Impact of IT governance framework in post-implementation for ERP performance: Literature Review

Santo Fernandi Wijaya
School of Information Systems
Doctor of Computer Science
Bina Nusantara University, Jakarta, Indonesia
santofw@binus.ac.id

Raymondus Raymond Kosala
Faculty of Computing and Media
Bina Nusantara Univeristy, Jakarta, Indonesia
rkosala@binus.edu

Meyliana
School of Information Systems
Bina Nusantara University, Jakarta, Indonesia
meyliana@binus.edu

Harjanto Prabowo
School of Business Management
Bina Nusantara University, Jakarta, Indonesia
harprabowo@binus.edu

Abstract – Measurement of ERP value depends on the key success factors in the implementation of ERP systems. It is the challenge for ensuring that ERP investments were more effective in organizations having a good of IT governance. The purpose of this paper is to investigate the role of IT governance in order to achieve the ERP performance with the focus on the measuring in the post-implementation phase. This paper employs Systematic Literature Review (SLR) approach. The research findings reveal that the impact of IT governance framework in post-implementation in order to enhance the performance of ERP systems. This paper addresses to help practitioners and managers to identify better and effectively focusing on integrating and linking of business processes based on IT governance framework.

Keywords: IT governance, ERP performance, Post-implementation, IT value

I. INTRODUCTION

Generally, the goals adopt IT of organizations is to improve competitive advantage and enhance business performance. Many organizations have understood the concept of IT governance in order to confirm ERP investments. Therefore, Effective of IT governance leads to enhance performance of organizations in relation to profitability. In realize many organizations have failed to achieve enhance the performance of organizations. IT governance has been managed as an important interest for businesses [15]. The growing interest of organizations for justify the reflection of the relation of IT in organizations, the need to confirm it is exactly managed. Organizations and IT governance will present high returns of ERP investments. IT governance further supports in order to enhance organizations growth. To achieve improve the information quality and system quality of ERP systems. ERP systems are seen as key in supporting business processes more effective. It is ensure that IT governance provide the performance of ERP system. ERP has become more significant in modern business and has capacity to consolidate the information for decision support to managerial of organizations [21]. Global governance can inevitable for the viability of the human culture in present and future generations, therefore, Force in the system of global governance has become more diffused [11]. In realize Failure in ERP implementation is to become factor seriously to examine for the management take decision strategy. These events have indicated the inadequacy of governance control in the avoidance of failure in the difficult and complexity of ERP implementation. Post implementation phases will determine the success in ERP implementation. Therefore, Post implementation phases are important phases for ensuring that ERP implementation will be done and support IT governance.

The purpose of this study is to evaluate that IT governance framework makes impact in order to enhance the performance of ERP systems.

From literature review in this study, the research question (RQ) can be addressed as follows:

RQ1. What are the significance of IT governance for ERP systems?

RQ2. What impact of IT governance framework in post-implementation in order to enhance the performance of ERP systems?

II. Theoretical Background

A. ERP Performance

The key indicator factors of ERP performance include aspects are: system quality, information quality, use of the ERP system, user satisfaction, individual impact, and organizational [21]. Organizations have the implement ERP systems to improve their operational more performance and profitability [21]. Therefore, IT is increasingly being identify as a tool to assist managerial activities that involve decision-making for complexity of organizational problems. ERP system requires important IT investment, and its effectiveness is complicated to examine [21]. Organizations need to more focus on IT governance before trial to enhance the ERP performance that it is concerned with information quality. IT governance will construct in making decision, goal setting, and build capability of organizational for focus objectives and goals [21].

B. Post-implementation of ERP systems

ERP performance occurs in the post-implementation phrase. Therefore, post-implementation analysis process must good managed [19]. ERP implementation can be allowed as a radical novelty and need an organizational change [2]. ERP implementation successful when ERP becomes more complexity to maintain its operation in post-implementation [3]. Post implementation of ERP systems includes: audit; documentation and advertising ERP success; correspondence success; process success; interaction success; expectation success, and benchmarking [23].

TABLE I
Framework for ERP implementation (Adapted from [23])

Pre-implementation	Implementation	Post-implementation
Clear understanding of strategic goals for ERP	Excellent project management	Post implementation audit
Commitment by top management	ERP package selection	Documentation and advertising ERP success
Cultural and structural change readiness	Open information and communication policy	Correspondence success
	Exhaustive analysis of current business processes	Process success
	Importance of data accuracy	Interaction success
	IT leveragability and knowledge capability	Expectation success
	A great implementation team	Benchmarking
	Focuses performance measures	
	Appropriate celebration when project completed	

C. IT Governance and ERP systems

IT Governance and ERP systems are becoming inseparable to decide business process standards, regulations, requirements. Therefore, Organizations with good IT Governance have more effective ERP investments [3]. IT governance have been described and must be implemented to stake business objectives, to decrease associated risks, and achieve through control of IT [8].

D. IT Governance framework

IT value depends on a variety of enterprise factors, such as: size, structure, knowledge, skills, culture, and capabilities [21]. Better the integration of IT governance have risk aspects such as: people, process, strategy, and tools [6]. IT governance is assigned as the processes, structures, and relational mechanisms for supporting the decision [17]. IT Governance consent an IT manager for focus on essential requirements: controlling costs, reducing risks, and extending the value of the information system [21].

III. Research method

The research framework of this study is to explore the correlations between the ERP system environment and IT governance to achieve the system efficiency. This research utilizes the SLR approach that was proposed by [24]. Researcher performed the following stages: (A) Data source, (B) Identification of inclusion and exclusion criteria, (C) Data extraction, (D) Quality assessment, and (E) Data analysis.

A. Data source

To conduce the search for the papers, we defined the search terms and created the search string. Search strategy comprised the use source databases that include the most important specific journals and conference proceedings for sources. The digital databases chosen for data retrieval were: ACM, Emerald, Elsevier, IEEE, Springerlink, Taylor and Francis, Wiley Online Library.

Search strings for data retrieval: (it AND governance) AND (post-implementation) AND (erp and performance). Search terms were defined based on "impact it governance framework erp performance" for search papers.

B. Identification of inclusion and exclusion criteria

Inclusion criteria are used to determine whether that piece of literature are needed. Exclusion criteria is use to determine whether that piece of literature found with the search term will be excluded.

TABLE II
Inclusion and exclusion of papers selected

Inclusion criteria
- Papers should describe framework, IT principle, IT Governance, ERP performance approaches
- Article date: publication from year 2005 include in this study, the reason is to get results up-to-date
- Academic papers published on journals and conference related to computer science, information system.
- Papers based on quantitative or qualitative analysis or a mix both.

Exclusion criteria
- Papers should not relevant to the research questions.
- Article date: publication from before of 2010 would be excluded
- Papers with non-academic databases
- Duplicate papers found on the digital libraries
- Studies not covering framework, IT governance, ERP system.
- Papers based on weak analysis, such as: editorials, unpublished paper, opinion, papers redundancy, panel discussion, master thesis, tutorials summaries, technical reports, article summaries, interviews, reviews, comments, workshops, and poster session.

C. Data extraction

The search result was processed by using the following processes as follows:

a. Studies found: In this phase, the literature data were found based on predetermined keywords in the search process are classified into the studies found.
b. Candidate selection: It is performed by reviewing the title, keywords and abstract.
c. Selected selection: It is performed by reviewing the full text of the papers.

TABLE III
Data extraction

Source	Studies Found	Candidated Studies	Selected Studies
ACM	27	3	1
Elsevier	179	15	6
Emerald	194	7	5
IEEE	45	3	2
Other	0	4	4
Springer	320	1	0
Taylor & Francis	110	5	3
Wiley Online	153	4	2
	1028	42	23

Researchers have investigated all articles by title and abstract for papers select the suitable according to the inclusion criteria. Stage 1, from 1028 papers identified relevant were selected for further investigation. Stage 2, researcher have selected 42 papers as candidate studies. Stage 3, after study based on abstract, the researchers have selected 33 papers for further research. Stage 4, at the end of filter process of the papers to primary 23 papers identified have been selected to be fully read as obtain primary papers and process data extraction and classification procedures to answer the research question.
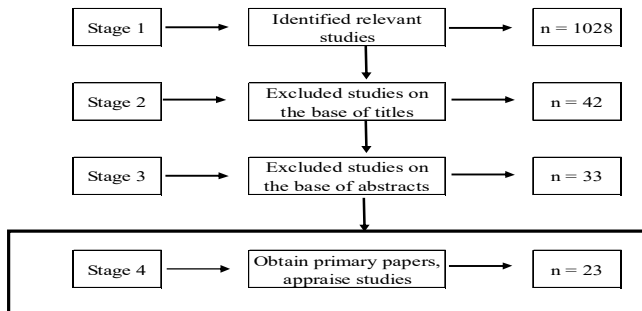

Figure 1. Stage of studies selection process

D. Quality assessment

The quality checklist comprises to meet research questions. The quality assessment (QA) questions are as follows:

QA-1 Are the authors describe that criteria of inclusion and exclusion suitable and related to answer the research questions?

QA-2 Is the literature searching properly to have embroiled all involved related research question?

QA-3 Did the authors evaluate the legality research included?

The score of the quality assessment questions:

QA-1 Y=the criteria of inclusion is flatly assigned in the research; P=the criteria of inclusion are imperative; N=the criteria of inclusion is not explained.

QA-2 Y=the authors have searched using 3 or more digital databases and included referenced of journals or proceeding; P=the authors have searched using 2 or 3 digital databases and no extra reference; N=the authors have search only 1 digital database.

QA-3 Y=the authors have explicitly explained the criteria of quality; P=the question of research related with quality issues by the research; N=explicit QA of primary research has been tried.

The scored was Y = 1, P = 0.5, N = 0. (Notes: Y=Yes; P=Partly); N=No)

IV. RESULT

This section is the summary and results of the study. The researchers discuss for the answers to research questions.

A. Search results

The researcher identified 22papers from research focus. The results each research focus based on the mapping control items of domain based on the process systematic review is shown in **Table IV.**

From table 3 mapping controls item of domains based on literature shows that It seems to indicate the most important domain of each component that have impacted for IT governance framework in post-implementation is governance, management, systems. Organizational.

B. Quality evaluations of SLRs

The researchers assessed that the studies for quality analysis from article type process. The score for each study is shown in **Table V.**

TABLE IV
Mapping domain components based on literature

DOMAIN	COMPONENTS	CONTROL ITEMS	Organizational	ITG	System	Freq of papers	References
GOVERNANCE	Ensure benefits	Evaluate benefits, Organizations performance	1	1	1	2	[3] ; [19]
	Governance	Competitiveness	1	1		2	[1]; [19]
	Governance	Risk management	1	1		2	[1]; [7]
		Stakeholder pressure		1		2	[1];[12]
	IT risk management	Identify IT investment opportunities	1	1		2	[6]; [7]
	Structures	Organizations of governance	1	1	1	2	[15]; [12]
	Accountability	Programme and personnel have clearly defined roles and		1		1	[12]
	Adaptability	New knowledge and learning		1		1	[12]
	Business Process	IT governance maturity models	1			1	[15]
	Capability	Achievements and failures are evident Information		1		1	[12]
		Definition, executive & evaluation of risk management		1		1	[4]
	Benefits/mitigate risk	Develop a continues audting system		1		1	[4]
		Improve customer relationship		1		1	[4]
	Governance framework	Maintenance information infrastructure, assessment control		1		1	[4]
		Provide IT Governance awareness & training		1		1	[4]
		ERP Steering committee effectively		1		1	[4]
	Resource optimization	Project champion		1		1	[4]
		Review of driving and governing principles for a project		1		1	[4]
	Ensure stakeholder	Build partnership between vendors and consultants		1		1	[4]
		Changes in the technological environment	1			1	[7]
		Eco-innovation		1		1	[1]
		Environmental management		1		1	[1]
		Green purchasing		1		1	[1]
		Information transparency		1		1	[1]
	Governance	Particularly for governing bodies	1			1	[7]
		Regulatory pressures/legal requirements		1		1	[1]
		Standardization		1		1	[1]
		Subtainable product desing		1		1	[1]
		Supplier evaluation		1		1	[1]
		Supply chain collaboration		1		1	[1]
		Supply chain partner focused		1		1	[1]
	Inclusiveness	Stakeholders have appropriate opportunities to participate		1		1	[12]
	Integration	Coordination across		1		1	[12]
		Define IT service level expectations		1		1	[6]
	IT risk management	Defining the role of IT in the organisation		1		1	[6]
		Setting timelines and budgets for IT initiatives		1		1	[6]
	Legitimacy	Information accurately		1		1	[12]
	Transparency	Governance and decision-making		1		1	[12]
ORGANIZATIONAL	ERP systems performance	Organizational sponsorship and commitment			1	1	[20]
	Structures	e-business advisory board	1			1	[15]
		e-business task force	1			1	[15]
		IT strategy & steering committees	1			1	[15]
		Organization structure	1			1	[15]
		Project steering commitees	1			1	[15]
		Roles and responsibilities	1			1	[15]

TABLE IV
Mapping domain components based on literature (continue)

DOMAIN	COMPONENTS	CONTROL ITEMS	Organizational	ITG	System	Freq of papers	References
MANAGEMENT	Ensure stakeholder Business process controls	Establish an effective communication system		1	1	3	[3]; [20]; [19]
		Control and analyze information flow	1	1		2	[3]; [20]
	Monitor performance	Evaluate ERP fit with a business strategic vision	1	1	1	2	[3]; [19]
	Relational Mechanisms	Collaboration between principle stakeholders	1	1		2	[15]; [19]
	Management intervention	Change agents			1	2	[20]; [10]
		Manage resistance to change			1	2	[20]; [10]
		Top management support and communication	1	1	1	2	[20]; [3]
	Business Process	Balanced IT scorecards	1			1	[15]
		Business/IT alignment models	1			1	[15]
		COBIT and ITIL	1			1	[15]
		Information economics	1			1	[15]
		Service level agreements	1			1	[15]
		Strategic alignment model	1			1	[15]
	Governance framework	Strategic information systems planning	1			1	[15]
		Establish an independent auditing dept		1		1	[3]
	IT risk management	Establish IT priorities		1		1	[6]
	Business process controls	Bridge control & cooperation between functions	1			1	[3]
		Elicit business requirements, specifications &internal control	1			1	[3]
		Manage internal control processes	1			1	[3]
	Manage continuity	Continuously strengthen user ERP expertise and learning network	1			1	[3]
		Engage leadership involvement for management expectations	1			1	[3]
		Enhance learning of employees for decision making	1			1	[3]
		Enhance technical knowledge of ERP	1			1	[3]
	Manage operations	Review of appropriate resolution strategies	1			1	[3]
		Acquire, adapt, and maintain configuration	1			1	[3]
		Understand the operations, strategies, and corporate	1			1	[3]
	Manage problems	Empower and engage ERP upgrade team	1			1	[3]
		Formulate strategic thinking and planning strategies	1			1	[3]
		Provide friendly multiple access interfaces for support	1			1	[3]
	Manage security service	Regulate managerial conduct of conflict resolution	1			1	[3]
		Adequate ERP team to provide maintenance support	1			1	[3]
		Provide real-time & centralized database	1			1	[3]
	Manage service request	Segregating duties of information security	1			1	[3]
		Assess patch maintenance: adaptive, corrective & standard	1			1	[3]
		Establish priority of requirements	1			1	[3]
		Integrate knowledge for increasing information quality	1			1	[3]
	Monitor performance	Provide adequate resources, application support	1			1	[3]
		Establish a compensation system	1			1	[3]
		Validate execution of ERP knowledge management	1			1	[3]
	Monitor systems of controls	Validate measures of performance evaluation	1			1	[3]
		Establishment, execution, and assessment of standard	1			1	[3]
		Meet the requirements of legislative complian	1			1	[3]
		Review of project justification practices effectiveness			1	1	[3]
	Relational Mechanisms	Active conflict resolution	1			1	[15]
		Active participation by principle stakeholders	1			1	[15]
		Business/IT collocation	1			1	[15]
		Cross-functional business/IT job rotation & Training		1		1	[15]
		Partnership rewards and incentives			1	1	[15]
		Shared understanding of business/IT objectives			1	1	[15]
	Management intervention	Champion			1	1	[20]
		Executive level support			1	1	[20]
		Management support			1	1	[20]
		Ongoing management support			1	1	[20]
		Strategic investment rationale			1	1	[20]
SYSTEMS	Performance of ERP Systems	Compatibility	1		1	2	[19]; [20]
		Customer relationship	1	1	1	2	[20]; [1]
		Team work & Coordination		1	1	2	[20]; [1]
		Employee satisfaction	1			1	[20]
		Improve system & information quality of ERP system	1			1	[22]
		Information quality refers to the value of information	1			1	[22]
		Process improvement	1			1	[20]
		Project completion	1			1	[20]
		System quality: accuracy, response time, data currency, reliability	1			1	[21]
		User satisfaction	1			1	[21]
	ERP Implementation	Analytics			1	1	[19]
		Best practice			1	1	[19]
		Complexity			1	1	[19]
		Training			1	1	[19]
	IT Management intervention	Dominant, enabling or socio-technical			1	1	[20]
		Incremental approach			1	1	[20]
		Integrated system			1	1	[20]
		IT as an enabler			1	1	[20]
		Scope of the project			1	1	[20]
		System configuration			1	1	[20]
		System features			1	1	[20]
	Relationship management	Cross functional teams			1	1	[20]
		Customer's point of pain			1	1	[20]

TABLE V
Quality evaluation of SLRs

No ID	Year	Article type	Quality			Score			
			QA1	QA2	QA3	QA1	QA2	QA3	Total
id01	2005	Case Study	Y	P	N	1.00	0.50	-	1.50
id02	2015	Case Study	Y	Y	Y	1.00	1.00	1.00	3.00
id03	2015	SLR	Y	N	N	1.00	-	-	1.00
id04	2009	Case Study	Y	Y	N	1.00	1.00	-	2.00
id05	2014	Case Study	Y	Y	Y	1.00	1.00	1.00	3.00
id06	2015	Dissertation	Y	Y	Y	1.00	1.00	1.00	3.00
id07	2015	SLR	Y	P	P	1.00	0.50	0.50	2.00
id08	2012	SLR	Y	P	P	1.00	0.50	0.50	2.00
id09	2005	SLR	Y	Y	Y	1.00	1.00	1.00	3.00
id10	2008	SLR	Y	Y	P	1.00	1.00	0.50	2.50
id11	2014	SLR	Y	Y	Y	1.00	1.00	1.00	3.00
id12	2011	SLR	Y	Y	P	1.00	1.00	0.50	2.50
id13	2016	Case Study	P	P	P	0.50	0.50	0.50	1.50
id14	2007	Survey	Y	Y	P	1.00	1.00	0.50	2.50
id15	2008	Survey	Y	Y	Y	1.00	1.00	1.00	3.00
id16	2012	SLR	Y	Y	Y	1.00	1.00	1.00	3.00
id17	2016	SLR	Y	Y	Y	1.00	1.00	1.00	3.00
id18	2015	Case Study	Y	Y	Y	1.00	1.00	1.00	3.00
id19	2008	Survey	Y	P	P	1.00	0.50	0.50	2.00
id20	2015	SLR	Y	Y	Y	1.00	1.00	1.00	3.00
id21	2014	Case Study	Y	Y	Y	1.00	1.00	1.00	3.00
id22	2016	Case Study	Y	Y	P	1.00	1.00	0.50	2.50
id23	2012	Case Study	Y	Y	Y	1.00	1.00	1.00	3.00
id24	2014	Case Study	Y	P	P	1.00	0.50	0.50	2.00
id25	2017	SLR	Y	Y	Y	1.00	1.00	1.00	3.00
id26	2015	SLR	Y	Y	P	1.00	1.00	0.50	2.50
id27	2011	SLR	Y	Y	Y	1.00	1.00	1.00	3.00
id28	2016	SLR	Y	Y	P	1.00	1.00	0.50	2.50
id29	2013	SLR	Y	Y	Y	1.00	1.00	1.00	3.00
id30	2016	SLR	Y	Y	P	1.00	1.00	0.50	2.50
id31	2016	SLR	Y	P	P	1.00	0.50	0.50	2.00
id32	2010	SLR	Y	Y	Y	1.00	1.00	1.00	3.00
id33	2015	Case Study	Y	Y	Y	1.00	1.00	1.00	3.00
id34	2005	Case Study	Y	Y	Y	1.00	1.00	1.00	3.00
id35	2005	Case Study	Y	Y	P	1.00	1.00	0.50	2.50
id36	2011	Survey	Y	P	P	1.00	0.50	0.50	2.00
id37	2005	Case Study	Y	P	P	1.00	0.50	0.50	2.00
id38	2015	SLR	Y	Y	Y	1.00	1.00	1.00	3.00
id39	2015	Case Study	Y	Y	P	1.00	1.00	0.50	2.50
id40	2014	SLR	Y	P	P	1.00	0.50	0.50	2.00
id41	2016	SLR	Y	Y	Y	1.00	1.00	1.00	3.00
id42	2009	SLR	Y	Y	Y	1.00	1.00	1.00	3.00
id43	2017	SLR	Y	Y	Y	1.00	1.00	1.00	3.00
id44	2010	Case Study	Y	P	Y	1.00	0.50	1.00	2.50
id45	2014	SLR	Y	P	P	1.00	0.50	0.50	2.00
id46	2005	Case Study	Y	P	P	1.00	0.50	0.50	2.00
id47	2016	SLR	Y	Y	Y	1.00	1.00	1.00	3.00
id48	2014	SLR	Y	Y	Y	1.00	1.00	1.00	3.00
id49	2017	SLR	Y	Y	Y	1.00	1.00	1.00	3.00
id50	2014	SLR	Y	Y	P	1.00	1.00	0.50	2.50
id51	2013	SLR	Y	Y	Y	1.00	1.00	1.00	3.00
id52	2014	Survey	Y	Y	P	1.00	1.00	0.50	2.50
id53	2017	SLR	Y	Y	Y	1.00	1.00	1.00	3.00
id54	2012	SLR	Y	Y	P	1.00	1.00	0.50	2.50

Table V. indicates that the results of the quality analysis shows that average all studies scored 2.57 only 10 papers have studies scored less 2, and 13 papers have studies scored 3.

C. Quality factors

The researchers investigated the relationship the quality score for the date article was published.

TABLE VI
Quality scores of studies (by publication date)

Year	Mean quality score	Number of studies	ACM	Elsevier	Emerald	IEEE	Inderscience	Other	Springer	Taylor & Francis	Wiley Online
2017	3.00	4	-	-	1	-	-	-	-	2	1
2016	3.00	4	-	-	-	1	-	2	-	-	1
2015	2.40	5	-	2	-	1	-	1	-	1	-
2014	2.83	6	-	3	3	-	-	-	-	-	-
2013	2.00	1	-	-	-	-	-	1	-	-	-
2012	2.00	1	-	-	1	-	-	-	-	-	-
2011	2.00	1	1	-	-	-	-	-	-	-	-
2010	2.00	1	-	1	-	-	-	-	-	-	-
	2.40	23	1	6	5	2	0	4	0	3	2

Table VI indicates that the number of studies published by year has been relatively quite stable with average scored 2,40.

.

The calculation of the mean quality score of each year is the result of the total of quality score divided total papers. The result quality score that the papers of recent years have increased trend.

V. DISCUSSION

In this section, the researchers discuss for the answers to the research questions.

A. RQ1. What are the significance of IT governance for ERP systems?

The intention of RQ1 is to show the methodological aspects used on IT governance framework have significance factors for ERP systems to enhance the performance of ERP systems. The reason of that To assess ERP value a model was developed. IT governance framework are seen as a model in manage to supporting decision-making for managerials level of the organizations.
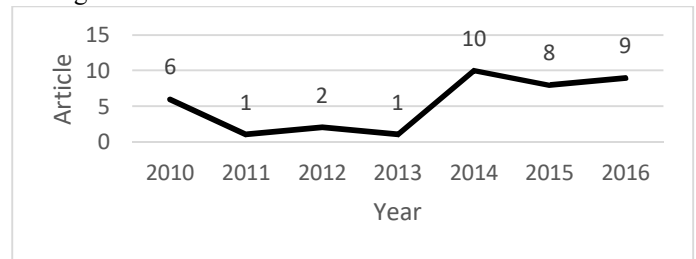

Figure 2. Number of studies on IT governance framework for ERP performance per year

Figure 2 indicates that the number of studies published by year has been relatively an increasing trend. This shows that the IT governance framework studies have significance factors to contribution for achieving the ERP performance. The studies have the significance on adopting it has been studied and respect for further research.

B. RQ2. What impact of IT governance framework in post-implementation to enhance performance of ERP systems?
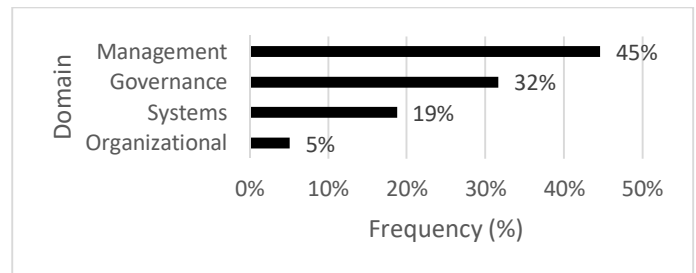

Figure 3. Summary domain of component

Figure 3 indicates that the domain component of item control model have influence consist: management(45%; governance(32%); systems(19%); and organizational(5%). The summary that the most important of domain component issues is management and governance that the significant factors for building IT governance framework effectively.

COMPONENTS	Research focus				References
	Organizational	ITG	System	Frequency	
Compatibility	1		1	2	[19]; [20]
Customer relationship	1	1	1	2	[20];[1]
Teamwork & Coordination		1	1	2	[20];[1]
Employee satisfaction	1			1	[20]
Improve system quality & information quality of ERP system	1			1	[21]
Information quality refers to the value of information	1			1	[21]
Process improvement	1			1	[20]
Project completion	1			1	[20]
System quality: accuracy, response time, data currency, reliability	1			1	[21]
User satisfaction	1			1	[21]

Based on the domain of systems that related post-implementation of ERP system to achieve ERP performance. Based on the mapping analysis on the ERP performance, describe that the most important factors in order to enhance ERP performance and have signifinance impact in post-implementation of ERP systems are compatibility, customer relationship, team-work and coordination.

C. The limitations

This paper was developed based on the review of literature only to identify the impact of IT governance framework in post-implementation in order to enhance the performance of ERP systems for general organization. The researchers have understood that this paper has the limitation of this current research, such as: the number of databases has restricted access from journal or conference proceedings publication, limitation of article date, the analysis did not consider the organization size.

VI CONCLUSION AND FUTURE RESEARCH

To identify the impact of IT governance framework in post-implementation in order to enhance the performance of ERP systems based on IT principle, research using the review of literature methodology is the solution. The result of this research has given the contribution that IT governance framework has important impact to identify the key success factors and to become a new approach in order to enhance the performance of ERP systems. The most important factors of IT governance framework in post-implementation in order to enhance the performance of ERP systems are compatibility, customer relationship, teamwork and coordination.Future research could consider focusing on identifying challenges to developing of IT governance framework by case studies and survey to many organizations with a detailed questionnaire to investigate the ERP system.

REFERENCES

[1] Ansari, Z. N., & Kant, R. Exploring the Framework Development Status for Sustainability in Supply Chain Management: A Systematic Literature Synthesis. Business Strategy and the Environment. 2017.

[2] Carvalho, H. L., & Guerrini, F. M. Reference model for implementing ERP systems: an analytical innovation networks perspective. Production Planning & Control. 1-14. 2017.

[3] Chang, S. I., Wang, T., & Li, H. J. A study of ITG mechanism in post-implementation phase of an ERP system. In Proceedings of the 2016 Pacific Asia Conference on Information Systems. 2016.

[4] Chang, S. I., Yen, D. C., Chang, I. C., & Jan, D. Internal control framework for a compliant ERP system. Information & Management, 51(2), 187-205. 2014.

[5] Chou, T. C., & Liao, J. L. IT governance balancing global integration and local responsiveness for multinational companies. Total Quality Management & Business Excellence, 28(1-2), 32-46. 2017.

[6] De Smet, D., & Mayer, N. Integration of it governance and security risk management: A systematic literature review. In Information Society, 2016 International Conference on (pp. 143-148). IEEE. 2016.

[7] Debreceny, R. S. Research on IT governance, risk, and value: Challenges and opportunities. Journal of Information Systems, 27(1), 129-135. 2013.

[8] Devos, J., Van Landeghem, H., & Deschoolmeester, D. Rethinking IT governance for SMEs. Industrial Management & Data Systems. 2012.

[9] Doležel, M., & Buchalcevová, A. Test Governance Framework for contracted IS development: Ethnographically informed action research. Information and Software Technology, 65, 69-94. 2015.

[10] Ferro-Beca, M., Sarraipa, J., Agostinho, C., Gigante, F., Jose-Nunez, M., & Jardim-Goncalves, R. A framework for enterprise context analysis based on semantic principles. Computer Science and Information Systems, 12(3), 931-960. 2015.

[11] Jang, J., McSparren, J., & Rashchupkina, Y. Global governance: present and future. 2016.

[12] Kim, M. K., Evans, L., Scherl, L. M., & Marsh, H. Applying Governance Principles to Systematic Conservation Decision‐Making in Queensland. Environmental Policy, 26(6), 452-467. 2016.

[13] Lech, P. Managing knowledge in IT projects: a framework for enterprise system implementation. Journal of Knowledge Management. 2014.

[14] Lin, C., Madu, C. N., Kuei, C. H., Tsai, H. L., & Wang, K. N. Developing an assessment framework for managing sustainability programs: A Analytic Network Process approach. Expert Systems with Applications, 42(5), 2488-2501. 2015.

[15] Lunardi, G. L., Becker, J. L., Maçada, A. C. G., & Dolci, P. C. The impact of adopting IT governance on financial performance: An empirical analysis among Brazilian firms. International Journal of Accounting Information Systems, 15(1), 66-81. 2014.

[16] Pang, M. S. IT governance and business value in the public sector organizations—The role of elected representatives in IT governance and its impact on IT value in US state governments. Decision Support Systems, 59, 274-285. 2014.

[17] Rubino, M., & Vitolla, F. Corporate governance and the information system: how a framework for IT governance supports ERM. Corporate Governance, 14(3), 320-338. 2014.

[18] Rubino, M., Rubino, M., Vitolla, F., Vitolla, F., Garzoni, A., & Garzoni, A. The impact of an IT governance framework on the internal control environment. Records Management Journal, 27(1), 19-41. 2017.

[19] Ruivo, P, Oliveira, T, & Neto, M. Examine ERP post-implementation stages of use and value: Empirical evidence from Portuguese SMEs. Journal of Accounting Information Systems, 166-184. 2014.

[20] Saeed, K. A., Grover, V., Kettinger, W. J., & Guha, S. The successful implementation of customer relationship management (CRM) system projects. ACM SIGMIS Database, 42(2), 9-31. 2011.

[21] Tsai, W. H., Chou, Y. W., Leu, J. D., Chen, D. C., & Tsaur, T. S. Investigation of the mediating effects of IT governance-value delivery on service quality and ERP performance. Enterprise Information Systems, 9(2), 139-160. 2015.

[22] Tsai, W. H., Chu, P. Y., Chang, J. C., Lee, H. L., & Huang, Y. C. The impact of IT governance on performance of IFRS conversion under ERP systems. In Industrial Engineering and Engineering Management (IEEM), IEEE International Conference on (pp. 626-630). 2015.

[23] Motwani J, Subramanian R, & Gopalakrishna P. Critical factors for successful ERP implementation: Exploratory findings from four case studies. Computers in Industry, 56(6), 529-544. 2010.

[24] Kitchenham, B. Procedures for Performing Systematic Reviews. Joint Technical Report. Keele University & National ICT Australia Lt. 2004.