of this study are that the dynamic tension between these forces must be analyzed to understand the construction of local cultural policies, (Lysgård, 2019).

Pia Oedewald (2015), conducted a study with the title: Safety culture and subcontractor network governance in a complex critical safety project. The purpose of this study is that this paper claims that engineering resilience into a system is mostly about directing the development of a system culture towards better abilities to anticipate, monitor, respond and learn. The results of this study are the concept of safety culture being a focus because it is widely used in the nuclear industry and bridges scientific and practical interests, (Oedewald & Gotcheva, 2015).

Yihui Wei (2017), conducted a study with the title: Organizational culture and knowledge transfer in project-based organizations: Theoretical insights from a Chinese construction firm. The aim of this research is to investigate empirically the impact that three main elements of organizational culture have on artifacts, norms, and shared beliefs in the transfer of knowledge across projects in project-based organizations. The results of this study are that our findings advance extant research on how interactions between organizational culture at the corporate level and cultural elements at the lower organizational level affect individual choices in (1) which type of knowledge is most important to be transferred, (2) where conditions of knowledge can be shared or stockpiled, and (3) the extent to which it is acceptable to share or hoard knowledge. This study also contributes to the literature on the legitimacy of knowledge by showing how organizational culture influences people's perceptions of "knowledge authority" and shapes their preferences for certain knowledge transfer mechanisms, (Yihui Wei & Miraglia, 2017).

Yueling Wei (2019), conducting research with the title: Geography, culture, and corporate innovation The purpose of this study is the cultural differences between north and south China give us a unique perspective to study the microcosmic effects of regional culture. This paper is one of the first to investigate the effects and mechanisms of regional culture on corporate innovation. The results of this study are that we found that: (1) Local dialects have a significant influence on company innovation; (2) CEOs born in the South are more innovative than those born in the North; (3) Cross-cultural communication significantly influences company innovation; (4) Collectivism in groups and institutional collectivism provide explanations for differences in cultural influences on corporate innovation. Our conclusion not only emphasizes the important effects of regional culture and cross-cultural communication on corporate innovation but also highlights the role of collectivistic culture, (Yueling Wei, Kang, & Wang, 2019).

2.6 Trust Variable

Sana Ozdemir (2020), conducted a study with the title: The effects of trust and peer influence on corporate brands-Consumer relationships and consumer loyalty. The purpose of this study is to draw on relational bonding theory and trust theory, this research examines the role of affective and cognitive trust in mediating the relationship between corporate and consumer brands, and in loyalty to national dairy company brand brands in China. The results of this study are that peer influence is only found to have a positive moderation effect on corporate brand communication regarding affective trust, (Ozdemir, Zhang, Gupta, & Bebek, 2020).

Ademir Silva (2019), conducted a study with the title: Calculating the trust of providers through the construction weighted Sec-SLA. The purpose of this research is that information systems are often exposed to various types of threats, which can cause various types of damage and cause significant financial losses. Security problems can range from small losses to the destruction of an entire information system. The effects of various threats vary widely: some affect the confidentiality or integrity of data, while others affect system availability. Organizations are now struggling to understand what threats to their information assets, and how to fight them, are still challenges. The results of this study are: From the vulnerabilities found, impacts and mitigation measures in the Architecture, Privacy and Compliance subcategories of the recommended providers, taking into account the weight given by consumers, allows us to validate the abstract model of the calculation of the proposed trust. This allows us to classify providers according to the trust given to consumers in the context of security vulnerabilities and policies adopted, (Silva, Silva, Rocha, & Queiroz, 2019).

Albertus Laan (2011), conducted a research with the title: Building trust in construction partnering projects: An exploratory case-study. The purpose of this study is For this purpose we first explore the concept of trust, and review the literature on trust in inter-organizational relations. We illustrate how trust is related to risk, control, and performance, and how initial conditions and expectations can lead to a positive cycle of increased trust or, conversely, to a negative cycle of decreased trust. The results of this study are that we conclude that the initial conditions of this project alliance are conducive to trust, both in terms of opportunities and incentives, (Laan, Noorderhaven, Voordijk, & Dewulf, 2011).

2.7 Work Experience Variable

Sadia Yasmeen (2020), conducted a study with the title: Physiological responses of acclimatized construction workers during different work patterns in a hot and humid subtropical area of China. The aim of this study was to evaluate the level of stress caused by labor heat several room experiments had been carried out rather than on-site studies. In this study, an on-site trial was

conducted in Chongqing, during the summer (July to mid-August 2017), to assess the physiological condition of the sample, using ten acclimated workers involved in seven types of activities. The results of this study illustrate that the intensity of outdoor masonry work is high, while the heavy lifting represents the intensity of being worked for indoor bricklayers. At high wet ball temperatures (WBGT) (31.5 C) and relative humidity (75%), the skin temperature of workers exposed to the sun is around 1.5-2.5 C higher than the comfort level. Heart rate fluctuations largely depend on sun exposure and work patterns; for example the heart rate is around 25-30 bpm higher with sun exposure, (Yasmeen, Liu, Wu, & Li, 2020).

Hossein Karimi (2019), conducted a study with the title: The influence of craft workers' educational attainment and experience levels in fatal injuries prevention in construction projects. The aim of this study is that despite the long-term improvement in construction, security over the past few decades, this industry still suffers from a disproportionate and fatal fatality rate that is significant compared to other industries. It is widely accepted that human error is one of the main contributors to the majority of accidents in construction projects. The results of this study are the results of this study indicate that in the majority of accidents, higher education practices in craft workers are produced with a much lower risk of fatal injury. In addition, higher experience levels substantially reduce mortality rates. It also shows that education and experience are independent, which makes both variables not good for the intended purpose, (Karimi & Taghaddos, 2019).

2.8 Job Satisfaction Variable

Shabir Hussain Khahro (2016), conducted a study with the title: Critical success factors affecting job satisfaction in construction projects: a case of Pakistani workers. The purpose of this study is, thus, it is important to investigate the critical success factors and shape these factors to build a culture of job satisfaction to increase job production. The results of this study are analyzed that organizational management, salary, policies & facilities, supervision, social security and growth opportunities are important factors that increase the level of job satisfaction of workers. This approach helps in increasing the level of satisfaction of workers while working. This will also help the construction project stakeholders to make more informed decisions and prepare the team for the upcoming challenges in the construction project, (Khahro, Ali, Siddiqui, & Khoso, 2016).

Charalambos Louca (2013), conducted a study with the title: Engineers' job satisfaction within projects developed by the international construction industry in the MENA region. The purpose of this study is the purpose of this paper is to assess the job satisfaction of engineers in a project developed by the international construction industry in the MENA region. The results of this study are data analysis showing that the level of job satisfaction of engineers in this industry is at a high level, (Louca, Kougoulos, & Kamsaris, 2013).

3 Research Methods

3.1 Population and Sample

This research is a descriptive study; descriptive research aims to describe allies that you want to understand. Descriptive research can find the true picture. The population in this study is the work motivation of construction project workers throughout Java, Indonesia. Samples were taken on certain projects located on the island of Java, Indonesia, namely: West Java, Central Java, East Java, Yogyakarta Special Region, and the Special Capital Region of Jakarta. ✓

The population number has not yet appeared, if we can show the number of population and the sample used.

3.2 Research Data

Research data obtained through questionnaires sent to respondents, respondents selected people who work on construction project workers have background skills or expertise as special workers (masons, carpenters, electricians and so on). Workers have a very varied education from primary school to senior high school senior high school Figure 1.
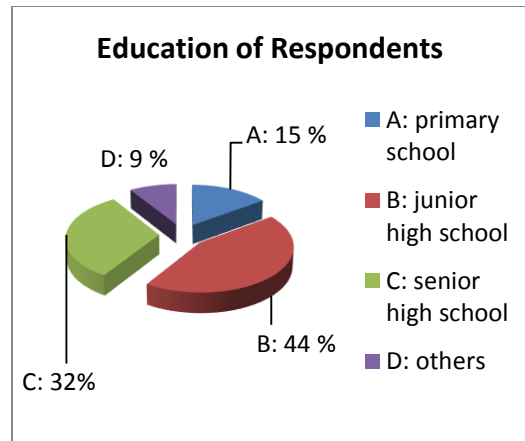

Figure 1. Education of Respondents

Having work experience is also very varied, 5-10 years' experience is 57%, 11-15 years' experience is 24%, 16-20 years' experience is 13%, and has> 20 years work experience is 6%, more clearly in Figure 2.
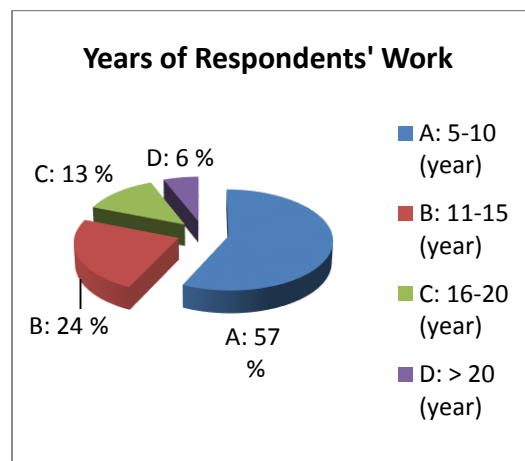

Figure 2. Experimental Experience

In this study, the questionnaire submitted to respondents amounted to 120 respondents, but those who returned 100 questionnaires and 100 respondents' answers were processed data. Then the 20 questionnaires did not return.

3.3 Data Collection

In this study the data collection was carried out using the questionnaire method, the questionnaire was submitted to respondents, while the respondents consisted of workers who worked on construction projects undertaken by contracting companies. The physical value undertaken varies in magnitude and respondents are taken according to the size of the project undertaken. The size of

the project and the number of respondents is as follows, the value of the project> 10 billion taking respondents as much as 34%, the value of the project 3-10 billion taking respondents as much as 13%, and the value of the project <3 billion taking respondents as% 3%, more can be seen in Figure 3.

Physical Value of Buildings

A: 34 %

C: 53 %

B: 13 %

- A: > 10 milyar
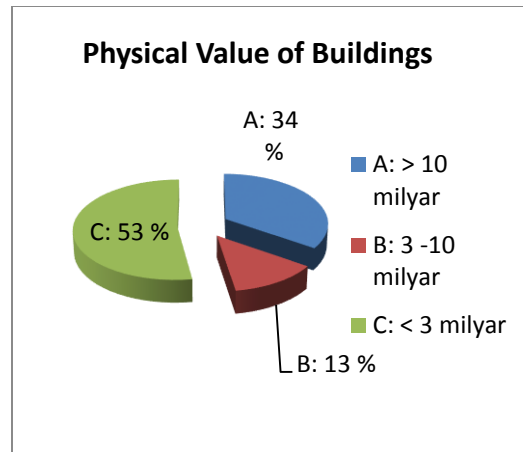- B: 3 -10 milyar
- C: < 3 milyar

Figure 3. Physical Value of Buildings

After the data is collected entirely, then processed using statistics, statistical data processing is useful for solving problems encountered. The statistics used in solving research problems here use structural equation modeling (SEM) analysis.

3.4 Data Analysis

Field data were collected through a questionnaire submitted to respondents and for structural equation modeling (SEM) methods, a minimum of 100 respondents (Ferdinand, 2006) was collected. Questionnaires are distributed using intervals 1 to 5, so that the data that were originally in the form of qualitative data and are weighted will be quantitative. Figures 1 through 5 are the value of the weight of the statement is very does not affect, does not affect, doubt, influence, greatly affect.

The distribution of questionnaires submitted to respondents, in essence, is to explore the factors that influence the work motivation of construction project workers. Then determine the dominant factors and non-dominant factors that influence work motivation. These factors will be obtained by using the structural equation modeling (SEM) method.

4 Analysis and Discussion

After the data has been collected and then entered the data in the SPSS version 16 program, the next activity is a prerequisite test. This test is conducted to see which items are appropriate to be used to represent the independent variables in this study. SEM analysis is then performed to see the effect or causality relationship between variables.

4.1 Validity and Reliability Test

Validity test is intended to determine whether the questions in the questionnaire are representative. The second measuring test (questionnaire) is Reliability, which is an index that shows the extent to which the measuring instrument is reliable or can be trusted. Reliability is a measure of the internal consistency of the indicators of a constituted variable indicating the degree to which each indicator indicates a common constituted variable. The results of the validity analysis are not yet visible

In this study in calculating reliability using composite (construct) reliability with a cut-off value is a minimum of 0.7. The validity and reliability test was carried out using confirmatory factor analysis on each latent variable through the AMOS 16. The results showed that the latent variables were valid and reliable latent variables.

4.2 Structural Equation Model (SEM)

The analysis used to prove the hypothesis is the calculation of structural equation modeling (SEM) analysis. Before using SEM, there are several requirements that must be met, namely, the SEM model must meet the criteria for goodness of fit. The evaluation criteria for goodness of fit are as follows.

4.3 Multivariate Outlier Evaluation

Outliers are observations or data that have unique characteristics that look very different from other observations and appear in the form of extreme values, both for a single variable and for combination variables. Outliers can be evaluated in this study using an analysis of multivariate outliers seen from the value of mehalanobis distance. If the result is that one of the P1 and P2 values is less than 0.05 then the observation number point contains an outlier.

If there are several observational numbers, some have P1 and P2 values below 0.05, so that it can be ascertained that the observation number contains an outlier. Basically, any observation number value that contains an outlier in the study must be removed. This is because it will affect univariate normality and multivariate normality results that are not met. According to (Ferdinand, 2006) if there are outliers at the multivariate level in an analysis it will not be eliminated from the analysis because the data illustrates the real situation and there is no specific reason from the respondent profile that causes it to be excluded from the analysis. Therefore, observation numbers, both containing outliers and not containing outliers, are still used as research samples because these data describe the actual conditions in this study.

4.4 Data Normality Test

Testing the next data is to analyze the level of normality of the data used in this study. Data normality assumptions must be met so that the data can be further processed for SEM modeling. Testing this univariate normality is by observing the value of skewness and kurtosis data used, if the value of CR on skewers and CR on kurtosis data is between a range between + 2.58, then the research data used can be said to be normal. The univariate and multivariate normality of data used in this SEM analysis.

Based on the CR Kurtosis value of each indicator that is inside the value of ± 2.58. So it can be concluded by univariate that some of the majority indicators show normal distribution. While the multivariate test gives a CR value of 27,045, where the value is above 10,000 so it can be concluded that the resulting data are not multivariate normally distributed. The above results are distributed univariately and not multivariate distributed.

This is due to the occurrence of outlier tests at the multivariate level and in this analysis will not be eliminated from the analysis because the data describe the real situation. This has resulted in multivariate normal distribution of data.

4.5 Multicollinearity and Singularity

Multicollinearity and singularity can be detected from the determinant of the covariance matrix. The very small determinant value of the covariance matrix determines the multicollinearity and singularity problems of multicollinearity and singularity can be tested and detected from the determinant value of the covariance matrix.

Table 1. Sample Covariances (Group number 1)

Condition number (CN): 941.931
Eigenvalues:
10.293 3.593 3.368 2.568 2.143 1.261 1.108 .914 .828 .686 .623 .489 .479 .447 .413 .370 .343 .338 .295 .252 .244 .234 .199 .171 .169 .161 .144 .142 .119 .115 .109 .093 .081 .081 .066 .061 .056 .052 .047 .042 .039 .035 .030 .025 .022 .019 .014 .011
Determinant of sample covariance matrix: .000

In the Table. 1. Sample Covariance's the determinant value of the sample covariance matrix = 0,000. From these values it was concluded that there were no indications of multicollinearity and singularity problems in the analyzed data. Detecting multicollinearity can be through the condition number (CN) covariance matrix statistics. CN statistics are identified as the ratio of the maximum eigenvalue to the minimum eigenvalue. CN coefficients exceeding 1000 indicate that among the variables studied there is multicollinearity. Thus it can be said that the research data used do not have multicollinearity and singularity.

4.6 Goodness Of Fit Model Suitability Test

After the model has been carried out the modification indices step is the result of the analysis suggested for the addition of the covariance value path. This is the only way to get a fit index value of fit, by means of the covariance error constrained by a two-way arrow on the covariance error which is considered to be the cause of the model's lack of fit. The results of goodness of fit after the modification indices are as follows Table 2.

Table 2. Hasil Goodness of Fit after Modification Indices

Goodness of fit index	Criteria	Cut of value	Notes
Chi-square	Low	1535.430	-
Significant Probability	≥0,05	0.051	Fit
RMSEA	≤0,08	0.078	Fit
GFI	≥0,90	0.871	Fit
AGFI	≥0,90	0.895	Fit
CMIN / DF	≤2,00	1.606	Fit
TLI	≥0,90	0.857	Marginal Fit
CFI	≥0,90	0.878	Marginal Fit
IFI	≥0,90	0.883	Marginal Fit

Test the suitability of the research model is used to test how good the level of goodness of fit of the research model. The test results presented above, are known from 9 existing criteria, 3 of them are in marginal fit and 5 of them are in fit. With these results, overall it can be said that the research model has a fairly good level of goodness of fit.

The next analysis is the structural equation model (SEM) analysis in full model which is intended to test the models and hypotheses developed in this study. Testing the model in the structural

equation model is done by two tests, namely the suitability of the model test and the significance test of causality through the regression coefficient test.

After the model meets the requirements, what needs to be done next is the regression weight test. Analysis of regression weight test to determine the rejection or acceptance of hypotheses, with the following results Table 3.

Table 3. Regression Weight Test Results.

			Estimate	S.E.	C.R.	P
Work motivation	←	Local Culture	.799	.192	4.153	***
Work motivation	←	Foreman	.231	.059	3.880	***
Work motivation	←	Communication	.255	.098	2.606	.009
Work motivation	←	Communication	-.264	.091	-2.908	.004
Work motivation	←	Work experience	.389	.097	3.997	***
Work motivation	←	Salary	-.113	.077	-1.461	.144
Work motivation	←	Job satisfaction	-.117	.088	-1.327	.184
Work motivation	←	performance	.028	.060	.464	.642

In testing the model is accepted or rejected by looking at the value of the Critical Ratio (CR) and the value of Probability (P) from the results of data processing, by comparing CR values above 1.96 and below 0.05 for the value of P (probability). If the results of data processing indicate a value that meets these requirements, the proposed research hypothesis can be accepted. In detail the research hypothesis testing will be discussed in stages in accordance with the hypotheses that have been proposed. In this study, 6 hypotheses were proposed, which are then discussed in the following sections:

H1: masons superiors (foremen) affect work motivation.

Hypothesis 1 in this study is the superiors of masons (foremen) affect work motivation. Based on the data processing, it is known that the CR value of the masons superiors is 3,880, the P value of 0,000 shows that the CR value is above 1.96 (3,380> 1.96) and the P value is below 0.05 (0,000 <0.05). This shows that the superiors of masons (foremen) affect work motivation, thus it can be said that hypothesis 1 (H1) is accepted.

H2: local culture influences work motivation.

Hypothesis 2 in this study is that local culture influences work motivation. Based on the data processing it is known that the CR value in the local culture is 4,153 P value of 0,000, these results indicate a CR value above 1.96 (4,153> 1.96) and a P value below 0.05 (0,000 <0.05). This shows that local culture influences work motivation, thus it can be said that hypothesis 2 (H2) is accepted.

H3: communication influences work motivation.

Hypothesis 3 in this study is that communication influences work motivation based on data processing. It is known that the CR value of 2,606 P values is 0.009, these results indicate CR values above 1.96 (2,606> 1.96) and P values below 0.05 (0.009 <0.05). This shows that communication influences work motivation, thus it can be said that hypothesis 3 (H3) is accepted.

H4: Trust from superiors or foremen influences work motivation.

Hypothesis 4 in this study is the belief of superiors or foremen influencing work motivation. Based on the data processing it is known that the CR value of -2.908 P value of 0.004, these results indicate a large CR value of 1.96 (2.908> 1.96 or -2.908 <1.96) and the P value below 0.05 (0.004 < 0.05). This shows that the trust of superiors or foremen influences work motivation, thus it can be said that hypothesis 4 (H4) is accepted. However, trust from superiors is negative, where high trust from superiors or trust everything to the craftsman, this results in a decrease in work motivation.

H5: masons work experience influences work motivation.

Hypothesis 5 of this study is the work experience of artisan influencing work motivation. Based on the data processing it is known that the CR value of 3,997 P value is 0,000, these results show CR values above 1.96 (3,997> 1.96) and the P value below 0.05 (0,000 <0.05). This shows that the worker's work experience influences work motivation, thus it can be said that hypothesis 5 (H5) is accepted.

H6: The salary or payment of a mason influences work motivation.

Hypothesis 6 of this study is that the salary or payment of an artisan influences work motivation. Based on the data processing it is known that the CR value of -1.461 P value of 0.114, these results indicate a CR value below 1.96 ((1.461 <1.96 or -1461> 1.96)) and a P value above 0.05 (0.114> 0.05). This shows that the worker's salary or payment does not affect work motivation, thus it can be said that hypothesis 6 (H6) is rejected.

H7: job satisfaction affects work motivation.

Hypothesis 7 in this study is job satisfaction influences work motivation. Based on the data processing it is known that the CR value of -1,327 P value of 0.184, these results indicate a CR value below 1.96 (1,327 <1.96) or (-1,327> 1.96) and a P value above 0.05 (0.184 > 0.05). This shows that job satisfaction does not affect work motivation so it can be said that hypothesis 7 (H7) is rejected.

H8: artisan performance influences work motivation.

Hypothesis 7 in this study is the worker's performance influences work motivation. Based on the data processing it is known that the CR value of 0.464 P value of 0.642, these results indicate a CR value below 1.96 (0.464 <1.96) and a P value above 0.05 (0.642> 0.05). This shows that the worker's performance does not affect work motivation, thus it can be said that hypothesis 7 (H7) is rejected.
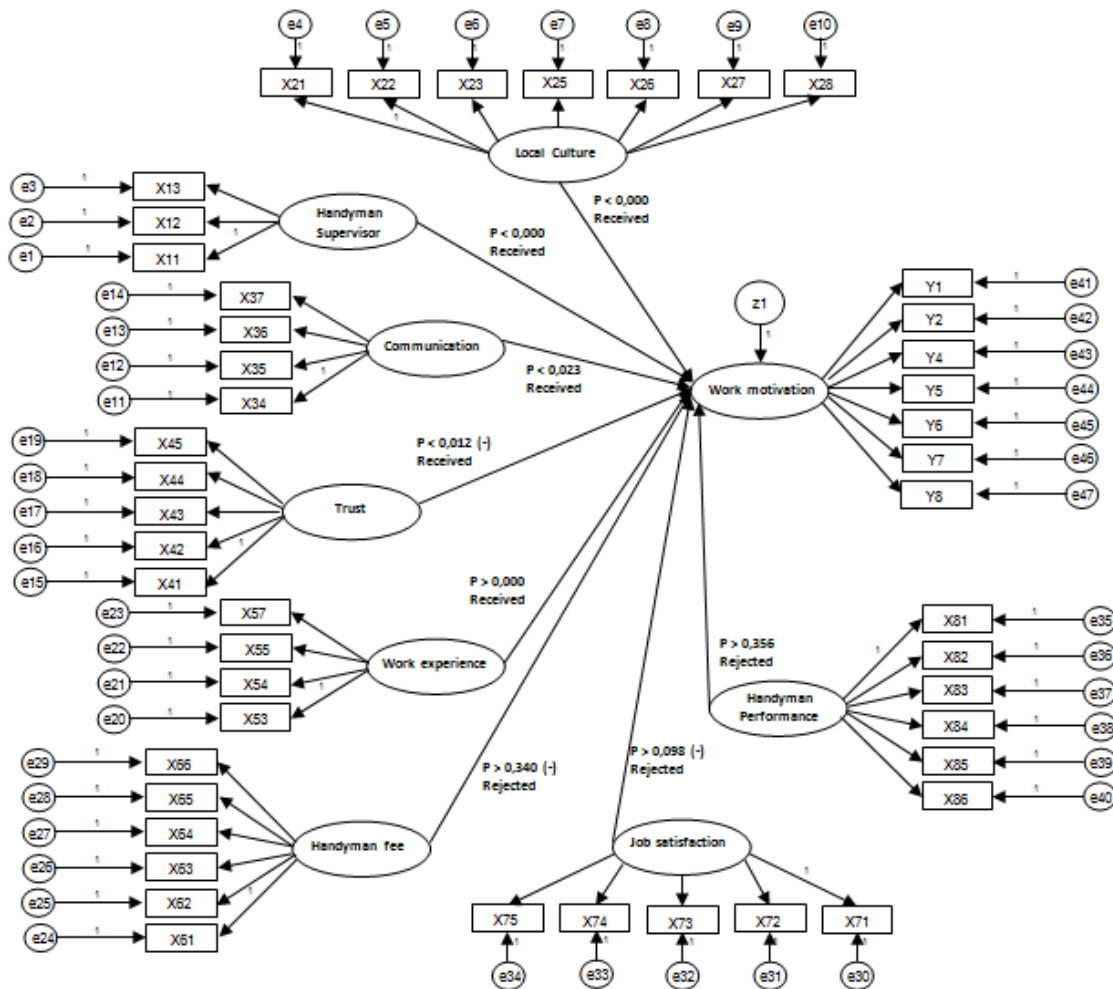
Figure 4. Overall Model

4 Research and Discussion

The amount of direct influence illustrates the contribution made by each variable to the dependent variable, namely the variable of work motivation or work morale. The results of the direct effect are as follows, shown in Table 4.

Table 4. Direct Effects of Independent Variables on Dependent Variables.

Variable	Direct Influence
	Work motivation
The supervisor of the workers (foreman)	0.353
Local culture	0.565
Communication	0.277
Trust from superiors	-0.276
Workers' work experience	0.458
Salary or payment artisan	-0.159 (no effect)
Worker's satisfaction	-0.136 (no effect)
Artisan performance	0.036 (no effect)

Based on the data in Table 4. Namely the independent variables of the artisan superiors (foreman), local culture, communication, trust from superiors, and work experience of the artisan directly influence the dependent variable namely work motivation. The magnitude of each effect can be seen in Figure 4. That is, 35.30%, 56.5%, 27.76%, -27.76%, and 45.80. Variables that have no effect on motivation are the variable salary or payment of the worker, the worker's satisfaction, and the performance of the worker, then this variable is not used anymore.
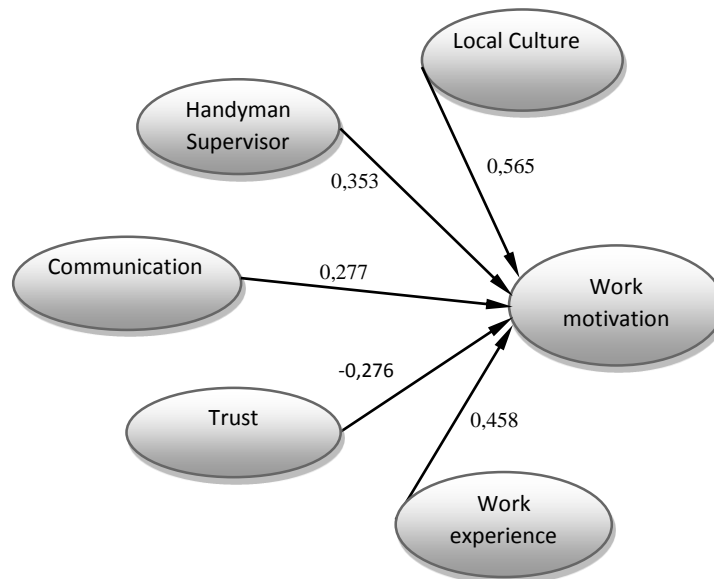

Figure 5. Variable Models that Influence Work Motivation.

From Table 4. or Figure 5 the results of the direct influence of each variable are obtained. The variable that most influences work motivation is first, the local cultural variable which contributes to the effect of 56.5%. This can happen for example, example1, in the area of origin of the worker there is a marriage ceremony, then all workers in one area do not go to work, example 2. in the area of origin of the worker there is a death, then all workers in one area do not go to work. The local culture will disrupt the project activities because some of the workers do not come to work during weddings and deaths.

Secondly, the variable works experience of workers who contributed 45.8% to work motivation. Experienced workers will have a high awareness to face challenges, difficulties in carrying out work tasks, thus triggering high motivation. Thus work productivity will be higher.

Third, the variable employer supervisor (foreman) who contributed to the influence of 35.3%. on work motivation. Workers' superiors in this case the foreman has a very large contribution to workers, for example, giving work motivation to workers, by supervising and directing workers will be more effective and because they meet directly with the workers will be more enthusiastic and have high motivation.

Fourth, the communication variable that contributed to the effect was 27.7%. Healthy communication between workers' superiors and workers between fellow workers is needed to

communicate about the progress or progress of work, especially regarding the nature of the work that is complicated. Communication will also facilitate the work.

While the fifth, the variable of trust from superiors contributed -27.6% with a negative direction. So that confidence decreases work motivation of workers, meaning that giving excessive trust from superiors will result in decreased work motivation. This can happen because there is no supervision of workers, so giving full trust from superiors is not recommended. ✓ There has been no discussion of the results associated with previous theory and research

5 Conclusion

This study shows that the following factors have a positive effect on work motivation of construction project workers, namely: local culture influences by 56.5%, work experience has an effect of 45.8%, the employer (foreman) has an effect of 35.3%, communication has an effect of 27.7% . The following factors negatively affect the work motivation of construction project workers, namely: trust from superiors, contributing with a negative direction of -27.6%.

However, local culture, and work experience are the most dominant factors influencing motivation compared to other factors. While communication and trust are the least dominant factors in influencing work motivation of construction project workers. Finally, it is expected that this study could inform practitioners in construction projects to take into account workers motivation into their projects success.

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COGENTENG-2020-0329	Research Article	Examining Workers Motivation in Construction Project with Structural Equation Modelling		Feb 15, 2021	Feb 16, 2021	Mar 09, 2021	Feb 16, 2021	0	

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