

Factors Affecting Awareness and Attitude of IT Governance Implementation in The Higher Education Institution: A Literature Review

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Abstract—This study aimed to obtain literature about the factors that influence the awareness and attitude in the implementation of IT governance, especially in higher education institutions. A literature review is done in several steps by referring to the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-analyses) guidelines. A total of 47 articles obtained from several credible databases such as IEEE Explore, Science Direct and Scopus, which is then validated and checked in order to obtain 22 articles which can be used as the main study. The final result showed several factors that influence the successful implementation of IT Governance: benefits, risk reduction, opportunities, and inhibitors. These are important factors that can impact an organization's performance, and should receive certain attention so that the implementation of IT governance in higher education institutions can work effectively and efficiently in accordance with the objectives of the organization.

Keywords—factor affecting; awareness and attitude; it governance; higher education; literature review

I. INTRODUCTION

IT has become an important part to support organization's growth and sustainability, including the organization in education industries [1, 2-4]. All factors and dimensions related should align well to keep the value of IT use in education organizations [5-7], so that it can bring added value and profit differences Investment accordance with what is expected [8, 9].

As we know, IT governance is the capacity of the organization that should be managed by the board of directors and executive management, to control a series of activities and creates business strategies to be aligned with organization's objectives [1, 3, 10]. IT Governance is part of Corporate Governance that consists of leadership, organization structure, and processes that guarantee the organization to support and expand its strategies [8, 11].

As part of governance structure within the organization, IT Governance become an important factor in the process of spreading knowledge through any stakeholders in higher education institutions so that learning processes become more interactive, dynamic, and transparent [1, 3, 10]. Operational

activities of IT governance bring some benefit such as the transparent scoring in the performance-based evaluation for higher education institutions and ensuring data security toward personal information related to intellectual property rights [3], [7]. IT Governance become an important part of the success of the organization, related to the opportunity, risk, value, and comprehensive system that is included in the organization's daily activities. Thus, every organization needs to minimize the risk and optimize the added value [5, 10].

Higher Education Institution (HEI) is a special form of non-profit organization. It has academic part and non-academic (administration) part. Non-academic part thus supporting academic part so that it could operate well as an organization that runs education as the main business. Therefore, HEI has a special IT infrastructure also. Its IT Infrastructure has special applications which are different with other organizations, such as academic system and technology related [1, 9]. IT is used as a supporting technology for the continuity of the administration process, so that the "Tri Dharma" higher education (Teaching, Researching and Community Services activities) can be performed well [3].

IT governance implementation using a certain mechanism (structure, process, and relational mechanism) as a tool for decision making [1, 4, 6]. Although the role of IT governance is very important, yet many organizations still not aware of the benefits that are acquired [6, 9]. Many of those still using traditional way to implement IT Governance [10, 12]. The importance of IT Governance implementation within an organization affects its ability to meet the objective in minimizing the risk and maximizing added value, by focusing on the performance and utilization of IT to meet the long-term demands of the organization [5, 10].

Awareness and attitude toward the implementation of IT Governance are very important to be known as effective and positive control tools in information system [2, 10]. It can create two-ways communication within users and management, about how far IT Governance being well responded. Therefore, it could be known how far IT Governance support the success of the organization's business [3, 5].

According to Indonesia Dictionary, awareness is having a concern about something used, while attitude is the readiness

towards consistent response both positively or negatively due to certain objects or situations faced. Since people are the user of the system, awareness within people's mind become a very important factor that could influence, or even disturb, a certain system that is running around them [2, 8, 12]. Also, it should be noted that in knowledge management, the human is the main domain, so that it should be given special concern specifically in term of IT Governance [12]. The lack of awareness will bring high risk to the organization, especially when it comes to the security and asset protection problems [6, 9, 12]. That's why, it is very important to aware people within the organization to participate in implementing IT Governance [2, 12].

Considering the importance of it governance awareness, this research aims to obtain literature about factors that influence awareness and attitude in the implementation of IT governance, especially in HEI. The results of this study are expected to contribute significantly, especially as a reference for top level management and stakeholders as the basis for

improvement of IT Governance in an effort to improve organizational performance better future.

II. METHODOLOGY

The process of searching and selecting articles is done under the guidelines of Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) by considering several requirements. Since the study of awareness and attitudes towards implementation of IT Governance seem rare, articles included must have specific relevance with at least awareness or attitude, if not both. Only studies that are published from 2012 to 2016 were eligible for inclusion. Some credible databases such as Science Direct, IEEE Explore, JSTOR, ProQuest, and Scopus are used. During the three-months searching process, the keywords used are "IT Governance", "awareness", "attitude" and the combination of them. By detail, it is shown in Table 1.

TABLE I. SEARCHING PROCESS

Topics	Keywords	References
IT Governance	IT Governance, ITG, e-governance	[2-18, 20-22]
Awareness	Awareness, awareness, and attitude	[2, 4, 6, 9-18, 21]
Attitude	Attitude, awareness and attitude	[9-14, 17, 18, 21]
Awareness and attitude toward IT Governance Implementation on Higher Education Institution	IT Governance Implementation on Higher Education Institution, IT implementation in government, e-governance implementation, IT governance in education, IT education, education IT governance, awareness toward IT implementation in higher education institutions, awareness toward IT implementation, awareness toward IT governance implementation.	[3-7, 9, 11, 19-22]

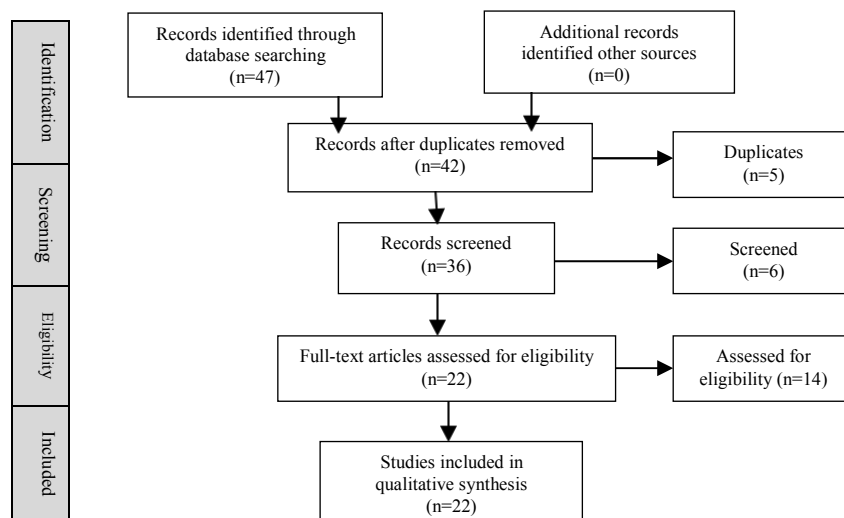


Fig. 1. Flow Diagram of the Seaching Process.

The stages in the searching process, as shown in Fig. 1, starting from the identification process, seeking and finding as many as articles. As the result, 47 articles were obtained. The articles then are checked for a duplicate. 5 pieces of articles are identified so that it leaves only 42 articles to be reviewed.

In the next process, the last 42 articles are screened deeply, by checking its titles and abstracts relevance to the topic. It has total found of 36 articles that match best with the topics. After getting this, the next process is looking at the feasibility of each article by examining and assessing the completeness of

the content. As the final result of this process, it is only 22 articles that is feasible to be reviewed and used as the primary literature.

III. RESULT AND DISCUSSION

Awareness and attitude often used as one terminology to tell how a person has a good attention to receive something. In this study, awareness is assumed as the degree of caring and receiving the implementation of IT Governance in higher education institutions. Attitude is the confidence of an individual in responding the implementation of IT governance in higher education institutions. IT itself is a set of systems associated with computers and telecommunications. IT is usually used to store, send, access and retrieve data and information. The result of this study found that the factors that may affect awareness and attitude towards the implementation of IT Governance in higher education institutions as follows:

A. Benefits

IT governance is vital in supporting and achieving the company's goals [1]. The use of IT will make the working processes easier and faster [2, 12]. Moreover, it also provides better quality, on time and within budget solutions [1, 5, 6, 11], and provide necessary information to support business requirements, process efficiency and operating costs [5-7, 10].

B. Risk Reductions

Good IT Governance will provide added value and reduce the risk of loss from certain large investment [5, 8, 10].

The risk reduction after the implementation of IT governance, such as business losses, could be forced as minimal as possible since it could be controlled and monitored, while the risk of delays could be avoided as well [7, 8].

C. Opportunitie

Some opportunities and occasions are coming up after the implementation of IT Governance since it brings competitive advantage and offers equipment to increase productivity and provide added value in the future [5, 7, 9, 10]. If the use of IT could be optimized well, the advantages gotten shall be enormous [8].

D. Obstacles

There is some potential cost (obstacles) that might be faced during the use of IT Governance. Lack understanding how to use the system, or even network error (down time) might result in a quite large loss [6, 8, 13]. Primarily, it is caused by lack of technical knowledge by the team to handle IT project procurement [7]. Besides that, conflict of interest also becoming potential cost during IT implementation. For example, for some cases, departments often debating on who own the crucial data. This conflict will result in bad coordination process during the project. Moreover, it is often found training that is given to the employee didn't match with the competencies needed by IT department [7]. Another potential obstacle is that there are many users who still have little knowledge on IT, also communication problems caused by different view toward the relationship between business and IT [2, 4, 6], all of this can detain the implementation of IT governance.

TABLE II. LITERATURE REVIEW RESULT

Factors	Instruments	References
Benefits	Ease job	[3, 5-7, 9, 12, 14, 18, 21]
	Faster processes, save time	[4, 6, 9, 12-14, 18, 21]
	Improve information quality	[3, 7, 10, 11, 13, 15, 21]
	Save cost.	[4, 6, 7, 11, 12, 14, 15, 17, 18, 16, 21]
Risks Reduction	Force business loses	[5-7, 9, 11, 13, 15, 17, 21]
	Avoiding late time	[2, 4, 5, 21]
Opportunities	Chance on competitive advantages	[2-4, 6, 17, 18, 16, 21]
	New opportunities	[4, 6, 9, 12, 21]
	Chance to improve productivity	[2, 3, 6, 10, 21]
	Chance to give added value and benefit	[3-6, 15, 17, 21]
Obstacles	Quite large potential loss on network	[10, 12-14, 16, 21]
	A different point of view through IT and business goals.	[5, 6, 9, 15, 21]
	Data saving dependencies.	[4, 11, 13, 15, 21]
	Lack of technical knowledge and skills.	[3, 4, 6, 7, 13, 16, 21]

IT governance is the responsibility of the board of directors, also it is an integral part of the company that consists of the leadership, organizational structures and processes ensuring that organizations can support and expand the organization strategy target [1, 3].

According to the Information Technology Governance Institute (ITGI), the focus of IT governance consists of five areas, there are strategic alignment, value delivery, resource management, risk management and performance measurement [9].

In today's highly competitive business environment, effectiveness and innovation in the use of IT has a huge potential to change the business and can affect the organization's performance positively [1, 3, 5, 7, 9, 10]. It is time for every organization consciously aware of the positive impact of the implementation of IT governance so that organizational goals can be achieved [8, 9].

IT Governance is often considered not giving many contributions to the growth of an organization. IT Governance requires no small cost. Good IT Governance is well-planned

governance in terms of long-term investment and requires the support of all parties [4].

Every new innovation always brings changes in practice. IT Governance can cause significant changes in the work procedures, and may involve the re-engineering of processes across departments and might also bring in many job layoff [2, 6, 8, 13]. That's why it might result in the resistance by the employee to adopt IT Governance. It will result in the lack of internal awareness of the importance of IT governance [5, 6]. Surveys and studies have shown that resistance to change is a significant barrier to the adoption of IT governance [5]. Lack of awareness of the importance of IT Governance implementation influenced by the paradigm that it would only add an extra burden in accomplishing their daily tasks [5, 6]. Awareness of the organization's external institutions is also a significant factor. There are many examples of organizations, such as Small and Medium Enterprises (SMEs), are often unaware of the existence of laws and regulations related to IT Governance that really affects them. IT Governance [9], as long as it did effectively, would simultaneously support business goals, maximize business investment in technology and manage the opportunities and risks related with IT [4, 8-10].

Successful implementation of IT governance can be determined by the awareness and attitude by all involved parties (stakeholders) within an organization [9]. Higher education is an organization that has unique characteristics

compared with other organizations [1]. Today, many higher education institutions are being intensively implementing IT Governance to support and carry out all its activities. IT Governance Implementation of this requires a very large investment and not least who have failed in implementing them [6, 8, 14]. Therefore, knowing and understanding the factors that can influence the failure of IT Governance implementation is very important. This meant that the alignment between organizational goals with business objectives can be achieved better [1, 3, 6, 11]. The scope covered in this study are all units involved in higher education institutions. This is only to observe the awareness and attitudes towards IT governance in higher education institutions, especially factors that can affect the success in the implementation of IT governance.

After the literature review process, four factors [14] were found as the main factors affecting awareness and attitude in the implementation of IT governance in higher education institutions, such as benefits, risk reduction, opportunities and cost (obstacles). These factors constitute the main factor and are very important to be known and understood by all stakeholders, which can be used as an input or consideration in implementing IT Governance. Each of these factors can continuously evolve in accordance with the conditions and the complexity of the organization itself. The Large organization would be different with a small organization, also it would be different implementing these factor current time and in the future.

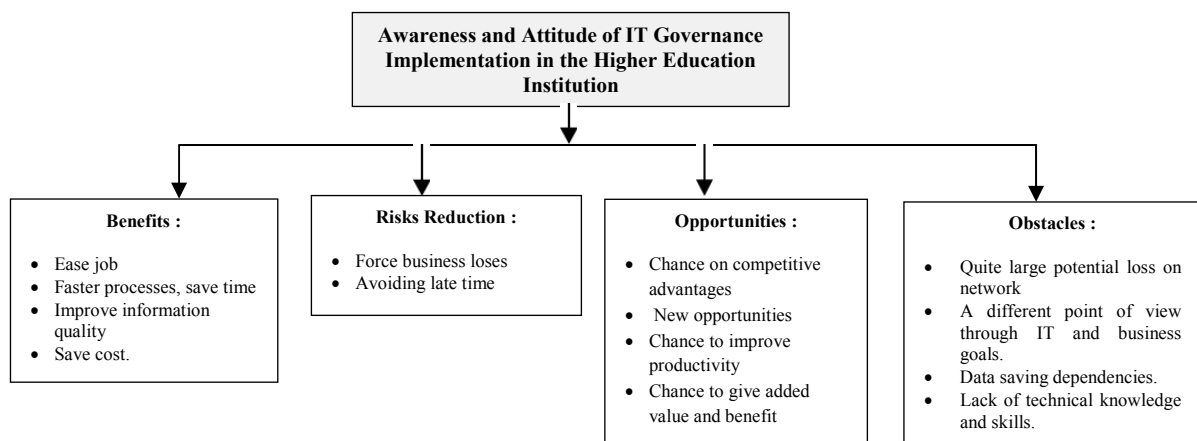


Fig. 2. Awareness and Attitude Literature Model.

The important thing that needs to be underlined in the implementation of IT governance, especially in higher education institutions, is this organization is very different from the enterprises [1]. In addition, human resources that included in the system are naturally very dynamic both academic and non-academic sides and has a contribution to the sustainability of the organization. Therefore, knowing and understanding awareness and attitudes become quite important [5, 6, 10]. Fig. 2, shows the results of the literature on the

model of awareness and attitude towards the implementation of IT governance in higher education institutions.

IV. CONCLUSION

Awareness and attitude are very important to be known and understood by all parties, as it has role and influence in the implementation of IT governance in higher education institutions, especially in improving an organization's performance. A total of 47 articles have been collected. The final process of the feasibility assessment obtained only 22

articles that can be reviewed and used as the primary literature. As the results, it was found several factors that might influence the awareness and attitude in the implementation of IT governance in higher education institutions, such as benefit, risk, opportunity, and cost (obstacle). These factors would impact on an organization's performance and should receive serious attention so that the implementation of the IT governance will work effectively and efficiently so that the organizational goals can be achieved in line with the business objectives.

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REFERENCES

- [1] H. Abdul Majid, M. Abdul Majid, M.I. Ibrahim, W.N.S. Wan Manan, and M.R. Ramli, Investigation of security awareness on e-learning system among lecturers and students in Higher Education Institution. In 2015 International Conference on Computer, Communications, and Control Technology (I4CT) (pp. 216–220), 2015.
- [2] Z. Alreemy, V. Chang, R. Walters, and G. Wills, International Journal of Information Management Critical success factors (CSFs) for information technology governance (ITG), 36, 907–916, 2016.
- [3] Y. Barlette, and V.V. Fomin, Exploring the suitability of IS security management standards for SMEs. Proceedings of the Annual Hawaii International Conference on System Sciences, 1–10, 2018.
- [4] P.H.deS. Bermejo, A.O. Tonelli, A.L.Zambalde, P.A. dos Santos, and L. Zuppo, Evaluating IT Governance Practices and Business and IT Outcomes: A quantitative Exploratory Study in Brazilian Companies. *Procedia Technology*, 16, 849–857, 2014
- [5] I.S. Bianchi, and R.D. Sousa, IT Governance Mechanisms in Higher Education. *Procedia Computer Science*, 100, 941–946, 2016.
- [6] H. Bin-abbas, and S. Haj, Assessment of IT governance in organizations : A simple integrated approach, 32, 261–267, 2014.
- [7] A. Buchwald, N. Urbach, and F. Ahlemann, Understanding IT Governance Success and Its Impact : Results from an Interview Study, 2013.
- [8] S. De Haes, and W. Van Grembergen, Exploring the relationship between IT governance practices and business/IT alignment through extreme case analysis in Belgian mid-to-large size financial enterprises. *Journal of Enterprise Information Management*, 22(5), 615–637, 2019.
- [9] C.E. Handford, M. Dean, M. Spence, M. Henchion, C.T. Elliott, and K. Campbell, Awareness and attitudes towards the emerging use of nanotechnology in the agri-food sector. *Food Control*, 57, 24–34, 2015.
- [10] J. Kaur, Examining the Effects of Knowledge ,Attitude and Behaviour on Information Security Awareness : A Case on SME, 2013, 286–290, 2013.
- [11] R.A. Khther, and M. Othman, Cobit Framework as a Guideline of Effective it Governance in Higher Education: A Review. *International Journal of Information Technology Convergence and Services*, 3(1), 21–29, 2013.
- [12] S. Kumar, ICT Integrated Social Media Framework for Consumer Awareness in society using ICT Tools, 2014.
- [13] Y.M. Lin, N.H. Arshad, H. Haron, Y.B. Wah, M. Yusoff, and A. Mohamed, IT Governance Awareness and Practices: an Insight from Malaysian Senior Management Perspective. *Journal of Business Systems, Governance & Ethics*, 5(1), 43–58, 2014.
- [14] J.W. Merhout, and D. Havelka, Information Technology Auditing: A Value-Added IT Governance Partnership between IT Management and Audit. *Communications of the Association for Information Systems*, 23(Article 26), 463–482, 2008.
- [15] H. Nugroho, Conceptual Model of It Governance for Higher Education Based on Cobit 5 Framework, 60(2), 216–221, 2014.
- [16] Shelly Ping-Ju Wu, and T.-P.L Detmar W. Straub, How Information Technology Governance Mechanisms and Strategic Alignment Influence Organizational Performance: Insights from a Matched Survey of Business and IT Managers. *Management Information System Quarterly*, 39(2), 497–518, 2015.
- [17] P. Weill, and J. Ross, IT Governance: How Top Managers Manage IT Decision Rights for Superior Results. Boston: Harvard Business School Press, 2004.
- [18] M. Winniford, S. Conger, and L. Erickson-Harris, Confusion in the Ranks: IT Service Management Practice and Terminology. *Information Systems Management*, 26(2), 153–163, 2009.
- [19] U. Yudatama, and R. Sarno, Priority determination for higher education strategic planning using balanced scorecard, FAHP and TOPSIS (Case study: XYZ University). *IOP Conf. Ser.: Mater. Sci. Eng.*, Vol. 105, No. 1, 2016.
- [20] U. Yudatama, A. Setiawan, and A. Trismanto, Alignment between val IT and risk IT for choosing a business strategy by fuzzy analytical hierarchy process and TOPSIS. *Adv. Sci. Lett.*, 23: pp. 2492-2494, 2017.
- [21] U. Yudatama, A.N. Hidayanto, and B. Nazief, Awareness and attitudes toward IT Governance: Empirical study. *J. Theor. Applied Inform. Technol.*, Vol. 95, pp. 2680-2687, 2017.
- [22] U. Yudatama, B. Nazief, and A.N. Hidayanto, Strategic Decisions in the Implementation of Information Technology Governance to Achieve Business and Information Technology Alignment Using Analytical Hierarchy Process. *Information Technology Journal*, Vol. 16, No. 2, pp 51-61, 2017.