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Implementation of Competency Dimensions for Assesor and Experts through Certification in Improving Construction Quality in Dinas Public Works and Spatial Office

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Abstract: The aims of this conducted Research were to examine and analyze the influence of: (1) Knowledge of certification (2) Skills towards certification (3) Attitudes toward certification (4) Construction management towards certification (5) Knowledge of construction quality (6) Skills for construction quality (7) Attitudes to construction quality (8) Construction management to construction quality (9) certification of construction quality (10) Knowledge of construction quality through Certification (11) Skills to construction quality through Certification (12) Attitudes to construction quality through Certification (13) Management construction of the quality of construction through Certification. This research was conducted at the Public Works and Spatial Planning Office of West Sulawesi Province. The population of this study was the Assessors and experts, a sample of 177 respondents, the research data was analyzed using the structural equation modeling program (SEM). The results of this study indicate that: (1) the knowledge has a positive and significant effect on certification (2) the skill has a Positive and not significant effect on certification (4) the Construction Management has a Positive and significant effect on certification (5) the knowledge is positively and significantly related to certification construction quality (6) the skills positive and significant effect on construction quality (7) attitudes (8) the construction management positive and significant effect on construction quality (9) the certification positive and significant effect on construction quality (10) the knowledge on construction quality through certification (11) skills (12) Attitudes affect positively and not significantly to the quality of construction through Certification (13) Construction Management has a positive and significant effect on the quality of construction through Certification.

Keywords: Knowledge, Skills, Attitudes, Construction Management, Certification, Construction Quality

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I. Introduction

Along with the development of modern technology and the demands of the times, then a worker must have better human resources by having the ability, skills and knowledge as a measure where the worker has been declared competent and professional in his field. The ability of workers to perform tasks or jobs professionally is the benchmark for a company or industry to measure the performance and or success rate of a company or industry.

Project activities are activities that can be defined as activities that cannot be repeated, carried out at a certain period of time to get results as expected. According to Junaidi (2012) control in construction projects generally concerns three main aspects, namely, cost, time, and human resources. The construction of relatively large projects with fairly complex dependencies, planning and control becomes complicated. In fact, the control is carried out continuously to be completely efficient in its control. In the implementation of a construction project, planning and control is the most important function in realizing the success of an activity in a construction project.

The quality of a work on government projects is more seen from the end result of the work or function of the building itself. The unmet quality of the final product and the unfulfillment of building functions have implications for the law. Deviations from work procedures and swelling costs & time are often ignored by service users and service providers in the hope that the final quality of the product can be achieved. Therefore, it is necessary to conduct a study related to quality control in government construction projects in this case the development of West Sulawesi Province.

The handling of construction quality issues in government projects has been set out in the guidelines in the form of The Minister of Public Works Regulation Number: 04/PRT/M/2009 on Quality Management System (SMM). This regulation is intended to provide guidance on implementing organizational management that leads to planning, implementation, control, maintenance and improvement for the achievement of

performance based on a documented and integrated SMM in accordance with the Quality Policy established in the environment of the Ministry of Public Works and Public Housing. Quality Policy in an effort to ensure the availability of reliable infrastructure for the community with efficient and effective principles and to improve the quality of activities in a sustainable manner.

In general, the quality aspect consists of three parts namely quality planning, quality assurance and quality control. The concept of quality planning and quality assurance is relatively good with many policies available. Precisely the application of quality control that often leads to the onset of quality constraints /issues in construction. Kompas Daily (2015) mentioned that the infrastructure quality index of RI is the second lowest in Asia. Indonesia lost far to Sri Lanka and excelled narrowly compared to the Philippines. This can happen because poor quality control in construction projects is no exception for construction projects. Numerous lapses in quality control in the project work resulted in the loss of function of the building.

Quality is often used in giving the best assessment of a product in everyday life. Quality is defined as an overview and thorough characteristic of goods/services that demonstrate its ability in the fulfillment of the specified or implied requirements (Regulation of the Minister of Public Works No. 04/PRT/M/2009 on Quality Management System/SMM). The definition of quality above clearly emphasizes customer satisfaction or product users. In a building project, the customer can mean the assigner, the tenant of the building or the user's community.

As Infrastructure Builders increase, the need for a certified workforce increases. However, this is still constrained given that the number of certified construction workers is still insufficient. Therefore, the acceleration of labor certification is a must do. To obtain a certified workforce, a labor certification process is required by the Professional Certification Body (LSP). The Minister of PUPR can establish a Professional Certification Body to carry out work competency certification tasks that have not been able to be carried out professional certification bodies (LSP) established by professional associations or educational and training institutions. Professional Certification Bodies (LSP) must follow the provisions of competency test implementation in accordance with the provisions.

Licensing for Professional Certification Body (LSP) is the authority of the Central Government, as outlined in Construction Services Act no. 2 of 2017, that every construction worker working in the field of Construction Services must have a Certificate of Employment Competency. Each Service User and/or Service Provider is required to employ a construction worker who has a Certificate of Employment Competency.

In line with research conducted by IrikaWidiasantin (2016), with the research title "Study of the effectiveness of expert certification mechanisms through the labor certification unit of construction service development agencies", the results of the study show that with this certification mechanism, there is no longer a non-uniform mechanism of each association. The government becomes able to control the quality of certification. Each expert will only have a certificate according to competency and cannot have multiple certifications.

In the world of construction projects we have realized how important quality control is. Control can be interpreted as a process of determining what has been achieved, performance evaluation and improvement measures if necessary. In other words, quality control is a performance evaluation step that is carried out in order to take quality improvement measures. The quality control of the project is usually done by making statistical measurements or in the form of certain checks as an evaluation of the quality processes that want to be achieved or as a measure of fulfillment of the criteria of the specifications that have been set before. All involved in the project have a certain role in achieving the quality of the project, be it the owner, contractor, or consultant.

The implementation of a building construction project is carried out through a specific project management system. The success rate of a project can be seen from the large cost efficient, short time and precise quality of the product achieved. In the implementation of construction, the cost factor is the main consideration because it concerns a large amount of investment that must be invested by contractors who are prone to the risk of failure.

Construction in general translates to all forms of infrastructure manufacturing (e.g. roads, bridges, buildings, irrigation, buildings) as well as the implementation of maintenance and repair of infrastructure, (Muzayanah,2008). In its implementation, construction projects require a management to process from raw materials as input activities into a construction. In other words, the implementation of a construction project can be interpreted as a temporary activity, which takes place for a limited period of time with a certain allocation of resources and is intended to prevent the product from being clearly outlined in the contract.

In general resources are a capability and capacity of potential that can be utilized by human activities for socioeconomic activities. So more specifically it can be stated that the construction project resources are potential capabilities and capacities that can be utilized for construction activities. Construction project resources consist of several types including cost, time, human resources, materials, and also equipment used in the implementation of the project, where in operation the resources are needed *Knowledge, Skill and Attitude*

experts in a good management system so that it can be utilized optimally.

Knowledge is influenced by formal education factors and is very closely related to the quality of construction services. It is expected that with higher education, the wider the knowledge. Increased knowledge is not absolutely derived from formal education alone, but can also be obtained from non-formal education. Knowledge of an object contains two aspects, namely positive aspects and negative aspects in the field of construction. Research conducted by Aryanto (2013), namely the assessment of construction assessor knowledge qualification based on SKKNI on building projects in Surabaya Region, concluded that the knowledge qualification of 30 assessors who were able to answer all test questions correctly (100%) or have a high level of knowledge as many as 8 assessors, Knowledge qualifications from 30 assessors whose level of knowledge is less than 5 assessors.

Skills include the ability of the workforce to use construction tools, the ability to read images, the compatibility of shapes with the expected or specified size of the assessment of a preparation skill, process and resulting product (Purwadi, 2016). Research by Sutikno (2015) which is a knowledge qualification and expert skills on a project in Surabaya area, concluded that the skills qualification of 30 experts has a good skill level as many as 26 experts with a percentage of 86.66%.

Based on the results of the survey in the working area of the Public Works Office of West Sulawesi, workers who have a standard of knowledge and skills in the field are still relatively low. The way out is that the government needs to implement rules governing the qualifications of workers' skills and knowledge to improve the quality of workers in the field.

In the broad context of construction management serves to ensure the implementation of the project (construction) well in order to achieve the project performance goals, namely timeliness, cost and quality. because the target performance target is actually the result of an estimate, it must be recognized that the suitability between those performance goals and the actual results achieved cannot be guaranteed to be appropriate. Therefore, in planning the program structure of a project, it is necessary to be aware of the interdependence between various parameters such as funds to finance the project, the time it takes to complete the work, and the resources needed to carry out the work. In this case the resources are human resources (experts and workers), and non-human resources (materials and equipment).

One of the main causes of physical and environmental vulnerability is human activity in building its built-in environments, and it is very closely related to the construction sector. The wrong way of building, both in terms of planning and design and in terms of implementation and supervision can result in infrastructure that is vulnerable to disaster, in addition to the risk of environmental degradation.

The causative factor of construction failure is not easy, Often the source of the failure itself is the accumulation of various factors. Oyfer (2002) states that "*Construction failures, including quality defects may stem from not only single but also multiple sources*". Pranoto (2007) mentions that the source of construction failures is often influenced by natural factors and human behavior. Natural factors are exemplified as failures that occur due to dynamic changes of nature such as volcanic eruptions, floods, ocean waves and earthquakes. Human behavior also plays a significant role in the construction of kegagalan. Vickynason (2012) states that 80% of the total project risk in construction is possible due to human factors. Research conducted by Oyfer (2002) states "*construction defects in America are caused by human factors (54%), design (17%), care (15%), materials (12%), and unexpected things (2%)*".

In construction project planning and control is the most basic function in realizing the success of an activity in a construction project. The success of a project is not separated by a series of activities that include the stages of planning, implementation, and supervision. Control, supervision and measurement of performance needs to be done because to know if in the implementation of the work there are irregularities with what has been established. Therefore, it is necessary to analyze to know the indicators of the effect of project performance control (Occupational Safety and Health, Cost, and Time) on the quality of construction projects using statistical tests.

One of the main causes of physical and environmental vulnerability is human activity in building its built-in environments, and it is very closely related to the construction sector. The wrong way of building, both in terms of planning and design and in terms of implementation and supervision can result in infrastructure that is vulnerable to disaster, in addition to the risk of environmental degradation. The results of the study of failure statistics, show that Practitioners have a greater stake and potential than Theoreticians in suppressing the risk of failure. The greatest percentage of risk comes from Human Activities and Human Attitude. Socio-Engineering focuses on attributes inherent in a person such as *knowledge, attitude, skill, values, human relationships, recognition and reward system, authority structure*).

In line with research conducted by Hartono (2013) with the title "Effect of construction implementation aspects on project time performance (Case Study in Dinas Cipta Karya Dan Tata Ruang Provinsi Central Java). The results of the research conducted on the 10 samples of the project, can be drawn the following conclusion: "The better the quality of the main aspects of implementation will be the better the

performance of the building project in the Office of Copyright Works and Spatial Planning of Central Java Province.

Sambira (2017) conducted a study titled "The influence of occupational safety and health knowledge on the behavior of construction workers on nusadua-ngurah raibenoa toll roadproyek", the results showed that there is a positive and low correlation betweenK3 knowledge and worker behavior. From the aspects of K3 knowledge, the mechanism aspect of the use of personal protective equipment and utilization of infrastructure facilities in the workplace has a positive/proportional and insignificant effect, while the aspect of understanding of definition and initiation, understanding of the K3 management system and understanding of risks negatively/inversely and insignificantly affect the application of construction workers in behaving safely and safely.

Empirical phenomena in general the case in construction work is dominated by irregularities in the form of auction arrangements, lack of volume of work, incompatible specifications in the form of reductions in the quality of work, price conversion or mark up and delay in completion of work. This is an aberration in construction work, which would later lead to other symptoms, which seemed to increase to become more dominant during today's economic recession. Symptoms start from the desire of the relevant parties to obtain a short-term profit by taking an abnormal path and replacing it with a competition based on the amount of rupiah alone. By understanding this, pro-active policies can be developed to build Indonesia's construction in order to play a positive role in reducing the risk of construction failure.

II. Rivew Literature

Human Resource Management Concept

Human Resources is a unique production factor and when well built, can generate added value in other resources, so hr should be the focus of development development in general and the development of the construction world in particular. In the construction business, the role of reliable human resources can not be ignored just like that. One of the best strategies in construction business competition is to develop human resources, because HR is an asset for all business activities. Therefore, attention and emphasis on human resources development is a strategic aspect (Clealand, 2009). Furthermore, according to A.F Stoner quoted by Siagian (2013), "Human resource management is an ongoing procedure that aims to supply an organization or company with the right people to be placed in the right position and position at the time the organization needs it"

Kompetence

The understanding of competence as proficiency or ability is also expressed by Roe (2011) as follows Competency can be described as the ability to carry out a single task, role or task, ability to integrate knowledge, skills, personal attitudes and values, and ability to build knowledge and skills based on experience and learning. Spencer and Spencer inPalan (2013)suggest that competence exhibits the underlying characteristics of behavior that describemotives, personal characteristics (characteristics), self-concepts, values, knowledge or skills brought by a superior performer in the workplace. MenurutZwell (2010) revealed that there are severalfactors that minfluence Competency: Beliefs and values;; skills; experience;; personality characteristics;; motivation; emotionalissues;andintellectual ability

(Knowledge)

Knowledge is a result of curiosity through sensory processes, especially in the eyes and ears of certain objects. Knowledge is an important domain in the formation of open behavior (Donsu, 2017). Notoatmodjo (2014) suggests Knowledge or knowledge is the result of human sensing or the result of knowing a person against an object through his or her senses. Five human senses for sensing objects i.e. vision, hearing, smell, taste and taste. At the time of sensing to produce such knowledge was influenced by the intensity of his attention and perception of the object. One's knowledge is mostly obtained through the auditory senses and the senses of vision.. According to Notoatmodjo (2014),a person's knowledge is influenced by the following factors: Education, mass media exposure, economy, social relations, and experience.

Skill(Keterampilan)

Skill comes from a skilled word that means capable, capable, and dexterous. Iverson (2016) says the skills require training and the basic skills that everyone has can better help prevent something more valuable more quickly. Skills are the capacity needed to carry out several tasks which are the development of the results of training and experience gained (Parmin, et al,2015). According to Arcynthia (2013) skill is a person's ability to do an activity or job. More about skills, Dunnett's (quoted by Arcynthia, 2013), skill is as much capacity as needed to carry out a series of tasks that evolve from training results and experience. A person's expertise is reflected in how well people perform a specific activity, such as operating an equipment, communicating

effectively or implementing a business strategy.

Attitude

Attitude or Attitude is an important concept in helping people to understand their social world. how we view and think about others, as well as how kita behave towards them. The theory according to Cooper (2019), states that attitude is **a process that creates a security partnership between management and the workforce with an ongoing focus on the attention and actions of everyone and** others, as well as efforts to behave safely. One way to identify unsafe **conditions** and unl.. safe behavior is by taking a behavioral approach orso-called BBS (Behavior- Based Safety).According to Azwar (2013)**factors that influence**attitudes towards attitude objects include:Personal experience;; influence of others deemed dianggap important;; culturalinfluences;**mass**media;; educational institutions and religious institutions; and **emotional** factors..

Construction Management

Konstruksi management according toSoehendradjati (2015) is a group that performs management functions in the construction process (implementation stage), a function that will occur in each construction project. Ervianto (2015) Construction management is a science that studies and practices the managerial and technological aspects of the construction industry. Construction management can also be interpreted as a business capital carried out by construction consultants in advising and assistance in a development project. Construction management how to get the resources involved in a construction project to be applied by the project manager appropriately. Resources in construction projects can be grouped into *manpower, material, machines, money, method*.

Certification

Certification is an assessment process to gain recognition of a person's competence and ability, to meet the statutory requirements through competency testing, (Nursyirwan 2016, Moedjiman 2017). Danim in Suprihatiningrum (2013) explained that certification (*sertification*)is the process of granting certificates to the profession for its abilities and skills and recognized its existence by the state. The purpose of certification is to provide assurance of the skills, quality and capability of the construction workforce, so as to produce construction products that meet the established quality standards, this certification is expected to be a powerful weapon for open access to employment opportunities in construction projects competitively at the global level (Cahyono, 2015).

Construction Quality

Consultant planners are one of the parties who play a role in the construction services industry, working with other parties such as project owners, supervisory consultants and implementers. project in order to complete the project. Construction projects involve many parties from multidisciplinary science ranging from planning to implementation. Consultant planners and supervisors are involved in it, so it requires close coordination and integration and needs a competent construction workforce in maintaining theconstruction community (Adi and Wibowo,2015). Quality management methods are determined by the ability of experts in maintaining quality performance (Latief and Utami, 2017). The quality of road construction depends heavily on the quality of human resources of the organizer, themanager and also the road user considering the quality of construction is the product of the construction activities including the owner of the project (*owner*),contractor as implementer and also consultant both as planner and supervisor; but not missed are the road users.

III. Research Method

The approach used in this study is to use quantitative methods and qualitative methods as well as combine qualitative and quantitative research methods..The types of data used in this study are primary and secondary data.Primary data is sourcedon a list of questions (questionnaires) that have been prepared first to employees of the Public Works and Spatial Office of West Sulawesi Province who were selected as a research sample.. Meanwhile,secondary data is sourced from documents in the form of authentic data and performance reports of employees of the Public Works and Spatial Office of West Sulawesi Province as well as other relevant information.The data collection techniques used in this study were conducted observations, interviews, questionnaires, anddocumentation.. The population in this study was Assessor and expert of the Public Works and Spatial Office of West Sulawesi Province as a research object of 177 people consisting of assessor 52 people and company experts as many as 125 people. The samples in this study were all assessors and experts of the Public Works and Spatial Office of West Sulawesi Province as many as 177 people consisting of 52 assessors and company experts as many as 125 people Sample withdrawal technique used is total sampling.

This research was developed based on the problem of construction quality with an emphasis on

functional relationships using *Path Analysis*.. variabel hubungan fungsional penelitian diklasifikasikan mengacu pada kerangka operasional dengan menggunakan analisis jalur (*Path analysis* In this study the parameters of *knowledge, skill, attitude* and construction management relationship to the quality of construction through certification, can be formulated into the form of structural equations, namely:

With Equation I:

$$Y_1 = \rho Y_1 X_1 X_1 + \rho Y_1 X_2 X_2 + \rho Y_1 X_3 X_3 + \rho Y_1 X_4 X_4 + \epsilon_1$$

Equation II:

$$Y_2 = \rho Y_2 X_1 X_1 + \rho Y_2 X_2 X_2 + \rho Y_2 X_3 X_3 + \rho Y_2 X_4 X_4 + \rho Y_2 Y_1 Y_1 + \epsilon_2$$

Description:

X₁ = Knowledge

X₂ = Skill

X₃ = Attitude

X₄ = Construction Management

Y₁ = Certification

Y₂ = Construction quality

$\rho Y_1 X_1$ = Knowledge PathwayCoefficient on Certification

$\rho Y_1 X_2$ = Skill PathCoefficient on Certification

$\rho Y_1 X_3$ = Attitude PathwayCoefficient to Certification

$\rho Y_1 X_4$ = Construction Management LineCoefficient on Certification

$\rho Y_2 X_1$ = Knowledge PathwayCoefficient on Construction Quality

$\rho Y_2 X_2$ = Skill PathwayCoefficient on Construction Quality

$\rho Y_2 X_3$ = Attitude PathwayCoefficient to Construction Quality

$\rho Y_2 X_4$ = Construction Management LineCoefficient on Construction Quality

$\rho Y_2 Y_1$ = Coefficient of Certification Path to Construction Quality

ϵ_1 = Other factors affecting construction quality

IV. Results And Analysis

Descriptive Statistical Analysis

Description of Knowledge Variable Respondent Assessment (X₁)

Table 1. Respondent's Assessment of Knowledge (X₁)

Indicators	Answer										On average, flat (Mean)
	1		2		3		4		5		
	F	%	F	%	F	%	F	%	F	%	
Think Rational	0	0.00	12	6.77	13	7.34	119	67.23	33	18.64	3.98
Relevance Education	0	0.00	10	5.64	52	29.37	67	37.85	48	27.11	3.59
Insights Work	10	5.64	14	7.90	34	19.20	60	33.89	59	33.33	3.81
Conformity Job	0	0.00	14	7.90	27	15.25	70	39.54	66	37.28	4.06
Average Knowledge Indicators											4.08

Source: Primary data processed in 2020

The average respondent's answer result was a score of 4.08 which means that the respondent's assessment of Knowledge is quite good, where knowledge indicators are Rational Thinking, Educational Relevance, Work Insights and Job Suitability. The indicator that influences the most is Job suitability, but nevertheless the lowest contribution is the Rational Thinking indicator.

Description of Variable Skill Respondent Assessment (X₂)**Table 2.** Respondent's Assessment of Skill (X₂)

Indicators	Answer										Average (Mean)
	1		2		3		4		5		
	F	%	F	%	F	%	F	%	F	%	
Technical skills for conformity Placement	0	0.00	7	3.95	23	12.99	100	56.49	47	26.55	4.06
Relationship skills Humanity	5	2.82	4	2.25	31	17.51	81	45.76	56	31.63	4.01
Skills Conceptual	0	0.00	15	8.47	10	5.64	119	67.23	33	18.64	3.75
Customized skills in the job and tasks	3	1.69	7	3.95	31	17.51	81	45.76	55	31.07	4.00
Average Skill Indicator											4.33

Source: Primary data processed in 2020

The results of the complete description of skill variables are presented in the appendix, indicating that the Skill variable indicator shows an average answer score of 4.33. This value indicates that the respondent's perception of Skill is quite good. Similarly, other indicators also show an average score of 3.75-4.06 which means that the Technical skills indicator for placement suitability, Humanitarian relations skills, conceptual skills and customized skills in the work and tasks of assessors and experts of the Public Works and Spatial Affairs Office of West Sulawesi Province is quite good. The indicator that exerts the most influence is technical skills for placement suitability, but nevertheless the lowest contribution is the conceptual Skills indicator.

Description of Attitude Variable Respondent Assessment (X₃)**Table 3.** Respondent's Assessment of Attitude (X₃)

Indicators	Answer										Average (Mean)
	1		2		3		4		5		
	F	%	F	%	F	%	F	%	F	%	
Attitudes towards this type of work itself	0	0.00	7	3.95	28	14.12	75	42.37	67	37.85	4.14
Attitude towards others Employees	0	0.00	12	6.77	40	22.59	75	42.37	50	28.24	3.92
Attitude towards conformity Equipment	0	0.00	9	5.04	44	24.85	86	48.58	38	21.46	3.81
Attitude to the physical condition of work	0	0.00	3	1.69	37	20.90	85	48.02	52	29.37	4.05
Average Attitude Indicator											4.25

Source: Primary data processed in 2020

The results of the complete description of the attitude variable are presented in the appendix, indicating that the Attitude variable indicator shows an average answer score of 4.25. This value indicates that the respondent's perception of Attitude is quite good. Similarly, other indicators also show an average score of 3.81-4.14 which means that the Attitude to the type of work itself and attitude towards the physical condition of the work is quite good. The indicator that exerts the most influence is attitude towards the type of work itself, but nevertheless the lowest contribution is the Attitude to equipment suitability indicator.

Description of Construction Management variable respondent scoring (X₄)**Table 4.** Respondent's Assessment of Construction Management (X₄)

Indicators	Answer					On average, flat
	1	2	3	4	5	

	28 T	%	F	%	F	%	F	%	F	%	(Mean)
Planning	0	0.00	2	1.12	36	20.33	72	40.67	67	37.85	4.14
Scheduling	2	1.12	16	9.03	49	27.68	62	35.02	48	27.11	3.94
Control	0	0.00	18	10.16	40	22.59	73	41.24	46	25.98	3.83
Average Construction Management Indicators											4.15

Source: Primary data processed in 2020

The results of the complete description of the research variable on Construction Management are presented in the appendix, indicating that the Construction Management variable indicator shows an average answer score of 4.15. This value indicates that the respondent's perception of Construction Management is quite good. Similarly, other indicators partially also show an average score of 3.83-4.14, which means that the Planning, Scheduling and Control indicators are pretty good. The indicator that exerts the most influence is Planning, but nevertheless the lowest contribution is the Control indicator.

Description of Certification Variable Respondent Assessment (Y1)

Table 5. Respondent's Assessment of Certification (Y₁)

Indicators	Table 3: Respondent's Assessment of Certification (n=11)										Average (Mean)
	Answer										
	1		2		3		4		5		
	F	%	F	%	F	%	F	%	F	%	
Method Training	2	1.12	6	3.38	17	9.60	46	25.98	76	42.93	3.53
Delivery Material	0	0.00	23	12.99	39	22.03	77	43.50	38	21.46	3.74
Practice Field	0	0.00	10	5.64	52	29.37	66	37.28	49	27.68	3.87
Average Certification Indicators											4.15

Source: Primary data processed in 2020

The results of the complete description of the certification variable are presented in the appendix, indicating that the Certification variable indicator shows an average answer score of 4.15. This value indicates that the respondent's perception of Certification provides good value. Similarly, other indicators also show an average score of 3.53-3.87, which means that certification indicators, Training Methods, Material Delivery, and Field Practice are good enough. The highest indicator is field practice, however the lowest contribution is the Training Method indicator.

Description of Construction Quality Variable Respondent Assessment (Y₂)

Table 6. Respondent's Assessment of Construction Quality (Y₂)

Table 3: Respondents' Assessment of Construction Quality (1-5)											
Indicators	Answer										Average (Mean)
	1		2		3		4		5		
	F	%	F	%	F	%	F	%	F	%	
Availability	0	0.00	5	2.82	55	31.07	65	36.72	52	29.37	3.93
Delivery	0	0.00	11	6.21	49	27.68	59	33.33	58	32.76	3.54
Reliability	0	0.00	10	5.64	18	10.16	88	49.71	61	34.46	4.13
Maintainability	0	0.00	17	9.60	29	16.38	80	45.19	51	28.81	3.93
Cost effectiveness	0	0.00	9	5.04	44	24.85	86	48.58	38	21.46	3.81
Average Construction Quality Indicators											4.31

Source: Primary data processed in 2020

The results of a complete description of the research variables on Construction Quality are presented in the appendix, showing that the Construction Quality variable indicator shows an average answer score of 4.31. This value indicates that the respondent's perception of construction quality provides good value. Similarly, other indicators also show an average score between 3.93-4.13, which means that the Availability, Delivery, Reliability, Maintainability and Cost effectiveness indicators Delivery are good enough. The highest indicator is Reliability, but nevertheless the lowest contribution is the Delivery indicator..

Validity and Reliability Test of Research Instruments

In the validity and reliability test, a response from the questionnaire was distributed to all respondents, the overall sample of 177 Assessors and experts of the Public Works and Spatial Office of West Sulawesi Province, so it can be explained that the overall questionnaire circulated (177 sets) with a return rate of 100% and after examination there were no questionnaires that researchers considered flawed (not usable) thus the overall questionnaires used to be analyzed in this study a total of 177 questionnaires/ questionnaires. The test results of the validity and reliability of the instrument, which is summed up in Table 7.

Table 7.Recapitulation test validity and reliability of research instruments

Variable	Variable Indicators	Item	Koefisien Correlation (r)	Sig.	Ket.	Cronbach's Alpha	Ket
Knowledge (X1)	Rational thinking	X1.1	0,916	0,000	Valid	0,972	Valid
	Relevance	X1.2	0,936	0,000	Valid		
	Education	X1.3	0,920	0,000	Valid		
	Work Insights	X1.4	0,939	0,000	Valid		
	Conformity	X1.5	0,939	0,000	Valid		
Skills (X2)	Job	X2.1	0,916	0,000	Valid	0,946	Valid
	Technical skills for suitability	X2.2	0,936	0,000	Valid		
	Placement	X2.3	0,920	0,000	Valid		
	Skills	X2.4	0,939	0,000	Valid		
	Relationship	X2.5	0,939	0,000	Valid		
Attitude (X3)	Humanity	X3.1	0,929	0,000	Valid	0,954	Valid
	Skills	X3.2	0,944	0,000	Valid		
	Conceptual	X3.3	0,930	0,000	Valid		
	The skills customized in work and	X3.4	0,949	0,000	Valid		
	Task	X3.5	0,949	0,000	Valid		
Management Construction (X4)	Attitude towards that type of work	X4.1	0,965	0,000	Valid	0,953	Valid
	Own	X4.2	0,954	0,000	Valid		
	Attitude towards fellow employees	X4.3	0,951	0,000	Valid		
Certification (Y1)	Equipment	Y1.1	0,927	0,000	Valid	0,926	Valid
	Attitude towards physical condition	Y1.2	0,935	0,000	Valid		
	Job	Y1.3	0,938	0,000	Valid		
	Planning	Y1.4	0,927	0,000	Valid		
Quality	Scheduling	Y2.1	0,920	0,000	Valid	0,926	Valid
	Control	Y2.2	0,912	0,000	Valid		

Construction (Y2)	Reliability	Y2.3	0,922	0,000	Valid	0,955	Rail
	Maintainability	Y2.4	0,917	0,000	Valid		.
	Cost effectiveness	Y2.5	0,933	0,000	Valid		

Note: Test criteria for validity value ($r \geq 0.30$ or $\leq \alpha = 0.05$ and reliability cut of value cronbach's alpha based on standardized items ≥ 0.60 or (60%). (Uma Sekaran, 2013)

Source: Primary data processed results 2020

Hypothesis Testing

Data Analysis

The data analysis used in this study is a *path analysis* by utilizing the help of computer program AMOS (Analysis of Moment Structures) version 18.0. The path analysis was chosen because in the research model (picture below) there are *intervening variables*, namely *certifications* that moderate the relationship between knowledge, skill, attitude, construction management to construction quality through certification. The following stage after the model identification process is to evaluate the estimation parameters between variables where the results are presented in the following images and tables:

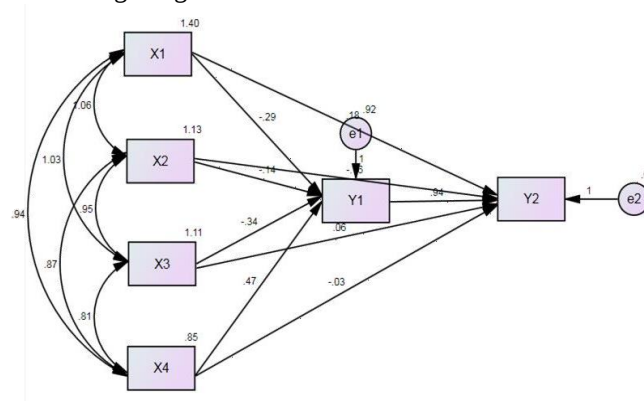


Figure 1. Path Analysis Diagram

Source: Primary data processing results 2020

The results of path analysis estimates, further to find out the direct and total relationship of each variable and its level of significance, based on the facts found in this study, then the hypothetical testing submitted can be accepted or rejected. With the estimated significance of the parameters in the hypothesis test set at 95% or $p = 0.05$. The results of the direct and total relationship and its significance value can be seen in table 8. Based on a summary of the hypothetical test results previously submitted can be presented in Table 8. the following:

Table 8. Summary of Hypothesis Test Results

Hip	Independent	Variable Intervening	Dependent	Direct	Indirect	Total	P-Value	Ket
1	Knowledge (X1)	-	Certification (Y1)	0.164	-	0.164	0.029	(+) Sig.
2	Skill (X2)	-	Certification (Y1)	0.096	-	0.096	0.201	(+) Not Sig.
3	Attitude (X3)	-	Certification (Y1)	0.260	-	0.260	0.000	(+) Sig.
4	Construction Management (X4)	-	Certification (Y1)	0.219	-	0.219	0.008	(+) Sig.
5	Knowledge (X1)	-	Construction Quality (Y2)	0.168	-	0.168	0.027	(+) Sig.
6	Skill (X2)	-	Construction Quality (Y2)	0.169	-	0.169	0.026	(+) Sig.
7	Attitude (X3)	-	Construction Quality (Y2)	0.189	-	0.189	0.007	(+) Sig.
8	Construction Management (X4)	-	Construction Quality (Y2)	0.194	-	0.194	0.020	(+) Sig.

9	Certification (Y1)	-	Construction Quality (Y2)	0.537	-	0.537	0.000	(+) Sig.
10	Knowledge (X1)	Certification (Y1)	Construction Quality (Y2)	0.164	0.060	0.224	0.076	(+) Not Sig.
11	Skill (X2)	Certification (Y1)	Construction Quality (Y2)	0.096	0.035	0.131	0.079	(+) No, no, no, no, Sig.
12	Attitude (X3)	Certification (Y1)	Construction Quality (Y2)	0.260	0.095	0.355	0.783	(+) Not Sig.
13	Construction Management (X4)	Certification (Y1)	Construction Quality (Y2)	0.219	0.080	0.299	0.004	(+) Sig.

Source: Primary data processing results 2020

Based on Table 8. of the overall model of nine significant paths, four paths are insignificant, as for the interpretation of table 8. can be explained as follows:

Knowledge has a significant positive influence on Certification with a track coefficient of 0.164. With a significance rate of 0.029. Thus the hypothesis is acceptable. From the results of the study shows that there is a positive and significant relationship between Knowledge and Certification as shown by the analysis of the coefficient of the path, which means there is an influence of Knowledge on certification. Thus the hypothesis (Ha) stating that there is an influence of Knowledge variables on Certification can be proven, so that it is empirically acceptable because it is supported by data and facts.

Skill has an insignificant influence on Certification with a path coefficient of 0.096 with a significance rate of 0.201 or $p > 0.05$. Thus the hypothesis is unacceptable. From the results of the study shows that there is no significant relationship between Skill to Certification as shown by the analysis of the path coefficient, which means there is an influence of Skill on certification. Thus the hypothesis (Ha) stating that there is an influence of Skill variables on Certification cannot be proven, so it is empirically rejected because it is not supported by data and facts.

Attitude has a significant positive influence on Certification with a line coefficient of 0.260. With a significance rate of 0.000. Thus the hypothesis is accepted. Based on the hypothetical test results as shown indicates that there is a significant coefficient of pathways between Attitude and Certification. This indicates that Attitude is able to prove causality both theoretically and empirically to Certification. In other words there is a significant relationship between Attitude and Certification. Thus the hypothesis (Ha) stating that Attitude has a significant effect on certification can prove empirical and supported by data and facts.

Construction Management had a significant positive influence on Certification with a line coefficient of 0.219 with a significance rate of 0.008 or $p < 0.05$. Thus the hypothesis is acceptable. From the results of the study shows that there is a significant relationship between Construction Management to Certification as shown by the analysis of the line coefficient, which means there is an influence of Construction Management on certification. Thus the hypothesis (Ha) stating that there is an influence of Construction Management variable on Certification can prove empirically and supported by data and facts.

Knowledge has a significant positive influence on Construction Quality with a line coefficient of 0.168 with a significance rate of 0.027 or $p < 0.05$. Thus the hypothesis is acceptable. From the results of the study shows that there is a positive and significant relationship between Knowledge and Construction Quality as shown by the analysis of the coefficient of the line, which means there is an influence of Knowledge on the Quality of Construction. Thus the hypothesis (Ha) stating that there is an influence of Knowledge variables on the Quality of Construction can be proven, so empirically accepted because it is supported by data and facts.

Skill has an insignificant influence on construction quality with a line coefficient of 0.169. With a significance rate of 0.026. Thus the hypothesis is acceptable. Based on the hypothetical test results as shown indicates that there is a significant coefficient of pathways between Skill and Construction Quality. It indicates that Skill is able to prove causality both theoretically and empirically to the Quality of Construction. In other words there is a significant relationship between Skill and Construction Quality. Thus the hypothesis (Ha) stating that Skill has a significant effect on the Quality of Construction can prove empirical and supported by data and facts.

Attitude has a significant positive influence on construction quality with a line coefficient value of 0.189. With a significance rate of 0.007. Thus the hypothesis is accepted. Based on the hypothetical test results as shown indicates that there is a significant coefficient of pathways between Attitude and Construction Quality. This indicates that Attitude is able to prove causality both theoretically and empirically to the Quality of Construction. In other words there is a significant relationship between Attitude and Construction Quality. Thus the hypothesis (Ha) stating that Attitude has a significant effect on the Quality of Construction can prove empirical and supported by data and facts.

Construction Management has a significant positive influence on the Quality of Construction with a line coefficient value of 0.194. With a significance rate of 0.020. Thus the hypothesis is accepted. Based on the hypothetical test results as shown indicates that there is a significant coefficient of pathway between Construction Management and Construction Quality. This indicates that Construction Management is able to prove causality relationship both theoretically and empirically to the Quality of Construction. In other words there is a significant relationship between Construction Management and Construction Quality. Thus the hypothesis (Ha) stating that Construction Management has a significant effect on the Quality of Construction can prove empirical and supported by data and facts..

Certification has a significant positive influence on construction quality with a track coefficient value of 0.537. With a significance rate of 0.000. Thus the hypothesis is accepted. Based on the hypothetical test results as shown indicates that there is a significant coefficient of pathways between Certification and Construction Quality. This indicates that Certification is able to prove causality relationship both theoretically and empirically to the Quality of Construction. In other words there is a significant relationship between Certification and Construction Quality. Thus the hypothesis (Ha) stating that Certification has a significant effect on the Quality of Construction can prove empirical and supported by data and facts.

Knowledge has an insignificant effect on the Quality of Construction through Certification with a line coefficient value of 0.060. With a significance rate of 0.076. Thus the hypothesis is unacceptable. From the results of the study shows that there is no significant relationship between Knowledge to The Quality of Construction through Certification as shown by the analysis of the coefficient of the path, which means there is an influence of Knowledge on the Quality of Construction through Certification. Thus the hypothesis (Ha) stating that there is a variable knowledge influence on the Quality of Construction through Certification cannot be proven, so it is empirically rejected because it is not supported by data and facts.

Skill has an insignificant effect on the Quality of Construction through Certification with a track coefficient value of 0.035. With a significance rate of 0.079. Thus the hypothesis is unacceptable. From the results of the study shows that there is no significant relationship between Skill to Construction Quality through Certification as shown by the analysis of the track coefficient, which means there is an influence of Skill on the Quality of Construction through Certification. Thus the hypothesis (Ha) stating that there is a variable skill influence on the Quality of Construction through Certification cannot be proven, so it is empirically rejected because it is not supported by data and facts.

Attitude has an insignificant effect on the Quality of Construction through Certification with a line coefficient value of 0.095. With a significance rate of 0.783. Thus the hypothesis is unacceptable. From the results of the study shows that there is no significant relationship between Attitude to Construction Quality through Certification as shown by the analysis of the line coefficient, which means there is an influence of Attitude on The Quality of Construction through Certification. Thus the hypothesis (Ha) stating that there is an influence of variable Attitude on the Quality of Construction through Certification cannot be proven, so it is empirically rejected because it is not supported by data and facts.

Construction Management has a significant positive effect on the Quality of Construction through Certification with a line coefficient value of 0.080. With a significance rate of 0.004. Thus the hypothesis is acceptable. From the results of the study shows that there is a significant relationship between Construction Management to The Quality of Construction through Certification as shown by the analysis of the line coefficient, which means there is an influence of Construction Management on the Quality of Construction through Certification. Thus the hypothesis (Ha) stating that there is a variable influence of Construction Management on the Quality of Construction through Certification can prove empirically and supported by data and facts.

Hypothesis Testing and Direct Influence Pathway Coefficient

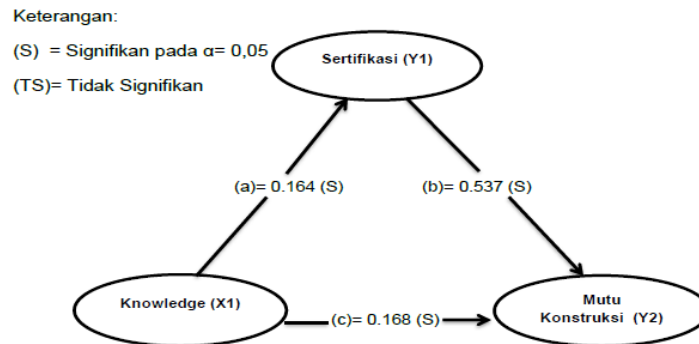
Based on the facts found in this study, hypothetical testing was conducted to answer whether the proposed hypothesis was acceptable or rejected. The level of parameter estimation signification in hypothetical testing is set at 95% or $\alpha = 0.05$ as follows:

- (H1): Knowledge has a significant effect on certification
- (H2): Skill has no significant effect on certification
- (H3): Attitude has a significant effect on certification
- (H4): Construction Management has a significant impact on certification
- (H5): Knowledge has a significant effect on the Quality of Construction.
- (H6): Skill significantly affects construction quality.
- (H7): Attitude has a significant effect on the Quality of Construction
- (H8): Construction Management has a significant impact on the Quality of Construction..
- (H9): Certification has a significant effect on construction quality.

Hypothesis Testing and Indirect Influence Pathway Coefficient (Mediation)**H₁ : Knowledge has a significant effect on construction quality through certification**

The results of the examination to determine the nature/type of mediation of certification in explaining the influence on the model, presented in the Path Diagram in Figure 2. Following:

Figure 2. Certification Mediation Variable Testing Path Diagram in explaining the Influence of Knowledge on the Quality of Construction



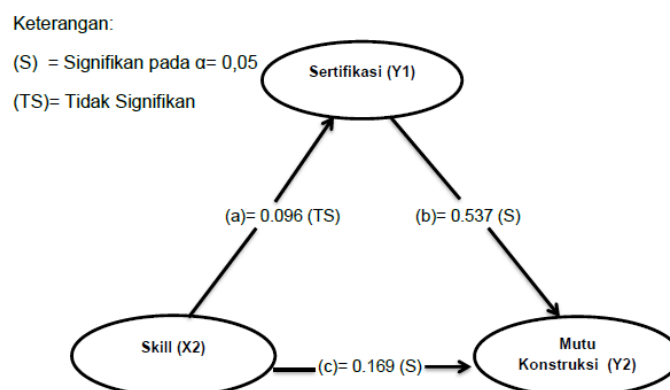
Source: Path Analysis 2020 Processed Results

Data processing results in Figure 2. indicates that the coefficient values of the path (a), (b) and (c) are significant, hence the Certification variable in explaining the influence of Knowledge on the Quality of Construction in the research model is said to be *Complete Mediation*. It means a positive and significant influence.

H₂: Skill is a significant effect on Construction Quality through Certification

Based on the results of the examination of the influence of skill variables by involving certification mediation variables in explaining the influence on Construction Quality through Certification shows that Skill is presented on the Drawing 3 path diagram. Following:

Figure 3. Certification Mediation Variable Testing Path Diagram in explaining the Effect of Skill on The Quality of Construction



Source: Path Analysis 2020 Processed Results

Data processing results in Figure 3. indicates that the coefficient value of the path (a) is insignificant whereas (b) and (c) significant, the Certification variable in explaining the effect of Skill on Construction Quality on the research model is said to be *partial mediation*.

H₃: Attitude has a significant effect on the Quality of Construction through Certification

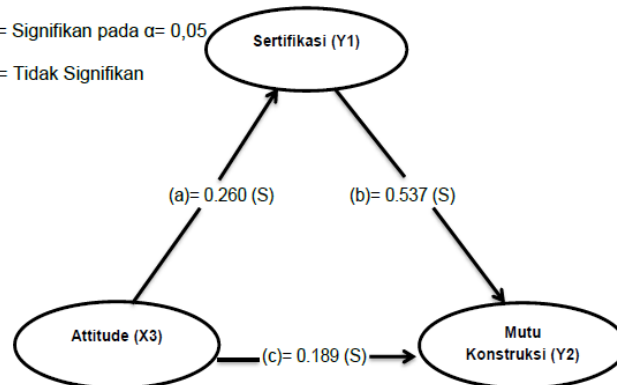
The results showed that the influence of attitude variables on this research model, presented on the Graph 4 path diagram. Following:

Figure 4. Certification Mediation Variable Testing Path Diagram in explaining the Effect of Attitude on The Quality of Construction

Keterangan:

(S) = Signifikan pada $\alpha = 0,05$

(TS) = Tidak Signifikan



Source: Path Analysis 2020 Processed Results

Figure 4, indicates that the coefficient values of the path (a), (b) and (c) are significant, hence the nature/type of certification variables in explaining attitude's influence on construction quality in this research model is expressed as *Complete Mediation*. It means a positive and significant influence.

H₄: Construction Management has a significant impact on the Quality of Construction through Certification

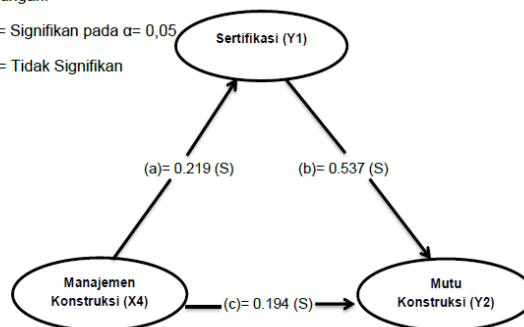
The results showed that the influence of Construction Management variables on this research model, presented on the Graph 5 path diagram. Following:

Figure 5. Certification Mediation Variable Testing Path Diagram in explaining the Influence of Construction Management on The Quality of Construction

Keterangan:

(S) = Signifikan pada $\alpha = 0,05$

(TS) = Tidak Signifikan



Source: Path Analysis 2020 Processed Results

Figure 5, indicates that the coefficient values of the path (a), (b), and (c) are significant, hence the nature/type of certification variables in explaining the influence of Construction Management on construction quality in this research model is expressed as *Complete Mediation*. It means a positive and significant influence.

V. Discussion

The influence of Knowledge on Certification on assessors and experts of the Public Works and Spatial Office of West Sulawesi Province

Based on the results of the study shows that there is a significant positive influence from Knowledge on certification. The results of this study concluded to accept the first hypothesis that Knowledge had a positive and significant effect on certification in the Public Works and Spatial Office of West Sulawesi Province. The results of this study have provided information that Knowledge contribute to certification, certification is the assessment process to gain recognition of the competence and ability of a person, to meet statutory requirements through competency testing. Knowledge is influenced by formal educational factors and is very closely related. It is hoped that with higher education, the wider the knowledge will be. But low-educated

people are not absolute low-knowledge anyway. Increased knowledge is not absolute obtained from formal education only, but can also be obtained from non-formal education. The knowledge of an object contains two aspects, namely the positive aspect and the negative aspect. This is in line with the opinion expressed by (Kuncoro,2012). Certification is one of the requirements that must be had by the workforce that will work in the world of construction services business professionally which will certainly be supported by knowledge. The results of this study are also in line with the results of previous research conducted by Widiasanti (2013) with the title "AnatomyOfconstruction service consultants In indonesia, Review About experts" .

Skill's influence on certification on assessors and experts of the Public Works and Spatial Office of West Sulawesi Province

Based on the results of the study shows that there is an insignificant positive influence of Skill on certification. The results of this study concluded to reject the second hypothesis that Skill affects certification in the Public Works and Spatial Office of West Sulawesi Province. The skill has an insignificant positive effect on certification can be interpreted that the higher the skill value then the lower the certification value of assessor personnel and experts of the Public Works and Spatial Office of West Sulawesi Province so that the influence is not significant. This result also applies otherwise that the lower the skill value then the higher the certification value and its significant influence, this indicates that the skill applied is still not able to affect certification so it takes efforts to apply better skills. This is in line with research conducted by Erasmus (2016), data analyzed showing that a good educational background on construction and attitudes to worker skills is critical to improving work productivity. The results of Orlando's research (2018) with the research title *Construction Workers' Skill Development: A Strategy For Improving Capacity And Productivity In South Africa*, Based on the results of the study, it is recommended that construction project organizations can include skill development factors identified in their organizations to build their skill capacity to increase construction productivity in South Africa. It is also recommended that, governments can use the factors identified in their national strategies and policies to empower construction workers with certification to increase productivity to create wealth in the national economy.

Attitude's Effect on Certification on Assessor personnel and experts of the Public Works and Spatial Office of West Sulawesi Province

Based on the results of the study shows that there is a significant positive influence from Attitude on certification. The results of this study concluded to accept the third hypothesis that Attitude affects the certification of the Public Works and Spatial Office of West Sulawesi Province. These findings explain that the largest contribution of attitude indicators that have been fulfilled is the indicator of attitude towards the type of work itself, meaning that the attitude of experts and assessors towards certification is very good means experts and assessors in this category provide an excellent response to certification activities, both certification process, certification time and certification benefits. This result is in line with the results of Koo's research, et al (2016) under the title *Analysing employee attitudes towards ISO certification*, This article describes how a company in Hong Kong implements employee attitude surveys as a monitoring tool on its way to obtaining ISO certificates. Successful drivers are the main determinants for strength for the company. Staff attitude surveys can be effective to be used as a tool to help organizations roll out changes to programs more successfully. human resources are by far the most important asset for most organizations. They are also the most predictable. Literature review of the benefits of ISO, providing useful references to designing specific organizations.

The effect of Construction Management on Certification on Assessor personnel and experts of the Public Works and Spatial Office of West Sulawesi Province

Based on the results of the research shows that there is a significant positive influence from Construction Management on certification. The results of this study concluded to accept the fourth hypothesis that Construction Management had an effect on certification in the Public Works and Spatial Office of West Sulawesi Province. The findings explain that the largest contribution of construction management indicators that have been fulfilled is the Planning indicator, project activities cannot be released from construction management (construction management) construction management is the whole of the planning where from the beginning of the project until completion and is intended to meet the needs of the client in order to produce functional and financially viable projects while the lowest indicators in the construction management indicator are Control covering the control of the project results to determine the project according to the established standards or not and identify the cause of the inappropriate results. The results of this study are in line with the research conducted by Asnuddin, et al (2018) with the title of research *Implementation of construction management at the controlling stage of the project.*, There is a difference between the realization of implementation in the field and the time schedule, seen in terms of time that is in the implementation of accelerated and deviation of work on a weekly basis. Planning a good work schedule can minimize job

deviation.

The influence of knowledge on the quality of construction in the Public Works and Spatial Office of West Sulawesi Province

Based on the results of the study shows that there is a significant positive influence of Knowledge on the Quality of Construction. The results of this study concluded to accept the fifth hypothesis that Knowledge affects the construction quality of the Public Works and Spatial Office of West Sulawesi Province. This is in line with research conducted by William Tam (2015), Serpella, et al (2014), Ashok kumar (2015), Saleh Alatawi (2016), Juarez, et al (2017) showing that knowlwdge is considered a valuable tool for the selection of methods of improving the quality of construction, by helping companies to produce company quality, reducing reliance on individual knowledge as well as the subjectivity of the decision-making process. The benefits described as provided by the system support project performance on better construction quality.

The Effect of Skill on Construction Quality in The Public Works and Spatial Office of West Sulawesi Province

Based on the results of the study shows that there is a significant positive influence of Skill on the Quality of Construction. The results of this study concluded to accept the sixth hypothesis that Skill had an effect on the quality of construction in the Public Works and Spatial Office of West Sulawesi Province. Based on previous theories it has been discussed that Labor experts and assessors are part of the resources that are supportive and necessary in construction. According to Acwar Zein (2011), the profession does not have certain formal qualification prerequisites so it is almost free entry. This seems to be a common condition in the construction world. The nature of construction projects can have a career in one particular company, and companies recruit and remove construction workers according to the volume of work. According to Eisenreich& Dobra (2015), skill is an important criterion that a construction worker needs have. so that the productivity of the job will be in line with expectations if the skill of the worker is good. The results of this study are in line with Mahasneh's research (2016) with the research title *A Theoretical Framework for Implementing Soft Skills in Construction Education Utilizing Design for Six Sigma*, the results show construction teaching activities will improve and expand the soft skills taught in the classroom to correlate with those needed in the market. As a result, this will help bridge the gap between construction graduates and their employers and ultimately facilitate the recruitment of construction graduates.

The Effect of Attitude on Construction Quality on The Public Works and Spatial Office of West Sulawesi Province

Based on the results of the study shows that there is a significant positive influence of Attitude on The Quality of Construction. The results of this study concluded to accept the seventh hypothesis that Attitude affects the quality of construction in the Public Works and Spatial Office of West Sulawesi Province. The attitude makes the company required to always produce quality products so as not to be abandoned by its customers. This then confronts the company on another issue which is how to maintain and improve the quality of the construction they produce. This is in line with the research of Padihardja (2016), Purimahua (2015), Sriwardingsih (2016), and K. Paerah (2016) showing that attitudes have a significant effect on the quality of construction.

Effect of Construction Management on Construction Quality in The Public Works and Spatial Office of West Sulawesi Province

Based on the results of the study shows that there is a significant positive influence of Construction Management on the Quality of Construction. The results of this study concluded to accept the eighth hypothesis that construction management has an effect on the quality of construction in the Public Works and Spatial Services of West Sulawesi Province. Construction management has a crucial function and role in ensuring the success of a project. But for some who do not directly related to the world of development and development, surely can only understand what exactly the definition of construction management is. Knowledge of construction management is considered necessary to be known by the public considering the values in the process of work a construction manager can be applied in other fields. Mane's research (2015) Quality Management System at Construction Projects shows that effective quality management, long time, quality and subjectivity associated with quality assessment as well as a large number of variables involved in its assessment.

Effect of Certification on Construction Quality in Public Works and Spatial Office of West Sulawesi Province

Based on the results of the study shows that there is a significant positive influence of Certification on

Construction Quality. The results of this study concluded to accept the ninth hypothesis that Certification affects the quality of construction of the Public Works and Spatial Office of West Sulawesi Province. The findings explain that the largest contribution is an indicator of field practice, certification of competency is an acknowledgment of the workforce that has the skills in accordance with the required work competency standards, thus the competency certification ensures that the workforce (certificate holder) is guaranteed its credibility in applying its knowledge in the field. while the lowest indicator on the material delivery indicator, to make the content of the training material more widely available, the three-phase certification process is designed to ensure high quality standards and usually takes between six and twelve months to complete. Once trainers are certified, they have access to a complete set of training materials that are regularly updated to include new developments in the field. These materials by trainers are tailored to their local environment. Adi (2014) conducted research on Construction Workforce Kerja Certification as a supporting element of infrastructure development, the research method is performance prism based on literature studies as well as in depth interviews with stakeholders. The results showed that based on stakeholder satisfaction, stakeholder contribution, and stakeholder strategy, process and capability, each stakeholder has a good strategy and capacity to improve the skills of construction workers.

The influence of Knowledge on the quality of construction through certification in the Public Works and Spatial Office of West Sulawesi Province.

The results showed that there is an insignificant influence between knowledge on the quality of construction if through certification variables, the results of this study concluded to reject the tenth hypothesis that Knowledge affects the quality of construction through certification of the Public Works and Spatial Office of West Sulawesi Province. With a knowledgeable, trained and certified construction workforce, I believe we can catch up with infrastructure especially we want to improve the quality of construction.

Skill influence on the quality of construction through certification in the Public Works and Spatial Office of West Sulawesi Province

The results of the study based on hypothetical tests show that Skill through certification has no significant positive effect on the quality of construction. This indicates that certification is not a good intervening in the relationship between Skill and the quality of construction. It is interesting to be observed as well as the findings in this study that the skill as intervening is able to influence or change skill's influence on the quality of construction from significant to mampumempengaruhiataumengubahpengaruhinsignificant. The positive nature of Skill's direct relationship to the quality of construction and intervening with certification that has the same properties that are positive to the quality of construction will logically strengthen each other. The logic changes after being associated with Skill's direct influence on the quality of construction of different properties i.e. negative so it can be understood that Skill causes certification (negative). Certification (negative) is what changes Skill's relationship to construction quality from significant to insignificant. Such certification if positioned as intervening is the main cause of the change in the significance of the relationship between Skill to the quality of construction. The intervening relationship can be disclosed by the editor, Skill, through certification of insignificant positive effects on the quality of construction. The results of this study are in line with Luong's research (2016) showing that the top important attributes and 5 potential constraints of project managers. There is no major difference in the assessment of project success or success criteria between certified and non-certified project managers across all projects. Both unseeded and certified project managers deliver their projects as their clients see fit. It comes as there is little demand for project managers to be certified in Australia, allowing them to work as supervisors with their original trained skills. Registered project managers are only required when or if the client wants them.

Attitude influence on the quality of construction through certification in the Public Works and Spatial Office of West Sulawesi Province

The results of the study based on hypothetical tests show that Attitude through certification has no significant positive effect on the quality of construction. This indicates that certification is not a good intervening in the relationship between Attitude and construction quality. It is interesting to be observed as well as the finding in this study that Attitude as intervening is able to influence or change attitude's influence on mampumempengaruhiataumengubahpengaruh the quality of construction from significant to insignificant. The positive nature of Attitude's direct relationship to the quality of construction and intervening with certification that has the same properties that are positive to the quality of construction will logically strengthen each other. The logic changed after it was attributed to Attitude's direct influence on the quality of construction of different properties i.e. negative so it can be understood that Attitude causes certification (negative). Certification (negative) is what changes Attitude's relationship to construction quality from significant to insignificant. terhadapmutukonstruksidari signifikan menjadi tidak signifikan. sertifikasi tersebut jika diposisikan sebagai

intervening menjadi penyebab The intervening relationship can be discussed with the editorial namely *Attitude through certification* or insignificant positive effect on the quality of construction. The results of this study are in line with Franshuid (2017) and Argyriou (2014) which is the influence of construction labor attitudes on the quality of building construction through, in this study concluded that the attitude of construction workforce has a significant effect on the quality of building construction through certification.

The effect of Construction Management on the quality of construction through certification in the Public Works and Spatial Office of West Sulawesi Province

The results of the study are based on hypothetical tests that show that Construction Management through certification has a positive and significant effect on the quality of construction. These results indicate that certification is capable of *good intervening* in the relationship between Construction Management and construction quality. The result can be interpreted that the higher the value of Construction Management through certification, the higher the quality value of construction as well as vice versa that the lower the value of Construction Management through certification then the lower the quality value of construction with significant effect. Looking at the results of this study, the Implementation of Construction Management through Certification is a defining variable in improving the value of good construction quality because of its significant influence. Management or leadership of an agency in formulating policies to achieve improved construction quality value of assessors and experts, the implementation of Construction Management through Certification is the right solution. The results of research showing that Construction Management through Certification had a significant positive effect on the quality of integrated construction with Prayogo's opinion (2015) "Development of Construction Management in Indonesia" concluded his discovery of the development of construction management in Indonesia one of the early milestones was the publication of Law No.18 of 1999 on Construction Services which was then followed by other implementation regulations.

VI. Conclusions And Suggestions

Based on the results of the study can be concluded that knowledge, attitude, and construction management have a positive and significant effect on certification in the Public Works and Spatial Office of West Sulawesi Province. Meanwhile, Skill has a positive and insignificant effect on certification in the Public Works and Spatial Office of West Sulawesi Province. Knowledge, attitude, skill and construction management have a positive and significant effect on the quality of construction in the Public Works and Spatial Office of West Sulawesi Province. Certification has a positive and significant effect on the quality of construction in the Public Works and Spatial Office of West Sulawesi Province. Knowledge, attitude, skills have a positive and insignificant effect on the quality of construction through certification in the Public Works and Spatial Office of West Sulawesi Province. Meanwhile, construction management has a positive and significant effect on the quality of construction through certification in the Public Works and Spatial Office of West Sulawesi Province.

Based on the results of the analysis and discussion, several suggestions can be submitted that can be considered both for the Public Works and Spatial Provinsi Office of the Province of West Sulawesi namely *improving knowledge, maintaining skills, maintaining attitude*, and maintaining the construction management of Assessor Personnel and experts, especially the Relevance of education.

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