KnE Social Sciences

ICEMSIT
International Conference on Engineering Management and Sustainable Innovative Technology
Volume 2024

Knowledge E
enriching | engaging | empowering

Research Article

Modern Architectural Design and Architect Performance in Terms of Intellectual Capital and Competence Through Leadership

Breeze Maringka*, Nusa Sebayang

National Institute of Technology (ITN) Malang, Malang, Indonesia

Abstract.

This study aimed to analyze the impact of intellectual capital and competence on leadership and analyze the impact of intellectual capital and competence and leadership on the performance of architects. The sample in this study was 200 architects. The data analysis technique used structural equation modeling (SEM) analysis. The results of the analysis showed that intellectual capital and competence had an impact on leadership. Intellectual capital and competence had an impact on the performance of an architect. Leadership had an impact on the performance of an architect. Intellectual capital and competence had an impact on the performance of the Architect through leadership.

Keywords: leadership, architect performance, competence, intellectual capital

Corresponding Author: Breeze Maringka; email: breezemaringka@lecturer.itn.ac.id

Published: 22 March 2024

Publishing services provided by Knowledge E

Selection and Peer-review under the responsibility of the ICEMSIT Conference Committee.

1. Introduction

The existence of an architect is increasingly visible from the proof of the world of Indonesian architecture. Evidenced by the number of buildings that are increasingly stylish and yet functional. Intellectual capital is very supportive of leadership, because if someone has good intellectual capital, then someone is a human resource who is trained, skilled, and able to keep up with the times so that he is expected to be able to lead an organization. Under the leadership of the organization, it is expected to produce products/services that meet future needs in accordance with needs and developments, the result is innovative and useful products. Thoha [1] states that the success or failure of an organization is largely determined by top management. Research result Houari et al. [2] demonstrates that there is a strong connection between leadership and intellectual capital. The effectiveness of leadership behavior is influenced by several factors, including the competence factor. Competent architects will certainly be able to carry out their functions, duties and responsibilities better than less competent

architects. The results of research by Malik et al [3] prove that competence has an effect on leadership. The results of research by Maringka and Sebayang [4], Helmiatin [5], Sutanto and Siswantaya [6], and Kamukama and Ntayi [7], demonstrate how architects' performance is influenced by their intellectual capital. Kasmir [8] suggests that one of the factors that influence performance is leadership. Leadership is a person's attitude and way of directing and instructing his subordinates. The results of research by Hasibuan [9] and Tirtayasa [10] prove that leadership affects performance.

Many factors affect the performance of architects, including competence [11]. Competence is the capacity to apply information and skills in a way that achieves a certain performance of the tasks for which they are responsible and meets the requirements of effectiveness and efficiency. One of the determining variables in improving performance is placing individuals in positions that are in accordance with their competencies. According to study findings by Elizar and Tanjung [12] and Syahputra and Tanjung [13], competence affects performance. This study is innovative because it considers leadership as a mediating factor that affects how well an architect performs in terms of the intellectual capacity and technical ability of the architect.

In this study, the performance of the Architect is examined because it is the Architect who is the originator of the planning/development idea. This research was conducted in East Java considering the rapid planning and construction of buildings in East Java. The planning and construction of these buildings of course has something to do with the performance of the architects, especially the architects in East Java. It is time to conduct research on Architect's performance due to rapid development and planning and as well as IAI activities in the form of workshops, competitions, exhibitions, and conferences.

The study findings have implications for human resource management in terms of intellectual capital, competence, leadership, and architectural performance and contribute to the thinking of architects that intellectual capital can improve the performance of architects through leadership.

In general, the purpose of this study is to explain leadership as a mediator of the influence of intellectual capital and competence on the performance of architects through intermediate variables, namely: leadership. Furthermore, the research objectives are formulated as follows: to analyze the impact of intellectual capital and competence on leadership, analyze the impact of intellectual capital and competence on the performance of the architect, analyze the impact of leadership and competence on the performance of the architect, analyze the impact of intellectual capital and competence on the performance of the architect through leadership.

2. Research Method

2.1. Research design

This research is classified as an explanatory type based on the nature of the problems encountered and the objectives to be achieved. Explanatory studies aim to explain a phenomenon or explain it, as well as investigate causal relationships between variables, evaluate, and find similarities or contrasts.

2.2. Research variable

2.2.1. Variable classification

The variables in this study were classified based on latent variables and were exogenous and endogenous. The variables in question can be detailed as follows:

1. Exogenous Variables, namely; Intellectual Capital, abbreviated as (MI), and Competence, abbreviated as (KPT)
2. Endogenous variables, namely; Architect Performance, abbreviated as (KA).
3. The mediation Variable is Leadership (KPP).

2.2.2. Variable operational definition

The operational definition of a variable reveals the method the researcher uses to measure it. measurement of independent and dependent variables using a score of 1 to 5, and measurement of exogenous and endogenous factors using a Likert scale.

1. Architect Performance

   Performance Architects is work in the form of Architectural design documents. Architect performance indicators consist of: design concept, design, design development, making working drawings, procurement of construction implementers, and periodic monitoring.

2. Intellectual Capital

   Intellectual capital is a knowledge resource that a business can use to generate value for the business, and may take the form of personnel, procedures, clients, or technology. Intellectual capital indicators consist of: human capital, customer capital, and structural capital.

3. Competence

   Competence is the ability of the Architect to perform the task. Competency indicators consist of: motive, nature, self-concept, knowledge and skills.

4. Leadership

   Leadership is the capacity to guide and coordinate subordinates (organizational members) in achieving organizational goals and readiness to lead in managing group operations. The indicators are: decision-making ability, ability to motivate, communication ability, ability to control subordinates, responsibility, and ability to control emotions.

2.3. Population and sample

1,971 architects in the East Java region who are members of the Indonesian Architects Association of Malang Region, or the professional association of architects, make up the population of this study. The sample in this study were architects in the Malang Region who were active according to the report of the Chairman of the Indonesian Architects Association for East Java Region. According to Hair et al. (2010:637) a good number of samples based on the Maximum Likelihood Estimation (MLE) ranges from 100-200 samples. Therefore, the number of samples in this study was 200 samples.

2.4. Data analysis technique

Structural Equation Modeling (SEM) analysis is the analytical method used. SEM can be used to describe and assess how exogenous variables affect endogenous variables.

3. Result and Discussion

3.1. Descriptive analysis results

The data analyzed in this study is the result of a questionnaire instrument distributed to 200 respondents. The results of the descriptive analysis of each variable are presented in the following table 1.

Based on Table 1, the results of the description of respondents' perceptions were analyzed from the average values generated by several indicators based on the Likert scale. The indicator that best describes the performance of the architect is the pre-design and procurement of construction implementers. The indicator most appreciated

Table 1: Descriptive analysis results.

Variable and Indicators	Items	Score mean
Architect Performance (Y2)		4.42
Design concept (Y2.1)	3	4.44
Design (Y2.2)	**3**	**4.47**
Design development (Y2.3)	3	4.42
Procurement Making Working Drawings (Y2.4)	4	4.43
Procurement of Construction Executors (Y2.5)	**4**	**4.47**
Periodic Monitoring (Y2.6)	4	4.31
Intellectual Capital (X1)		4.45
Human Capital (X1.1)	**7**	**4.56**
Customer Capital (X1.2)	8	4.46
Technology Capital (X1.3)	5	4.27
Competence (X2)		4.40
Motif (X2.1)	2	4.43
Nature (X2.2)	**2**	**4.45**
Self concept (X2.3)	2	4.36
Knowledge (X2.4)	2	4.41
Skills (X2.5)	2	4.36
Leadership (Y1)		4.41
Decision Making Ability (Y1.1)	2	4.39
Motivating Ability (Y1.2)	2	4.36
Communication Ability (Y1.3)	**2**	**4.56**
Ability to Control Subordinates (Y1.4)	2	4.44
Responsibility (Y1.5)	2	4.47
Emotional Control Ability (Y1.6)	2	4.25

by respondents in describing intellectual capital is human capital. The most appreciated indicator in describing competence is nature. The most appreciated indicator in describing leadership is communication skills.

3.2. SEM analysis results

In this study, structural equation modeling (SEM) was employed to carry out an inferential analysis. The estimation is done in phases when utilizing the structural equation modeling technique, and the first step is to use the confirmatory factor analysis technique. The findings are shown in Figure 1.

The goodness of fit indicator for this SEM model is generated using AMOS 18 computation. The model can be accepted based on the results of the examination

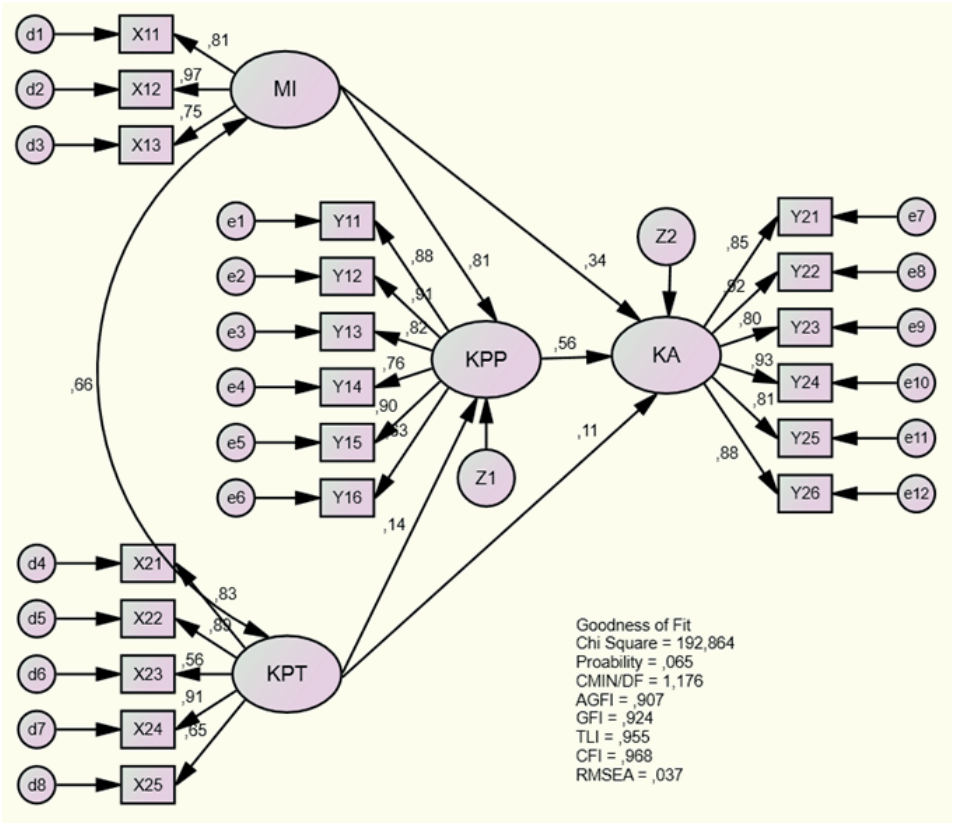

Figure 1: SEM Analysis results.

of the Goodness of Fit Index criteria which show that the overall model evaluation has been met.

TABLE 2: Hypothesis Test Results.

Variable exogenous	Meditation	Variable endogenous	Direct Influence	P Value	Indirect Influence	Total Infllluence	Results
Intellectual Capital	Leadership	-	0.885	0.000*	-	0.885	H1 Accepted
Competence	Leadership	-	0.160	.010*	-	0.160	
Intellectual Capital	-	Architect Performance	0.343	0.000*	-	0.343	H2 Accepted
Competence	-	Architect Performance	0.107	0.011*	-	0.107	
-	Leadership	Architect Performance	0.496	0.000*	-	0.496	H3 Accepted
Intellectual Capital	Leadership	Architect Performance	0.343	-	0.453	0.796	H4 Accepted
Competence	Leadership	Architect Performance	0.107	-	0.081	0.188	

3.3. Discussion

3.3.1. The influence of intellectual capital and competence on leadership

Leadership is influenced by intellectual capital, so the more intellectual capital an architect has, the better leadership they will show. Customer capital has the potential to contribute most intellectually to enhancing leadership. Customer capital is an understanding of various markets, clients, suppliers, profitable government-industry connections, or profitable relationships with third parties. The part of intellectual capital that adds genuine value is customer capital. This indicator represents a positive working relationship between the company and its partners, including reliable and high-quality suppliers, loyal clients who are happy with the company's services, and positive interactions between the company and local government and communities. Businesses must be able to produce goods and services that stand out from the competition and are more valuable in the eyes of customers. The capacity to identify and position your business in the market you want to target is another aspect of customer capital. This can be achieved by leveraging staff expertise combined with structural capital to generate positive relationships with third parties. This is possible if Leaders can inspire Architects to always develop to meet modern demands and client needs. According to Maringka dan Sebayang [4], a company's competitive advantage can be created through the use of experience, organizational technology, customer interaction, and expertise. An architect's success is influenced by intellectual capital.

Leadership is influenced by competence, so the higher the competence of an architect, the better his leadership will be. Understanding, which is represented in having knowledge of service technicalities, is an indicator of competence that most contribute to developing leadership. In businesses that provide services, such as architects, providing good customer service is critical to their success. The key to capturing the possibilities and understanding the customers who will use the services provided is to provide excellent customer service. The architect's knowledge related to the services offered makes the Architect more comfortable and confident in carrying out daily activities. The existence of an architect is recognized as capable of handling all design problems, starting from the preparation of the design concept to periodic supervision until finally, it becomes an architectural product. Competence, in principle, can shape the personality and increase the knowledge of the architect to do things more precisely and quickly. Thus, it can be said that the higher the level of competence possessed by the architect, the better the leadership applied in the organization because the Architects already have competencies that are in accordance with their respective fields. Marwansyah [14] defines competence as a group of knowledge, attitudes, abilities, and

other human qualities required for success in the workplace that may be evaluated using universal standards and promoted through development and leadership. Therefore, competence plays an important role in business because, Once the organization is aware of its competencies, it can support employee development through leadership, making it easier for the organization to identify the appropriate type of work. The findings of this study corroborate the statement of Malik et al3 that competence affects leadership.

3.3.2. The influence of intellectual capital and competence architect performance

Intellectual capital influences the performance of an architect, hence an increase in intellectual capital can enhance that performance. Intellectual capital refers to an architect's ability to solve problems, think critically, dan reason. A resource that will be useful in the future is the company's intellectual capital. Client-related knowledge, human capital, and company-specific knowledge form the components of intellectual capital, i.e. how the company will develop its intellectual capital. Intellectual capital is very important for a business because it can reveal how far an architect's abilities and growth have come. This information can then be used to help the business grow in the future. One of the most important competitive characteristics in the field of science and technology is organizational capacity. Science and human resources have provided a competitive advantage and added value to the company. This shows how effective intellectual capital management can improve the performance of architects. The findings of this study are in line with Maringka and Sebayang [15], Rusli [16], Helmiatin [5], Sutanto and Siswantaya [6], and Kamukama and Ntayi [7] which states that intellectual capital affects the performance of an architect.

Competence has an impact on the performance of an architect, so the more competent an architect is, the better his performance will be. On the other hand, performance decreases along with the decreasing competence of architects. This shows that an architect will be competent if he is always looking for information to complete his task and has support from the company in the form of facilities that can help science to complete the task at hand. As the view expressed by Spencer and Spencer [17], competence is a quality that is inherent in a person and is related to the efficacy of a person's performance in the field of work. The fundamental quality of a person is competence, specifically the rationale behind effective performance standards. This conclusion suggests that skilled architects are able to study and advance the work they

do, resulting in a positive increase in the architect's performance level. Competence is very important to support work routines. Competence is needed for an architect to feel fulfilled in his profession because it mostly consists of goals, qualities of character, self-perception, knowledge, and abilities. In order for performance to be maintained in terms of quality and quantity, it is very important to pay attention and develop it. In order to influence the architect's excellence, a new product is created which presents problems for the architect. The difficulty of the work will motivate the architect to put in sufficient effort to produce the best results. Technical skills are a reflection of competency indicators that can improve performance. Competence is the capacity to do work or complete tasks based on one's level of knowledge and expertise and is supported by a relaxed work ethic for the given task. Since competence generally refers to a person's basic capacity for work, competence highlights the knowledge and abilities of a professional in a particular field as being the most significant. The research findings corroborate the claims made by Elizar and Tanjung [12] and Syahputra and Tanjung [13] that competence affects performance significantly.

3.3.3. The effect of leadership on architect performance

The architect's performance is influenced by leadership, thus the better the leadership applied, the better the architect's performance. Leadership is the ability to persuade someone to take a certain action or refrain from taking a certain action. Subordinates led from without prompting or pushed from behind. Through leadership activities that give subordinates opportunities to grow in their abilities to foresee opportunity at work and every issue, leaders must be able to integrate the needs of their subordinates with the needs of the organization and the needs of the community as a whole, so that the leader's ability to mobilize and empower architects will affect the architect's performance. According to Hanafi [18], Leadership is the capacity to direct and coordinate the efforts of subordinates (organizational members) towards the achievement of organizational goals and readiness to assume primary responsibility for the activities of the group they lead. Leadership is a personal behavior that influences how followers or subordinates behave in any activity, including their ability to influence, inspire, and make decisions. Tasks that need to be performed by subordinates will be done voluntarily. and make decisions. Tasks that need to be performed by subordinates will be done voluntarily. and make decisions. Tasks that need to be performed by subordinates will be done voluntarily.

An authoritative leader will inspire respect among followers and colleagues, motivating them to act in the leader's best interests. Similarly, authority combined with a leader setting a positive example will foster harmony. The role of the leader has a significant impact on the efforts and performance of institutions in measuring and guiding the use of architects. To achieve organizational goals effectively and efficiently, a leader must be able to persuade subordinates to carry out their duties. The findings of this study are in line with Hasibuan [9] and Tirtayasa [10] which state that performance is influenced by leadership.

3.3.4. The influence of intellectual capital and competence on architect performance through leadership

Leadership mediates the impact of intellectual capital on the architect's performance, therefore if the organization's leadership is well executed, having more intellectual capital can boost the architect's performance. The correct leadership is required to create a supportive work environment and enhance Arisek's performance so that it is anticipated to yield the best performance. One of the most important players in a company's success is the architect. Leadership is the method a leader directs, encourages, and controls all organizational components to reach a desired organizational goal and to enable the best performance from architects. Increasing the performance of the architect means the achievement of the work of the architect in realizing organizational goals. Therefore, the leader always has a good relationship with whoever he leads. According to Kartono [19], a leader can be recognized from his leadership through his habits, temperament, character, and personality when interacting with others. Intellectual capital is influenced by technological advances, human knowledge, and experience. Intellectual capital potential to improve organization and society. All knowledge of architects, organizational skills, and the capacity to offer value and build a long-term competitive advantage is included in its intellectual capital. The intellectual capital ability that an architect has to help complete his work will help them perform better overall. Because it can determine the extent of the architect's abilities and progress, intellectual capital is important for organizations because it can be taken into account as the company develops in the future.

Competence affects performance through leadership, so if leadership is carried out well in terms of decision-making abilities, motivating abilities, communication skills, the ability to control subordinates, responsibility, and the ability to control emotions, the higher the level of architect competence. improve architect performance. The capacity to

comprehend and comprehend how to accomplish the task properly and correctly, as well as the product quality requirements set by the organization, are characteristics of highly competent architects. In addition, they possess skills and abilities that are similar to those of architects in the industry. The results of this study support Elizar and Tanjung12 and Syahputra and Tanjung13 which state that competence affects performance.

4. Conclusions and Recommendation

4.1. Conclusion

Based on the discussion, the conclusions from this research are:

1. Leadership is influenced by intellectual capital and competency, therefore the higher the architect's intellectual capital and competence, the better the leader they will be. It can improve leadership by utilizing the skills and knowledge that the Architect possesses.

2. Intellectual capital and competence affect the performance of the architect, which means that the higher the intellectual capital and the higher the competence of the architect can improve performance of the architect. Competent intellectual and artistic capital are resources owned by an organization that will provide benefits in the future.

3. Leadership has an impact on the architect's performance, thus the better the application of leadership, the better the performance architects will get. Architect's performance can be enhanced by leadership that has the capacity for decision-making, inspiration, communication, subordinate control, responsibility, and emotional self-discipline.

4. Intellectual capital and competence have an impact on the performance of the Architect through leadership, which means that the higher the intellectual capital and the higher the competence possessed by the architect can improve the performance of the Architect if the leadership is implemented properly in the organization.

4.2. Suggestions

Considering the research findings and conclusions, that intellectual capital and competence can improve the performance of architects through leadership, the suggestions put forward in this study are as follows:

4.2.1. Theoretically

Enriching the concept of human resource management in improving performance through leadership.

4.2.2. Practically

1. It is better to maintain the performance of periodic supervision and the Architects must be able to prepare building budget forecasts.
2. Architects should master ICT so that the work becomes lighter, always innovates, and more cost-effective

Architects' performance can be improved through leadership, so it is hoped that leaders will be able to achieve the best performance.

References

[1] Thoha M. Ilmu administrasi publik kontemporer. Kencana; 2017.

[2] Houari M, Toua H, Miloud Z. The Role of Intellectual Capital in the Managerial Leadership Processes. Journal of Business and Management Studies. 2012;4(1):1–3.

[3] Malik J, Trisnamansyah S, Mulyanto A. Pengaruh Kompetensi, Motivasi, Sarana Prasarana, Dan Iklim Sekolah Terhadap Kepemimpinan Kepala Sekolah Di Sekolah Dasar Negeri. Munaddhomah: Jurnal Manajemen Pendidikan Islam. 2021 Oct;2(2):81–94.

[4] Maringka B, Sebayang N. The Influence of Intellectual Capital and Competency to Architects'. Workperformance Through Training in Malang City. 2022;4(9):41–8.

[5] Maringka B, Mulyadi L. Kompetensi Sebagai Pemediasi Pengaruh Modal Intelektual. 2022.

[6] Helmiatin. Optimalisasi Peran Modal Intelektual Terhadap Kinerja Karyawan. 2015;14(April):51–68.

[7] Sutanto N, Siswantaya IG. Pengaruh Intellectual Capital Terhadap Kinerja Perusahaan Pada Perusahaan Perbankan Yang Terdaftar Di Bursa Efek Indonesia. Modus. 2014;26(1):39–60.

[8] Kamukama N, Ahiauzu A, Ntayi JM. Competitive advantage : mediator of intellectual capital and performance. 2005.

[9] Kasmir K. Manajemen Sumber Daya Manusia (Teori dan Praktik). Jakarta Rajawali Pers; 2016. p. 72.

[10] Hasibuan SM, Bahri S. Pengaruh Kepemimpinan, Lingkungan Kerja dan Motivasi Kerja Terhadap Kinerja. 2018;1(1):71–80.

[11] Ainanur A, Tirtayasa S. Pengaruh Budaya Organisasi, Kompetensi dan Motivasi Terhadap Kinerja Karyawan. Maneggio J Ilm Magister Manaj. 2018;1(1):1–14.

[12] Mathis RL, Jackson JH. Manajemen sumber daya manusia. Thomson Learning; 2001.

[13] Elizar HT. Pengaruh Pelatihan, Kompetensi, Lingkungan Kerja terhadap Kinerja Pegawai Penanggulangan Bencana Daerah Kabupaten Deli Serdang menyadari bahwa manajemen sumber daya manusia merupakan faktor yang sangat penting dalam kegiatan petugas Berkaitan dengan pel. 2018;1(1):46–58.

[14] Muhammad Dedi Syahputra* HTP. Pengaruh Integritas Dan Pengembangan Karir Terhadap Kinerja Karyawan. Manag J Ilmu Manaj. 2020;2(3):329.

[15] Marwansyah M. Manajemen sumber daya manusia. Ed II, Politek Negeri Bandung; 2016.

[16] Rusli G. Pengaruh Pelatihan Dan Modal Intelektual Terhadap Kinerja Keuangan Perusahaan Perbankan Yang Terdaftar Di Bursa Efek Indonesia Tahun 2012 - 2015. J Muara Ilmu Ekon dan Bisnis. 2018;2(1):245.

[17] Spencer LM, Spencer PS. Competence at Work models for superior performance. John Wiley & Sons; 2008. 384 pp.

[18] Hanafi. Konsep Dasar dan Perkembangan Teori Manajemen. 2011;1–66.

[19] Kartono K. Pemimpin dan Kepemimpinan: Apakah pemimpin abnormal itu. 2014.