

# The Influence of Intellectual Capital to Architect's Work Performance Through Training in Malang

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**Abstract-** This study has a purpose to describe the intellectual capital, leadership, and work performance owned by architects, to analyze the effect of intellectual capital on training, to analyze the effect of intellectual capital on architect work performance, to analyze the effect of training on architects' work performance, and to analyze the effect of intellectual capital on architect performance through training. The population in this study were architects in Malang Raya area who are members of the professional association of Architects; *Ikatan Arsitek Indonesia* (The Indonesian Architects Association) in Malang with a sample of 186 architects. The sampling technique was carried out by census. The analysis techniques use descriptive analysis technique and quantitative analysis technique. From the analysis results, it shows that training mediates the influence of intellectual capital on architect performance, which means that intellectual capital can improve architect work performance when the application of training is carried out properly.

**Index Terms-** Intellectual capital, architect's workperformance, training

## I. INTRODUCTION

The world economy globalization had led to an increase in business world development along with great demand of architect services in Indonesia. The progress development in the field of construction services has made the intensity of competition between companies and architect grows higher. By understanding fact of the existence of this competition, architects need to improve their work performance as one way to have strong competitive edge. In this study, the observation focus was on work performance of the architect because they originator of the planning/development idea. In Indonesia, architects have a unifying association platform format by the name of IAI: *Ikatan Arsitek Indonesia* (The Indonesian Architects Association) as regulated in Republic of Indonesia Constitution in article 6 year's 2017 about architects, where this law also mention architect' duties/ responsibilities together with their rights. This association appoints administrators in every province and certain cities/regencies in Indonesia, including in Malang region where its management is covering areas of Malang city, Malang regency and Batu city (*Malang Raya*).

Technological innovation and intense business competition at this time forced consulting firms and architects to change the way of doing business. In order to keep surviving, consulting firms and architects are rapidly changing their strategies from a business that initially prioritizes labor (labor-based business), because of its nature mixed with the implementation of development, into a knowledge-based business that prioritizes specificity only as a designer architect/planner, so that its main characteristic becomes a science.

In the present era where intangible assets have become a source of wealth and company progress, intellectual capital might be one of the "missing links" (Young et al., 2009). Intellectual capital is considered as hidden value for organizations. The purpose of three components of Intellectual Capital (human capital, organizational capital, customer capital) is to assess intangible assets and to re-assess the knowledge used to improve business excellence.

The concept of intellectual capital has received great attention from various circles, especially accountants. This phenomenon requires accountants to seek more detailed information on matters relating to the management of Intellectual Capital, starting from how to identify, measure, and disclose in the company's annual report.

However, research on Intellectual Capital still inconsistent, especially those in relation to company work performance. Firer and William (2003) state that physical capital is the most significant factor affecting company work performance, therefore in this aspect there is no positive influence between intellectual capital and company work performance. According to Armstrong (2011: 506) training can be interpreted as a modification of experiences or transfer skills and knowledge from other parties, employees, those who have skills, and knowledge to people who do not have skills and knowledge. The results of research by Marga (2016) and Widijanto (2017), Rusli (2018), and Halawi and Haydar (2018) prove that training has an effect on work performance.

The novelty of this study is to place training as an intervening variable that affects intellectual capital to architect work performance.

## II. LITERATURE REVIEW

### A. Work Performance

According to Pasolong (2008: 197), the concept of work performance can basically be seen from two aspects, the employee work performance (per individual) and the organizational work performance. Employee work performance is the result of individual work in an organization, while organizational work performance is the totality of the work achieved by an organization. Employee work performance and organizational work performance are very closely related. The success of achieving organizational goals cannot be separated from the resources owned by the organization that are driven or run by employees who play an active role as actors in achieving the organization goals (Pasolong, 2008: 57). Similar to theory above, Keban (2004: 192) stated that work performance of an organization can be seen from the level to which the organization can achieve its goals based on the vision and mission that has been previously set. While Mahsun (2006: 25) saying that work performance is a description about level of implementation of an activity or program or policy in realizing goals, objectives, mission and organizational vision contained in the strategic planning of an organization. Organizational performance or company performance is an indicator of the level of achievement that can be achieved and reflects the success of a manager or entrepreneur. Work performance in an organization is an inseparable element in carrying out organizational tasks, both government and private institutions.

### B. Intellectual Capital

Intellectual capital definitions according to some experts are as follow: Itami (1987) defines intellectual capital as an intangible asset which includes technology, customer information, brand name, reputation, and organizational culture which are very valuable for a company's competitive advantage. Edvinsson (1997) states that intellectual capital is applied experience, organizational technology, customer relations, and expertise that can create a firm's competitive advantage. The Organization for Economic Co-Operations and Development (OECD, 1999) describes intellectual capital as the economic value of two categories of a firm's intangible assets: Organizational (structural) capital and Human capital. Structural capital includes proprietary software and systems, distribution networks, and supply chains, while human capital includes human resources within the organization and outside the organization such as customers and suppliers

### C. Training

Simanjuntak (2011) defines training as part of human investment in order to improve job abilities and skills of human resources, thus improve employee work performance.

In addition to above theory, Ivancevich (2014) defines training as an effort to improve employee work performance in their current job or in other jobs that will soon be held. Furthermore, in connection with this definition, Ivancevich (2014) also puts forward a number of important points which are described below: training is a systematic process to change the work behavior of an individual/group of employees in an effort to improve organizational work performance.

Meanwhile, training according to Dessler (2015) defines as the process of teaching new or existing employees the basic skills they need for carrying out their jobs. Training is an effort to improve the quality of human resources in working world.

## III. RESEARCH METHODOLOGY

### A. The Definition of Operational Variables

- 1) Architect work performance is architect's work in the form of an architectural design document. The indicators are; concept design, pre-design, design development, drawing work, procurement of construction implementers and periodically supervision.
- 2) Intellectual Capital is a thinking ability and knowledge resources in the form of employees, customers, processes or technology that implemented in the process of creating value for architects. The indicators are; human capital, customer capital, and structural capital.
- 3) Training is a way to form, add, develop or improve the work skills of an architect. The indicator of this variable are; objectives, goals, trainers, materials, methods, and training participants.

### B. Population and Sample of The Study

The population in this study was architects of Malang region, who are members of the professional association of architects *Ikatan Arsitek Indonesia* in Malang region with total sample of 186 architects. The sampling technique was carried out by census.

### C. Data Analysis Technique

Two types of analysis techniques were applied in this study, the descriptive analysis technique and the quantitative analysis technique. Descriptive analysis technique used to determine the characteristics of the respondents as measured by certain indicators stated in the questionnaire while quantitative analysis technique carried out through structural equation modeling (SEM).

#### IV. RESULT

##### A. Result of The Study

###### 1) Normality test

Based on data processing results, the multivariate CR value is 2.081 which located between intervals of -2.58 to 2.58. Then it can be concluded that the assumption of multivariate normality has been fulfilled, therefore normality assumption required by SEM analysis is fulfilled.

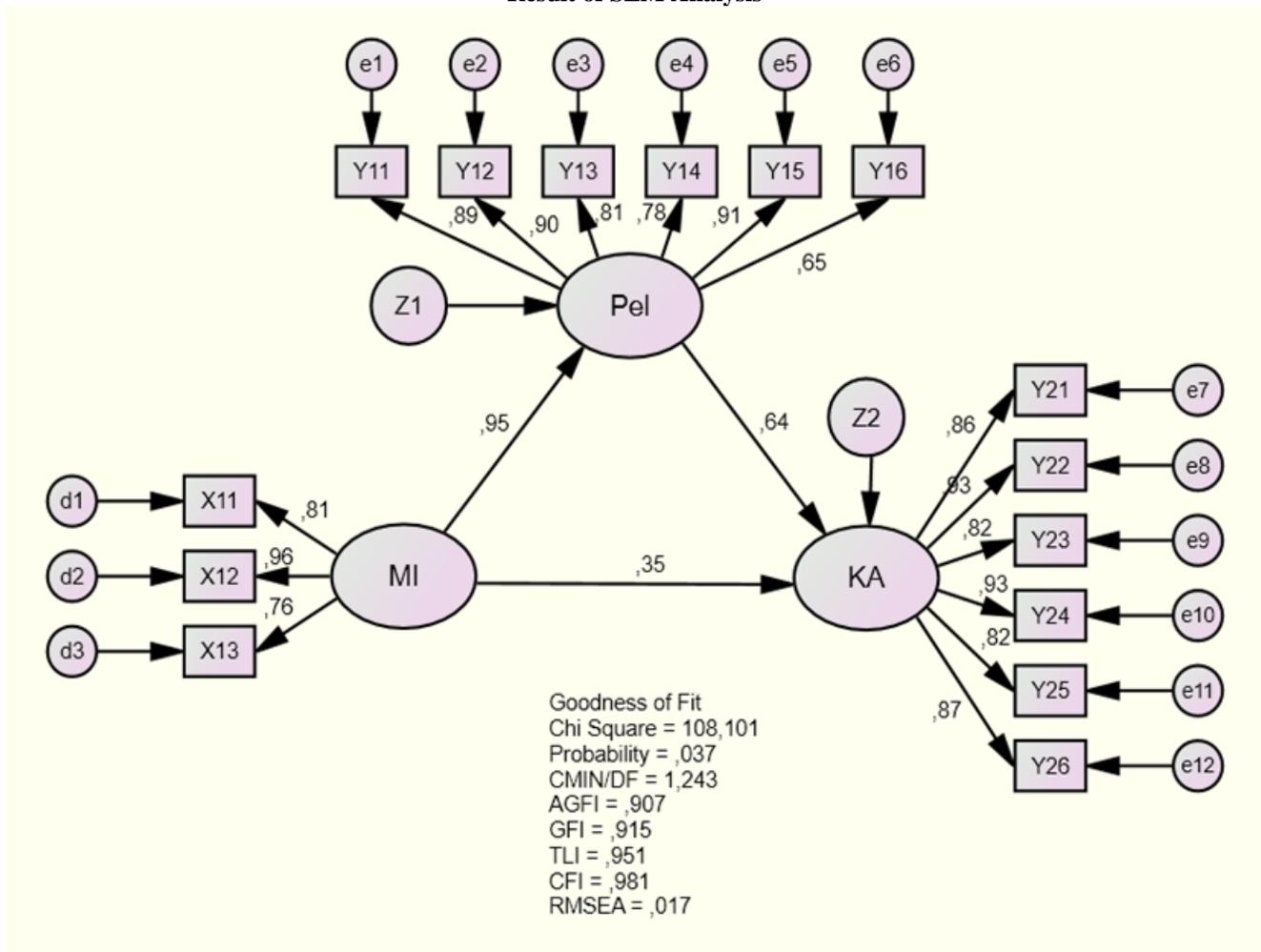
###### 2) Outlier test

The results of the outlier test by applying *Mahalanobis distance squared* showed that the observed variable had a value of Mahalanobis Distance Observed Variable that was detected smaller than the chi square table ( $df = 23, \alpha = 0.001$ ) namely 37.70. With this analysis result, it is known that the 15 indicators used in this study have a Mahalanobis distance squared value smaller than 37.70, so none of them contain outliers.

##### B. Result of SEM Analysis

In accordance with the literature review and study objectives, an overall structural model was developed as follows:

**Result of SEM Analysis**



**Source: Primary data tabulation, 2020**

According to AMOS 18 computation for this SEM model, the goodness of fit indices is presented in Table 1. Then, the index values are compared with the critical value (cut-off value) of each index. A good model is expected to have goodness of fit indices that are greater than or equal to the critical value.

**Table 1: Test result of *goodness of fit* for modified structural model**

<i>Goodness of Fit Index</i>	<i>Cut-off Value</i>	<b>Model Result</b>	<b>Description</b>
Chi-Square	109,77	108,101	Good
Probability Chi-Square	≥ 0,05	0,037	Good
CMIN/DF	≤ 2,00	1,243	Good
RMSEA	≤ 0,08	0,017	Good
GFI	≥ 0,90	0,915	Good
AGFI	≥ 0,90	0,907	Good
TLI	≥ 0,95	0,951	Good
CFI	≥ 0,95	0,981	Good

**Source: Primary data tabulation, 2020**

Based on the evaluation results of Goodness of Fit Indices criteria displayed in Table 1 showed that the evaluation of the overall model has met the criteria, thus the model can be accepted.

*C. Result of Hypothesis Test*

Hypothesis testing in this study was carried out by assessing the p value (probability), if the p value is higher or equal to 0.05, then it is said there is a significant influence to the matter.

**Table 2: The Hypothesis Test**

<b>Hip</b>	<b>Variables</b>			<b>Regression Coefficients</b>				<b>Result</b>
	<b>Exogen</b>	<b>Mediation</b>	<b>Endogen</b>	<b>Direct Influence</b>		<b>Indirect Influence</b>	<b>Total</b>	
				<b>Koef.</b>	<b>Prob.</b>			
H <sub>1</sub>	Intellectual capital	Training	-	0,95	1,292*	-	2,24	Accepted
H <sub>2</sub>	Intellectual capital	-	Architect work performance	0,35	0,009*	-	0,35	Accepted
H <sub>3</sub>	-	Training	Architect work performance	0,63	0,000*	-	0,63	Accepted
H <sub>4</sub>	Intellectual capital	Training	Architect work performance	0,35	0,000*	0,60	0,95	Accepted

\* significant at α 5%.

**Source: Primary data tabulation, 2020**

V. DISCUSSION

*A. The Description of Intellectual Capital, Training, and Work Performance of Architect's*

The Intellectual capital is formed by human capital, structural capital and customer capital. The biggest contribution to the formation of intellectual capital is human capital, which is described as working to the fullest (full capabilities). This is in accordance with the conception of Stewart (1997) which states that intellectual capital is intellectual material that has been formulated, captured, and leveraged to create wealth, by producing high value assets.

Trainings are composed from the objectives, goals, trainers, materials, methods, and training participants. The biggest contribution to the formation of training is the trainer which reflected from trainer's valuable capabilities. As Simanjuntak (2011) argues, that training is part of investment in human resources (human investment) to improve job abilities and skills, and thus improve employees' work performance.

Architect work performance is made from the concept of design, pre-design, design development, drawing work, procurement of construction implementer, and periodical supervision. The biggest contribution to the formation of architect's work performance is the design concept which is reflected in the respondent's sketching of ideas. This is consistent with the conception of Brumbach (1988)

which states that performance is a behavior and an outcome, a behavior that comes from the individual, from the abstract of the actions to produce work according to the assigned command.

#### *B. The Influence of Intellectual Capital to Training*

Intellectual capital has an effect on training, meaning as higher intellectual capital can increase training. An intellectual capital type that capable to provide the largest contribution for improving training is the customer capital. Customer capital is knowledge from a series of markets, customers, suppliers, good relationship between government and industry, or good relationship with external parties. Those indicators are the harmonious relationship which architect has with its partners. As Edvinsson (1997) explains that intellectual capital is applied experience, organizational technology, customer relations, and expertise that can create a firm's competitive advantage. Thus, intellectual capital plays a role in the success of the architects.

#### *C. The Influence of Intellectual Capital to Architect's Work Performance*

Intellectual capital has effects on work performance of architects; the higher the intellectual capital will make architects work performance more advanced. Intellectual capital is the ability needed to carry out various mental activities, think, reason and solve problems for architects. Intellectual capital is a resource that owned that later provides benefits in the long run. The intellectual capital dimension consists of knowledge related to human capital, knowledge related to customers, and knowledge related to work which will form an intellectual capital for the architect. The profound ability of architects in science and technology is one of the most important competitiveness factors. Human resources and science have created added value and competitive advantage for architects. This shows that good intellectual capital management can improve architect work performance. The results of this study support's Kamukama and Ntayi (2011), Sutanto and Siswantaya (2014), Helmiatin (2015).

#### *D. The Influence of Training to Architect's Work Performance*

Training has an effect on the work performance of an architect, which means that the application of good training can improve architect's work performance. Training indicator type that supports the biggest contribution in improving work performance is method. Training is a way that is often used to improve the abilities of architects which is followed by feedback that can improve their abilities, then, these abilities are arranged in the right place and proceed by supportive opportunities, so that the ability greatly affects the work performance of the architect. As Dessler (2015) argues, which states that training is the process of teaching new or existing employees the basic skills they need to carry out their jobs. Training is one from many efforts in improving human resources quality in the working world.

Trainings for architects is a crucial activity that must be applied. By joining training, an architect is expected to be able to work more effective and efficient, in particular when dealing with changes that occur such as technological change, change in working method, or demand to make changes in attitude, behaviour, skill or knowledge. Therefore it can be said that the purpose of training is to develop knowledge, attitudes, work skills and morale of architects, in their efforts to improve their working power or work performance with prime result to produce quality products. In addition, training is important because it is also able to close gaps between the architects' work ability to job demands, so that a mutually beneficial condition will be achieved between architects and customers. The results of this study are supporting researches conducted by Marga (2016), Widijanto (2017), Rusli (2018), and Halawi & Haydar (2018) which affirming that training has an effect on performance.

#### *E. The Influence of Intellectual Capital on Architect's Work Performance Through Training*

Training mediates the influence of intellectual capital to architects' work performance, which means that higher intellectual capital can improve architect work performance when supported by the application of training according to the architect's needs. Training for architects is an activity that aims to improve and develop attitudes, behavior, skills and knowledge, in accordance with the ideal criteria of the architect. These theories are in line with Simanjuntak (2011) which states that training is part of human investment to improve job abilities and skills, and thus improve architect work performance. Training is usually carried out in modules tailored to architects needs and given in a relatively short time to equip the architect's expertise and skills.

In general, intellectual capital owned by architects already sufficient to support the completion of work, moreover when these capitals are further supported by following training according to architects needs then it can improve the work performance of architects. Intellectual capital is related to human knowledge and their experience along with technology applications related to their field of work. Intellectual capital includes all the architect's knowledge and abilities to create added value and lead to sustainable competitive advantage.

Thus, the intellectual capital owned by architects basically is able to support the completion of an architect's work, which can improve the architect's work performance. Intellectual capital plays a role for the organization because it can detect the extent of progress and capabilities of its architects which can also be used as a consideration for developing the organization in the future time.

## VI. CONCLUSION

- 1) Architect's work performance constructed from the concept of design, pre-design, design development, procurement of working drawings, procurement of construction implementer and periodical supervision. The biggest contribution to the formation of an architect's work performance is the procurement of construction implementers, which is reflected in examining and improving work drawings. Intellectual capital is formed from human capital, customer capital and technology capital. The biggest contribution to the formation of intellectual capital is the human capital, reflected in the fact of study of respondents who work to their full potential.

While trainings are constructed from the objectives, goals, trainers, materials, methods, and training participants. The biggest contribution to the formation of training is the trainer where it is reflected in the trainer's ability. Intellectual capital influences leadership, this shows that intellectual capital is a resource owned by an architect, which later can provide benefits in the future as seen from their leadership. The results of this study are in line with Houari et al. (2014), Almanaseer and Matarneh (2015) which state that intellectual capital affects leadership.

- 2) Intellectual capital has an effect on training, which means that higher intellectual capital will able to increase the training. Next, by utilizing intellectual capital owned by architects, it can improve training quality.
- 3) Intellectual capital has an effect on the work performance of an architect, which means that the higher the intellectual capital, the higher the architect's work performance. Intellectual capital is a resource that is owned by an organization which will provide futher benefits in the future.
- 4) Training has an effect on the work performance of an architect, which means that the better the application of training will improve the work performance of an architect. The training that architects participating in plays a significant role in supporting the fluency of architect's activities.
- 5) Training is able to mediate the influence of intellectual capital on architect work performance, which means that higher intellectual capital can improve the architect work performance, when supported by related trainings that architects attend to increase their owned abilities and skills.

In this study researchers found novelty by evidence from training procurement that mediates intellectual capital and architect work performance, so the effect of intellectual capital will be more significant on architects' work performance.

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