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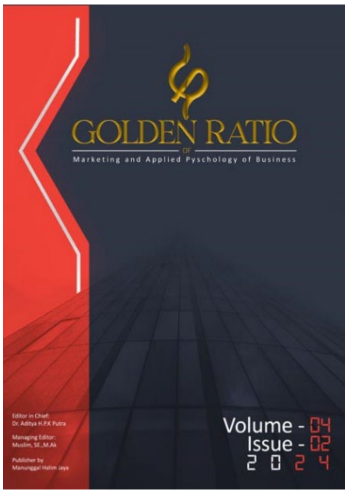

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MARKETING | RESEARCH ARTICLE

Project Success Factors Analysis Business Construction

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Abstract: Project success factors relate to the risk of uncertainty in a job that experiences additions or deletions from the original scope of work according to the contract, thereby changing the entire contract value and even the completion time of the job. This research aims to analyze the influence of soundness of business and workforce, planning and control, and safety performance on the success of construction projects. Using a quantitative explanatory methodology, the research utilized Structural Equation Modeling with Partial Least Squares (SEM-PLS), used in this work via SmartPLS software. A structured survey was used to gather information from 100 contractors in Surabaya. The findings reveal a positive relationship between the soundness of the business and the workforce and planning, control, and safety performance to project success in construction projects.

Keywords: Soundness of Business and Workforce, Planning and Control, Safety Performance, Project Success.

JEL Classification Code: L74, M12, M54, C30, O22

1. INTRODUCTION

The success of a project or project success factor is related to the risk of a work permit that experiences additions or deletions from the original scope of work according to the contract so that it changes the entire contract value and even the completion time of the work. Ayalew et al. (2016) explained that construction projects often experience changes, and it is rare for a project not to experience changes until the project is completed, so obstacles in a construction project process are recommended to be minimized or even avoided because they cause losses to the project. Success in a project requires consistency and promising cooperation between service users and service providers. This misunderstanding can cause inflammation that impacts the implementation of the project, so the project fails. Obstacles in the project that are considered challenging to anticipate and have a significant impact on the construction project related to increasing the achievement of work progress, the impact of obstacles to the project caused by rising construction costs are followed by an increasingly high impact on the construction project (Al-Momani, 2000).

Research by Karaman and Koray (2022) explains that the contractor selection process on a project significantly impacts its success. Various project obstacles are often experienced, such as poor previous work, the need for rework, design obstacles, weather, problematic document quality, job transfers, inappropriate work methods, incapable processes, minimal skills or experience, and late materials. The role of soft skills of construction actors involves several parties such as project owners, consultants, contractors, natural factors, social policies, and so on. Project owners or service users have a significant role in changing work because time issues are an obstacle for consultants in working with the incompatibility of planning consultants in designing construction projects, and changes in work impact the project's success. According to Karaman and Koray (2022), essential factors in achieving the success of a project generally depend heavily on the quality of the contractor working on the project. Hence, it is necessary to compile various criteria for a reliable, quality contractor. The selection factor for implementation criteria can be analyzed through Business and Labor Health,

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Planning and Control, Quality Performance, Safety Performance, and Past Performance. This is related to the competence of construction actors in managing increasing construction costs, increasing construction time, client dissatisfaction, project failure, contractor dissatisfaction, project neglect, failure of related parties, financial difficulties, litigation, poor contract management, minimal commitment, and misunderstanding of contracts. Various studies explain that the perpetrators of construction capabilities in dealing with multiple problems and conflicts in the field are essential parameters in the organization of construction projects. These are often used as project targets, budgets, schedules, and quality. Success in running a project on time, cost, and planned quality is one of the most important goals for owners and contractors. Project implementation that does not follow the plan can result in project delays. In the implementation of construction projects, project delays often occur, which can cause various forms of losses for service providers and service users. For contractors, project success can prevent projects from project cost overruns due to increased project implementation time and can also result in decreased contractor credibility for the future. Owner risk is the impact of order variations related to the operation of construction project results and often has the potential to cause abnormalities and claims between owners and contractors. Data shows that during 2019-2021, especially during the COVID-19 pandemic, the company experienced various obstacles in working on projects that caused multiple losses. Obstacles or even failures that construction companies often experience in working on a project significantly impact changes in costs and time and even threaten project failure. Analysis of factors that drive the occurrence of project success factors or success factors for a project in a Depot Development project and similar projects need to be done so that the construction company and various other parties involved in the implementation of a construction project know what factors can be maximized so that the project runs successfully and is completed according to the estimated time. Based on the various explanations above, it is essential to analyze the success factors of a project or project success factors as one of the main objectives in the construction work process so that it can be studied and used as an analysis consideration in carrying out construction work for the actors involved in the construction work process, both from the service users and service providers in the construction sector.

2. LITERATURE REVIEW

2.1. Construction Project

A construction project is an activity that occurs within a certain period with predetermined resources to obtain good-quality construction results (Khan et al., 2016). The main characteristics of a project are as follows: There is a specific goal for the final work result; The amount of cost quality standards as part of the project objectives have been determined; The activity schedule is detailed from start to finish within a certain period; The series of activities carried out are non-routine and produce products that tend to be unique. The types of construction projects that exist are as follows (Hanna et al., 2002):

a. Residential buildings, namely simple houses designed by architects and constructed by contractors. Construction in the form of buildings, significant developments, traditional construction that is labor-intensive in the field or related to installations
b. Commercial buildings, such as bank buildings, hospitals, school offices, and recreational buildings. The general design is coordinated by architects working with the structural, mechanical, and electrical parties. Construction is generally coordinated with construction managers according to their fields of specialization.
c. Industrial buildings, namely buildings for manufacturing goods such as steel mills, paper mills, etc. Materials related to design and construction require high engineering expertise in the civil and chemical, electrical, and mechanical fields. 4. Heavy engineering construction, namely highway projects, bridges, dams, railways, and so on, with design and construction stages of heavy construction according to the field of expertise. The construction stages are more machine-based, with project costs borne by the government.

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Contracts in the construction world are stated in the Construction Services Law (UUJK) No. 18 of 1999: A construction work contract is a complete document that regulates the legal relationship between service users and service providers in the implementation of construction work." Presidential Regulation of the Republic of Indonesia No. 70 of 2012, there is a definition of a contract, "The Procurement Contract for Goods/Services hereinafter referred to as the Contract is a written agreement between the PPK and the Provider of Goods/Services or self-managed implementer." The forms of construction contracts are distinguished from various aspects. The division of types of construction contracts is contained in Presidential Regulation No. 70 of 2012 concerning the Second Amendment to Presidential Regulation No. 54 of 2010 concerning Government Procurement of Goods/Services reads as follows:

Goods/Services Procurement Contracts include:
a. Contracts based on payment method
b. Contracts based on budget year charges
c. Contracts based on funding sources
d. Contracts based on the type of work

Goods/Services Procurement Contracts based on payment method, as referred to in paragraph (2) letter a, consist of:

a. Lump Sum Contract
b. Unit Price Contract
c. Combined Lump Sum and Unit Price Contract;
d. Percentage Contract
e. Turnkey Contract

Goods/Services Procurement Contracts based on Budget Year charges, as referred to in paragraph (2) letter b, consist of:

a. Single Year Contract
b. Multi-year Contract.

Goods/Services Procurement Contracts based on funding sources, as referred to in paragraph (2) letter c, consist of:

a. Single Procurement Contract
b. Joint Procurement Contract
c. Framework Contract

Procurement Contract for Goods/Services based on the type of work referred to in paragraph (2) letter d consists of

a. Single Work Procurement Contract
b. Integrated Work Procurement Contract.

There is a difference between the field conditions at the time of implementation, with the drawings and/or technical specifications specified in the Contract Document, the PPK together with the Goods/Service Provider, can make changes to the Contract, which include:

a. Adding or reducing the volume of work listed in the contract
b. Adding and/or reducing the type of work;
c. Changing the technical specifications of the work according to field needs
d. Changing the implementation schedule

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Contract changes caused by administrative problems can be made if both parties agree. LKPP Regulation No. 2 of 2011 concerning Procurement Document Standards in the General Contract Conditions (SSUK) Section Addendum Clause, or Contract Changes in this case, are taken from the standard document for procurement of post-qualification construction work. The contract can only be changed through a contract addendum. Contract changes can be implemented if agreed to by the parties, including (1) Changes to the work caused by something done by the parties in the contract that changes the scope of work. (2) Changes to the work schedule due to changes to the work. (3) Changes to the contract price due to changes to the work. (4) Changes to the work implementation and/or price adjustments. For contract changes, the PA/KPA can form a Committee/Contract Implementation Research Officer upon the recommendation of the PPK. In the implementation of construction work, changes to the contract are common. This can be caused by various factors that affect the implementation of the construction work itself. The significant possibility of changes in the implementation of construction work requires clear regulations regarding changes to the construction contract. In terms of changes to the construction contract, three terms are often used: Addendum, contract variation order (CCO), and variation order.

2.2. Project Success Factors

Albino & Garavelli (1998) explained the complexity of selecting subcontractors in companies engaged in the construction sector. This process follows the experience of company management supported by various data. Five measurement factors with statements that can be evaluated statistically as a decision analysis technique based on utility criteria and evaluation according to the capacity of different subcontractors for proposals and selection in construction projects (Hatush & Skitmore, 1998). Okoroh & Torrance (2010) used fuzzy logic theory for subcontractors in conducting the selection process by measuring project success based on the level of business and workforce health, planning and control, performance quality, and past performance. Piasny & Paslawski (2015) examined quality progress by selecting the most appropriate subcontractor using survey data to obtain eight construction projects. Bingol & Polat (2017) explained that selecting general subcontractors according to the lowest price resulted in poor performance. This encourages the existence of a performance measurement system with performance assessment model indicators in the subcontractor selection process. Lew et al. (2018) developed a structural equation model that evaluates data obtained from 162 general contractor firms and created a PreCSAM model for contractor selection. This model offers a three-stage evaluation with criteria such as lowest bid and best value. Ulubeyli (2008), on subcontractor selection in Turkish construction, developed and tested a basic fuzzy decision-making model for project construction. Postgraduate studies on the subcontractor selection process were conducted using analytical hierarchy process (AHP) and analytical network process (ANP) methods. Polat & Damci (2015) determined the importance of the criteria for selecting Turkish firms for subcontractors in international construction projects. Aydin et al. (2016) solved the problem of subcontractor selection through TOPSIS and VIKOR. Ulubeyli et al. (2010) examined the selection of Turkish firms as subcontractors for international construction projects based on fuzzy importance weights. Erdogan (2019) used the TOPSIS methodology for risk-based subcontractor selection. The studies were mainly aimed at determining the level of importance of subcontractor selection criteria, and research has been conducted on the impact of these selection criteria on project success.

2.3. Sub Contractor Selection in Construction Projects

General contractors work in construction areas and hire subcontractors. The contractor can handle some parts of the work. However, it must work with expert subcontractors to complete most of the project successfully. Good subcontractors contribute to the project's success; bad subcontractors can cause problems. Proper selection of subcontractors enhances the success of general contractors in construction projects. Different models have been presented in the literature regarding the importance of subcontractor selection. Mbachu (2008) examined the effectiveness of the criteria in assessing subcontractors' ability to be invited to bid. Subcontractors are listed according to the decision makers' opinions according to the specified criteria. In selecting the best candidate, parameters are considered,

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including the weight of each decision maker, the weight of each criterion, and the score of the subcontractor. Wang et al. (2001) applied fuzzy logic and genetic algorithm together to develop a hybrid fuzzy model in subcontractor selection. The project is divided into subprojects through fuzzy logic, and the best subcontractor is assigned to each subproject. Ng & Luu (2008) collected previous records of successful and unsuccessful subcontractors and proposed a model built on case-based reasoning. Hartmann & Karteling (2010) searched for criteria considered more critical by general contractors. The results showed that price is the most essential criterion for general contractors. Kozlovska & Strukova (2013) stated that reliability performance should be added to the key determinants of contractor or subcontractor selection factors. In this study, the fundamental factors that can be used for subcontractor selection in general contractor companies in construction projects are identified using evaluations conducted through literature research on similar studies in construction or in different organizations. Subcontractors are contractors; they utilize the factors formed for general contractor selection. Five selection factors that play a role in subcontractor performance are examined in this study: (1) business and labor health (SBW), (2) planning and control (PC), (3) quality performance (QP), (4) past performance (PP) and (5) safety performance (SP). Overall project success (OPS) is determined by duration, budget, quality, and cost.

2.4. Hypotheses Framework

2.4.1 Soundness of Business and Workforce on Project Success Factors

The contractor can handle some parts of the work. However, it must work with expert subcontractors to complete most of the project successfully. Good subcontractors contribute to the project's success; bad subcontractors can cause problems. Proper selection of subcontractors enhances the success of general contractors in construction projects. Polat & Damci (2015) determined the importance of the criteria for selecting Turkish firms for subcontractors in international construction projects. Aydin et al. (2016) solved the problem of subcontractor selection through TOPSIS and VIKOR. Ulubeyli et al. (2010) examined the selection of Turkish firms as subcontractors for international construction projects based on fuzzy importance weights. Erdogan (2019) used the TOPSIS methodology for risk-based subcontractor selection. The studies conducted mainly were aimed at determining the level of importance of subcontractor selection criteria, and research has been conducted on the impact of these selection criteria on project success. For that reason, the hypotheses of this research are:

H1: Soundness of Business and Workforce have a positive correlation on Project Success Factors

2.4.2 Planning and Control on Project Success Factors

Different models have been presented in the literature regarding the importance of subcontractor selection. Mbachu (2008) examined the effectiveness of the criteria in assessing subcontractors' ability to be invited to bid. Subcontractors are listed according to the decision makers' opinions according to the specified criteria. In selecting the best candidate, parameters are considered, including the weight of each decision maker, the weight of each criterion, and the score of the subcontractor. Bingol & Polat (2017) explained that selecting general subcontractors according to the lowest price resulted in poor performance. This encourages the existence of a performance measurement system with performance assessment model indicators in the subcontractor selection process. Lew et al. (2018) developed a structural equation model that evaluates data obtained from 162 general contractor firms and created a PreCSAM model for contractor selection. This model offers a three-stage evaluation with criteria such as lowest bid and best value. Ulubeyli (2008), on subcontractor selection in Turkish construction, developed and tested a basic fuzzy decision-making model for project construction. Postgraduate studies on the subcontractor selection process were conducted using analytical hierarchy process (AHP) and analytical network process (ANP) methods. For that reason, the hypotheses of this research are:

H2: Planning and Control have a positive correlation on Project Success Factors

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2.4.3 Safety Performance on Project Success Factors

Wang et al. (2001) applied fuzzy logic and genetic algorithm together to develop a hybrid fuzzy model in subcontractor selection. The project is divided into subprojects through fuzzy logic, and the best subcontractor is assigned to each subproject. Ng & Luu (2008) collected previous records of successful and unsuccessful subcontractors and proposed a model built on case-based reasoning. Hartmann & Karteling (2010) searched for criteria considered more critical by general contractors. Albino & Garavelli (1998) explained the complexity of selecting subcontractors in companies engaged in the construction sector. This process follows the experience of company management supported by various data. Five measurement factors with statements that can be evaluated statistically as a decision analysis technique based on utility criteria and evaluation according to the capacity of different subcontractors for proposals and selection in construction projects (Hatush & Skitmore, 1998). Okoroh & Torrance (2010) used fuzzy logic theory for subcontractors in conducting the selection process by measuring project success based on the level of business and workforce health, planning and control, performance quality, and past performance. For that reason, the hypotheses of this research are:

H3: Safety Performance has a positive correlation with the Project Success Factor

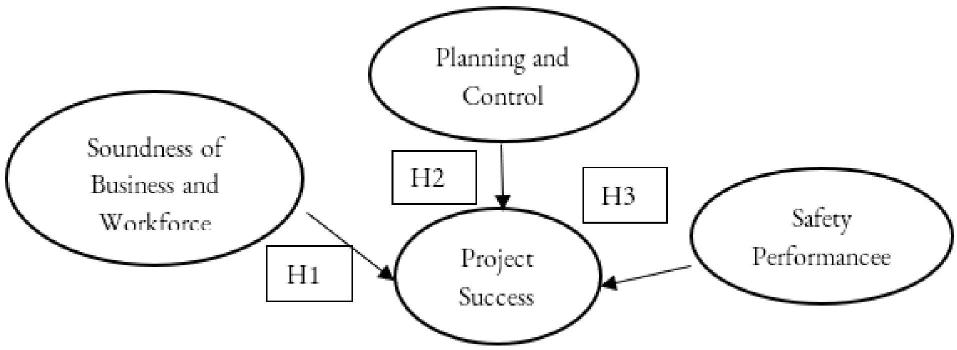

Figure 1. Research Model

3. RESEARCH METHOD AND MATERIALS

Partial least squares (PLS) with structural equation modeling (SEM) using the SmartPLS software is appropriate for this research for several reasons. Firstly, SEM-PLS allows for the simultaneous analysis of many dependent and independent variables, making it a good choice for complicated model analysis incorporating multiple constructs and indicators. Second, SEM-PLS is robust even with small to medium sample sizes, making it suitable for this research given the purposive sampling method and specific respondent criteria. This characteristic ensures reliable results despite potential deviations from normality. SEM-PLS is perfect for both exploratory and predictive research since it is prediction-oriented and maximizes the explained variance of dependent variables. In this study, SEM-PLS helps predict the relationships between these constructs. The method also offers flexibility in specifying the measurement and structural models, allowing for accurate modeling of the constructs involved. Using bootstrapping techniques in SEM-PLS for hypothesis testing enhances the robustness of the results. Bootstrapping assesses the significance of path coefficients without relying on parametric assumptions, thus rigorously testing hypotheses. Furthermore, a thorough assessment of the model's explanatory and predictive capacity is made possible by SEM-PLS's extensive model evaluation metrics, which include R^2 (coefficient of determination), path coefficients, effect sizes (f^2), and predictive relevance (Q^2).

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4. RESULTS AND DISCUSSION

4.1. Outer Model

The following is an illustration of the SEM diagram used in this research:

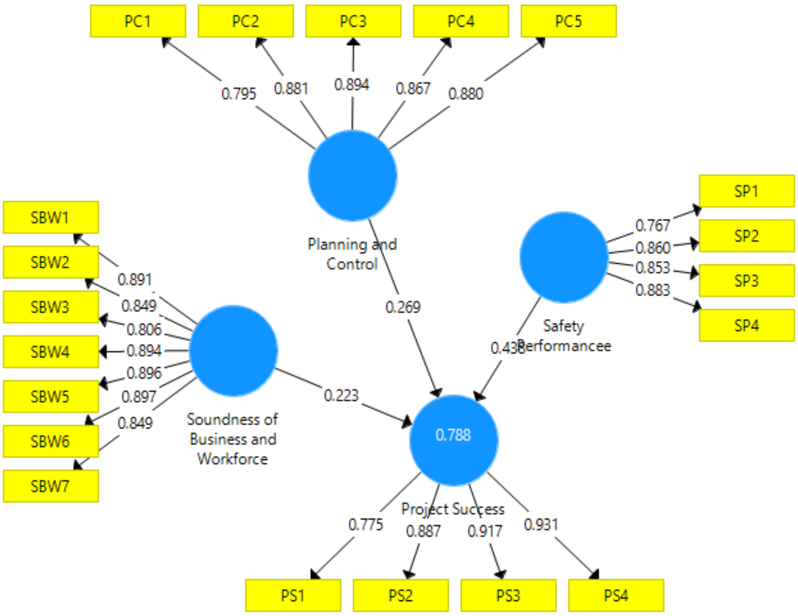

Figure 2. Loading Factor

The loading factor of each indicator on the variable has a minimum value of 0.6, and the Average Variance Extract (AVE) analysis has a minimum value of 0.5, but they meet the requirements. Based on the table below, it can be seen that the results of convergent validity testing show that all variables have indicators with loading factor values of more than 0.6 or 0.5, meaning that all indicators have met the convergent validity criteria.

Table 1. Results of Loading Factor

Variable	Item	Loading Factor	Info
Soundness of Business and Workforce	SBW1	0,891	Valid
	SBW2	0,849	Valid
	SBW3	0,806	Valid
	SBW4	0,894	Valid
	SBW5	0,896	Valid
	SBW6	0,897	Valid
	SBW7	0,849	Valid
Planning and Control	PC1	0,795	Valid
	PC2	0,881	Valid
	PC3	0,894	Valid
	PC4	0,867	Valid
	PC5	0,880	Valid
Safety Performance	SP1	0,767	Valid
	SP2	0,860	Valid
	SP3	0,853	Valid
	SP4	0,883	Valid
Project Success	PS1	0,775	Valid
	PS2	0,887	Valid
	PS3	0,917	Valid
	PS4	0,931	Valid

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Next, the AVE Method is used to assess the convergent validity of each construct and latent variable. The minimum value that is considered to be met is at least 0.5. The average variance extracted by AVE based on these SEM results is as follows:

Table 2. Average Variance Extracted Value

Variable	AVE	Info
Soundness of Business and Workforce	0,756	Valid
Planning and Control	0,747	Valid
Safety Performance	0,709	Valid
Project Success	0,774	Valid

In table 2, the AVE value for the latent variable Soundness of Business and Workforce (0.756), Planning and Control (0.747), Safety Performance (0.709), and project success (0.774). Thus, the measurement model is valid and meets the validity test requirements. The cross-loading values based on the results in this SEM are as follows:

Table 3. Cross Loading Value

	Planning and Control	Project Success	Safety Performance	Soundness of Business and Workforce
PC1	0.795	0.665	0.711	0.554
PC2	0.881	0.819	0.786	0.752
PC3	0.894	0.759	0.742	0.817
PC4	0.867	0.663	0.748	0.835
PC5	0.880	0.711	0.759	0.764
PS1	0.602	0.775	0.685	0.640
PS2	0.773	0.887	0.727	0.709
PS3	0.799	0.917	0.813	0.780
PS4	0.773	0.931	0.797	0.776
SBW1	0.800	0.768	0.754	0.891
SBW2	0.725	0.736	0.694	0.849
SBW3	0.675	0.567	0.624	0.806
SBW4	0.750	0.685	0.700	0.894
SBW5	0.736	0.726	0.817	0.896
SBW6	0.749	0.640	0.748	0.897
SBW7	0.795	0.848	0.809	0.849
SP1	0.746	0.692	0.767	0.574
SP2	0.788	0.762	0.860	0.859
SP3	0.693	0.730	0.853	0.703
SP4	0.693	0.713	0.883	0.697

The cross-loading table 3 shows that the value for each latent variable is greater than the values of other latent variables. This reliability test also examines the composite reliability value as an indicator of reliability, where both values should exceed 0.70. The Cronbach's alpha and composite reliability values obtained in this SEM are as follows:

Table 4. Construct Reliability

Variable	Cronbach's Alpha	Composite Reliability	Info
Soundness of Business and Workforce	0.946	0.956	Reliable
Planning and Control	0.915	0.936	Reliable
Safety Performance	0.862	0.907	Reliable
Project Success	0.901	0.932	Reliable

Based on table 4, the results of the reliability test analysis show that the composite reliability score is more significant than 0.7, which means that all variables are reliable and have passed the test requirements.

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4.2. Inner Model

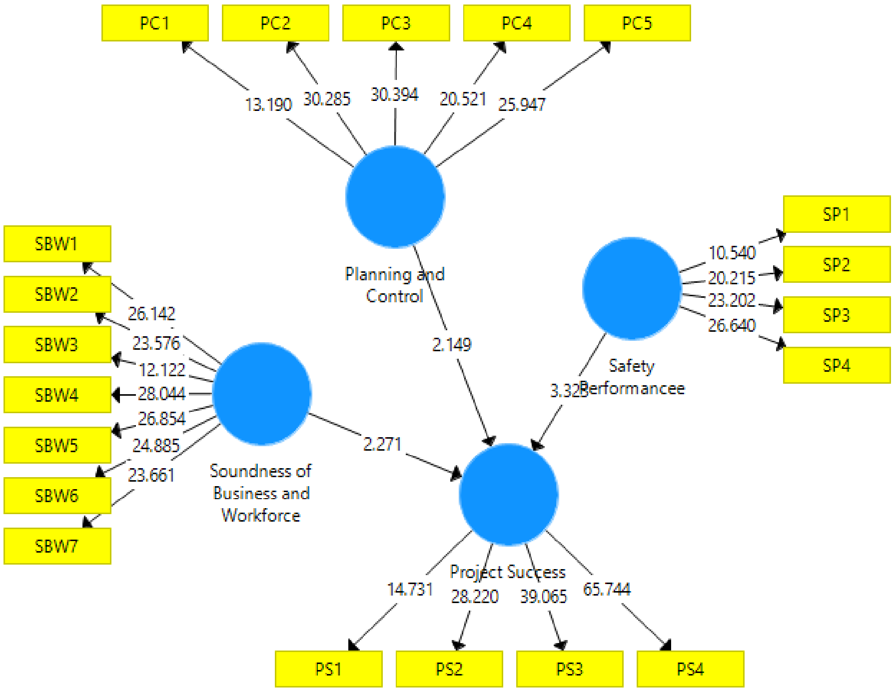

Figure 3. Inner Model

The model's feasibility test examines the R-square value, which ranges from 0 to 1. An R-square value of 0.75 is considered good, 0.50 is moderate, and 0.25 is considered poor. The following R-square values are based on the SEM results, as shown in the table and figure:

Table 5. R-Square Value

	R Square
Project Success	0.788

From table 5, the model's suitability can be assessed by the r-square result for project success, which is 0.788 (78.8%). This indicates that the soundness of business and workforce, planning and control, and safety performance can explain 78.8% of the variation in project success. To determine whether a relationship is significant, the p-value should be compared to the 5% error rate, as outlined in the research hypothesis testing:

Table 6. Path Coefficient SEM-PLS

	Original Sample (O)	T Statistics (|O/STDEV|)	P Values
Soundness of Business and Workforce -> Project Success	0.223	2.271	0.024
Planning and Control -> Project Success	0.269	2.149	0.032
Safety Performance -> Project Success	0.438	3.323	0.001

Based on table 6, the results of the hypothesis test show the following results and conclusions:

a. Sounds of business and workforce has a positive effect of 0.223 on project success with a t-statistic value of 2.271 and a p-value of 0.024 < 0.05. Therefore, the hypothesis "Soundness of business and workforce has a positive and significant effect on project success"(H1) is accepted.

b. Planning and control has a positive effect of 0.269 on project success with a t-statistic value of 2.149 and a p-value of 0.032 < 0.05. Therefore, the hypothesis "Planning and control has a positive and significant effect on project success "(H2) is accepted.
c. Safety performance has a positive effect of 0.438 on project success with a t-statistic value of 3.323 and a p-value of 0.001 < 0.05. Therefore, the hypothesis "Safety performance has a positive and significant effect on project success "(H2) is accepted.

4.3. Discussion

a. Soundness of Business and Workforce on Project Success Factors

The soundness of business and workforce has a positive effect of 0.223 on project success with a t-statistic value of 2.271 and a p-value of 0.024 < 0.05. Therefore, the hypothesis "Soundness of business and workforce has a positive and significant effect on project success"(H1) is accepted. The contractor can handle some parts of the work. However, it must work with expert subcontractors to complete most of the project successfully. Good subcontractors contribute to the project's success; bad subcontractors can cause problems. Proper selection of subcontractors enhances the success of general contractors in construction projects. Polat & Damci (2015) determined the importance of the criteria for selecting Turkish firms for subcontractors in international construction projects. Aydin et al. (2016) solved the problem of subcontractor selection through TOPSIS and VIKOR. Ulubeyli et al. (2010) examined the selection of Turkish firms as subcontractors for international construction projects based on fuzzy importance weights. Erdogan (2019) used the TOPSIS methodology for risk-based subcontractor selection. The studies were mainly aimed at determining the level of importance of subcontractor selection criteria, and research has been conducted on the impact of these selection criteria on project success.

b. Planning and Control on Project Success Factors

Planning and control has a positive effect of 0.269 on project success with a t-statistic value of 2.149 and a p-value of 0.032 < 0.05. Therefore, the hypothesis "Planning and control has a positive and significant effect on project success "(H2) is accepted. Different models have been presented in the literature regarding the importance of subcontractor selection. Mbachu (2008) examined the effectiveness of the criteria in assessing subcontractors' ability to be invited to bid. Subcontractors are listed according to the decision makers' opinions according to the specified criteria. In selecting the best candidate, parameters are considered, including the weight of each decision maker, the weight of each criterion, and the score of the subcontractor. Bingol & Polat (2017) explained that selecting general subcontractors according to the lowest price resulted in poor performance. This encourages the existence of a performance measurement system with performance assessment model indicators in the subcontractor selection process. Lew et al. (2018) developed a structural equation model that evaluates data obtained from 162 general contractor firms and created a PreCSAM model for contractor selection. This model offers a three-stage evaluation with criteria such as lowest bid and best value. Ulubeyli (2008), on subcontractor selection in Turkish construction, developed and tested a basic fuzzy decision-making model for project construction. Postgraduate studies on the subcontractor selection process were conducted using analytical hierarchy process (AHP) and analytical network process (ANP) methods.

c. Safety Performance on Project Success Factors

Safety performance has a positive effect of 0.438 on project success with a t-statistic value of 3.323 and a p-value of 0.001 < 0.05. Therefore, the hypothesis "Safety performance has a positive and significant effect on project success "(H2) is accepted. Wang et al. (2001) applied fuzzy logic and genetic algorithm together to develop a hybrid fuzzy model in subcontractor selection. The project is divided into subprojects through fuzzy logic, and the best subcontractor is assigned to each subproject. Ng & Luu (2008) collected previous records of successful and unsuccessful subcontractors and proposed a model built on case-based reasoning. Hartmann & Karteling (2010) searched for criteria considered more critical by general contractors. Albino & Garavelli (1998) explained the complexity of selecting subcontractors in companies engaged in the construction sector. This process follows the

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experience of company management supported by various data. Five measurement factors with statements that can be evaluated statistically as a decision analysis technique based on utility criteria and evaluation according to the capacity of different subcontractors for proposals and selection in construction projects (Hatush & Skitmore, 1998). Okoroh & Torrance (2010) used fuzzy logic theory for subcontractors in conducting the selection process by measuring project success based on the level of business and workforce health, planning and control, performance quality, and past performance.

4. CONCLUSION

Based on the analysis and discussion presented, the following conclusions can be drawn: (1) Soundness of business and workforce has a positive effect of 0.223 on project success with a t-statistic value of 2.271 and a p-value of 0.024 < 0.05. Therefore, the hypothesis "Soundness of business and workforce has a positive and significant effect on project success"(H1) is accepted (2) Planning and control has a positive effect of 0.269 on project success with a t-statistic value of 2.149 and a p-value of 0.032 < 0.05. Therefore, the hypothesis "Planning and control has a positive and significant effect on project success "(H2) is accepted (3). Safety performance has a positive effect of 0.438 on project success with a t-statistic value of 3.323 and a p-value of 0.001 < 0.05. Therefore, the hypothesis "Safety performance has a positive and significant effect on project success "(H2) is accepted.

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