



IT GOVERNANCE FROM PRACTITIONERS' PERSPECTIVE: SHARING THE EXPERIENCE OF A MALAYSIAN UNIVERSITY

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ABSTRACT

The pervasive use of technology has led to organisations becoming more dependent on IT, hence the need for IT governance (ITG). ITG is viewed as IT behaviour deliberately designed and adopted by enterprises to enable them to achieve continuous organisation performance. Studies on how organisations achieve performance from ITG are relatively evolving. Thus frameworks on how universities govern their IT, if they exist, are scarce. This study attempts to explore how HEIs in Malaysia govern their IT to achieve performance based on empirical investigation of practitioners of a public university. Semi-structured interviews were conducted on three key university informants, namely, the Chief Information Officer; the IT Director and a management user, a Dean of functional unit. Interview's data were transcribed and thematic process of coding and theme generation was applied for analysis purposes. Based on this qualitative approach. The themes so generated were categorised under three capabilities of structure, process, and relations. Viewed from absorptive capacity of organisational learning theory, the findings show that when structures and processes are in place, the relationship between the IT and functional unit side of an organisation reflects the desired behaviour. The essence of such relationship is to attain effective IT governance, which will eventually lead to better organisation's performance.

Keywords: *IT Governance, ITG and university, Absorptive Capacity, ITG in Malaysia*

1. INTRODUCTION

The need to justify the continuous expenditure in IT informed the IT governance (ITG) paradigm adjudged as a subset of corporate governance [1]. This need arose from the need to justify investment in IT as a result of failures [2, 3] in spite the cautions on strategic value of IT by Carr [4]. Given the heat generated by Carr's work and subsequent 'IT paradox' debates that ensued, the way organisations measure and achieve performance through ITG has been an issue of concern [5]. Thus the need to justify IT investments, has been on the increase due to the rise in IT use given the present technological realities. It is worthy of note that the critical dependence on IT and consequential investment is on the increase [6] not only in developed nations but also in developing ones in recognition of its strategic importance [3].

The trend is also observable in higher education institutions (HEIs) around the globe. However, measuring performance of IT remains a challenge for IT decision makers in HEIs [1: 432].

Measuring intangible components of complementary systems is not that easy [7: 45]. After all, IT is considered as an intangible complementary resource as espoused by proponents of Resource-Based View theory. From literature, how HEIs management evaluates organisation performance relative to governance of IT seems not to be given adequate attention. In particular, there are few empirical studies on this issue in Malaysia. Such attention is necessary in order to ensure that nations derive value from continuous IT patronage. This study is an effort geared towards understanding how IT is governed in universities in developing nation's context. It was premised on the fact that strategic value of IT endeared the need to govern it deliberately [8].

2. REVIEWING IT GOVERNANCE

Research begins with ideas and concepts that exhibit a relationship to one another [9]. The following sections attempt to fit this study with important past researches on ITG [9]. A review of literature related to ITG definition, concept, IT in HEIs and ITG in Malaysia is presented. This is to



provide a good grasp of foundation knowledge and highlight the necessity of deliberate governance of IT as well as the intended IT behaviour.

3. DEFINING ITG

There have been various ways of defining ITG based on different perspectives. This study considered the various definitions given by prominent researchers on ITG. It was noted that some of these definitions connote the direction, leadership and control of the use of IT. Definitions of ITG from ITGI [10] as well as [5] are seen to be somewhat similar except that the latter include IT management in exercising decision rights. Peterson [11] broadens the scope of stakeholder as he posits that such responsibility revolves around enterprise stakeholders. Weill & Ross [12] and Peterson [11] see ITG as making right decisions (structures), being accountable and institutionalising frameworks (processes) and practices that encourage desirable behaviour (relationship). Cadler & Watkin [13] as well as Webb, Pollard & Ridley [14] introduce the concept of control and accountability respectively. Webb et al. add risk and performance management. While risk is new, performance management is perhaps what was termed as monitoring of IT strategic decisions so that the essence of implementation in the first instance is adequately achieved [11]. This is when risk can be adequately mitigated. Based on the above discussion, this study viewed ITG as IT behaviour deliberately designed and adopted by an enterprise to enable continuous performance. Is this not management?

IT management used to be defined as how effective the IT function can provide IT services in meeting organisational current needs and priorities. In contrast, ITG deals with how IT is being transformed to meet present and future demand of business [5, 11] which extend the role of IT beyond the traditional functional-based one into a more strategic role. This is expected to be the case when IT and non-IT appreciates each other's capability. This leads to IT and business alignment. Such relationship is attainable when there is a deliberate craft or design of IT via proper governance by leadership, cascaded down the enterprise to ensure desirable IT behaviour.

4. ITG IN HEI

Empirical research into implementation and influence of ITG to leverage performance,

especially in public organisations is no doubt scarce when compared to report on profit-oriented ones. There is also limited amount of contemporary research of ITG in the universities [15] perhaps due to the fact that it is a recent phenomenon which profit-oriented organisations are first adopters and big investors of IT [16].

The landmark research of Center for Information Systems Research-CISR by Weill & co and that of Information Technology Alignment and Governance Research Institute-ITAG by Van Grembergen & co are studies based on empirical investigation on organisations other than HEIs and mostly in developed nation's context. Nevertheless, there are some empirical reports on how ITG is being designed and implemented in HEIs to leverage the aim of education and achieve value for IT investment [15, 17, 18].

Of interest is Fraser and Tweedale's [17] study, which chronicle the implementation of ITG in Queensland University of Technology in Australia. Fernández and Llorens [18] suggested an ITG4U framework for Spanish universities in order to aid improvement in IT designs. Such improvement is to enhance higher ITG maturity. The studies from Hanover Research Council and Educause are also dedicated to discuss ITG in HEIs. However, evaluating how HEIs adapt ITG to impact on performance was not the focus of this stream of studies.

5. INFLUENCE OF EFFECTIVE ITG IN DEVELOPING NATION CONTEXT

The need for governance of IT in developing nations, where information systems is categorised as failing either partly or totally, is important [19]. It is a fact that when an organisation focuses more on implementation of sound ITG strategy based on collaboration and experience sharing, senior executives tend to appreciate more on the need for alignment of IT and the enterprise's goals [20].

Based on a past study, organisation with effective ITG was found to have an actively designed set of mechanisms that lead to desirable IT behaviour [21]. The same study also found empirical evidence to show that organisations with IT strategies that were consistent with organisational goals and objectives were highly profitable and considered top-performing.

Researchers have seen the need to investigate how ITG paradigm has been leveraged in developing nation context as well. Nfuka & Rusu [22] examines the critical success factors that



Tanzanian Public Sector should consider when implementing ITG. In Malaysia, some researchers have come to realize the potentials of studying ITG. Table 1 shows some of the empirical studies that have been reported in the nation's context. What is observable is that the evolution of study on ITG in Malaysia follows a similar pattern like that of the developed nations. More empirical studies focused on industry-based and financial sector other than the public domain which includes the HEIs regardless of the nation's level of development.

Given the growing numbers of HEIs [28], the issue of governance in this public sector should become more endearing. Though attention has been made on how HEIs govern IT infrastructures [23], there is still a need for studies to investigate how HEIs management in Malaysia governs IT to enable performance. This study attempts to fill this research gap by exploring the context of a public HEI in Malaysia. A guiding perspective on understanding this phenomenon is through the organisational learning lens, which is explained in the following section.

6. ITG AND ORGANISATIONAL LEARNING

The theoretical underpinning for this study is grounded in the Organisational Learning (OL) theory. Organisations are assemblies of functions that comprise largely of learning subunits. Learning is the process by which organisations develop competence through use and among which they choose based on experience [29]. This ability of an organisation is a function of the capacity of individuals in its community to recognise and acquire needed information. Learning of an organisation thus depends largely on the features of the memories of its constituent members [29; 30] in their ability not only through the discovery of new knowledge but the ability to create new ones [31]. This is where the absorptive capacity (ACAP) construct becomes handy in order to understand how IT functions can effectively use IT capabilities in their interaction with the other functional units of the organisation.

ACAP, a construct of OL, is said to be contingent upon an organisation ability to explore new knowledge, assimilate or transform it and apply it to commercial ends and for value creation [30]. Simply put, ACAP is the ability of members of an organisation to learn and solve problems in different ways. The premise is that organisation needs prior knowledge in order to identify, acquire

and assimilate or transform valuable knowledge [31]. When this is achieved, the knowledge has to be utilised, to a commercial end, for value creation [30; 32]. ACAP is seen as influencing organisation success in governing IT to support operational and strategic activities. A principal finding is that the value of IT is contingent upon organisation complementary resources like ACAP [33]. Thus for value to be achieved IT capabilities should be deliberately governed.

The OL theory and the concept of ACAP are found to be relevant to this study. HEIs, as with many organisations, learn how best to govern IT over time as it acquired more experience. The past mistakes will be rectified, and inefficiencies will be removed. As decisions are done collectively, organisations will improve its ITG practices based on feedbacks and external indicators.

Additionally, in the description of organisational ITG, regardless of whether centralised or decentralised in IT structural arrangement, there seems to be noticeable congruence of description of complimentary dimensions or domains that constitute it. Weill, Peterson as well as Van Grembergen, describe it respectively as:

- ITG mechanism: Decision-making structures, alignment processes and formal communications.
- IT capabilities: Structural capability (connection), process capability (coordination) and relational capability (collaboration).
- ITG mixture: Structures, processes and relational mechanisms.

The framework based on structure, process and relational capabilities are adopted by this study. Structure Capability relates with organisational units and roles for IT decision-making functions [34]. It deals with the way organisations designate positions, roles and responsibilities related to IT. Most past studies revolved around the way IT was structured and leveraged in an organisation. Some researchers are of the view that decisions on whether IT resources should be centralised or decentralised or both depend on various factors [35]. In fact, these days the issue of such arrangement is becoming a dynamic affair as there is neither best pattern nor strict rule to it [12]. The studies of Weill & co bring the dynamics of politics to the arrangement patterns. They indicate that there is no single best arrangement that they could suggest as a benchmark. It all depends on how the organisation concerned is making the best

out of its chosen pattern, which very much relates how IT is governed in the organisation.

Process Capability refers to formalities involved in strategic IT decision-making and procedures in its monitoring so that it leads to the desired outcome [11; 12; 21; 34]. It consists of various ITG frameworks or tools to examine IS activities and value to business side of the organisation [1]. Both management tools, in form of frameworks and experiences, the way they are implemented are very important contingencies of ITG outcome [11].

Relational Capability refers to communication mechanisms with the intention to spread the word about ITG throughout the enterprise [12]. It describes the strategic dialogue, shared learning and active participation between IT and business and among corporate stakeholders within the enterprise [11; 34]. For example, the higher the ability of senior management to describe the ITG of a firm, the higher the level of governance performance. This is an indication of effective governance [12; 21]. This aspect of ITG mechanism is crucial to the attainment of business and IT alignment [34].

These mechanisms have been leveraged upon in extant literature either as domains of effective ITG [2] or as its determinant [6]. It goes to show that their interplay is important in the governance of IT in any settings. In fact, ITG is said to be embedded within the governing structure, leadership, processes and relational mechanism [2]. These are meant to ensure that an organisation performs while protection from IT-related risks are guaranteed. Mohamed and Kaur identified some contingent factors, conceptualised as influencing ITG effectiveness in the private sector. This idea is in line with other past studies of Weill, Van Grembergen, and Peterson. Almeida et al. presented a review of 27 articles in reputable journals to identify, define and describe sets of ITG mechanisms. According to the review, these sets of mechanisms were important and appropriate to achieve effective and efficient ITG.

7. DATA COLLECTION

It is widely known that research is an organised effort or process of finding solutions to a problem after a thorough study of the situational factors [36: 3]. To that extent, the method adopted for a research has to be aligned to the research goals. The methodology adopted for this study is qualitative. Specifically, it is an ethnographic

attempt to study events in a natural setting by understanding how practitioners perceived and interprets it [9]. It has a phenomenological emphasis as it involved a study of occurrences mirrored through the eyes of those experiencing them [9; 37]. This approach is deemed most suitable to attain the research purpose which is to gain in-depth understanding on ITG practices in the case organisation.

The case university is a multi-campus university with its branches in and out of Klang Valley, Malaysia. It has student population of about 19,000. The university was selected due to resources accessibility to informants. It represents a typical public university in Malaysia. It has come to the realisation of ITG importance. This need has evolved into an enterprise formulated “ICT Strategic Plan” in recent times. It has also adopted benchmark practices, CobiT, IT balanced scorecard, that have positioned it to realise the need to change its numerous systems into an integrated one. However, its IT systems until recently are majorly in silos. They are run differently by designated functional offices making it a strictly decentralised IT environment. With recent external IT audit, things were dynamically changing to reflect IT realities of shared view and centralised IT resources. The audit adjudged the university to be at the “Performed” or Stage one out of five stages on a CoBIT 5.0 framework.

The informants selected were management staff from the university. The selection was based on purposeful sampling technique [37]. The interview questions were semi-structured, and they were sent beforehand to guide the direction of the interview. Aside from this, a cursory study of available IT policy documents was done in a bid to understand how governance of IT is achieved. In order to answer the question of how IT is governed in the selected HEI, a pilot interview was initiated in March, 2014 with the then IT Director of the university. This was done in order to ascertain whether the instrument can actually measure what they are intended for [37]. After some corrections, as noted by the IT expert, letters were sent to management staff. Favourable responses were received from an executive member, a Director and a Dean. The following is the details of informants whose interview transcripts were analysed in this study, albeit with a sense of confidentiality:

- Informant A: Chief Information Officer (CIO) who is a Professor and one of the Deputies

VC who sits on the University Board. He was previously the Dean for Research Management Centre. There after he was appointed as the Dean of Strategic Planning and Quality Assurance division before his present posting.

- Informant B: Director of IT Division which is the IT function or the IT Provider of the university. The informant is a Professor and is holding the position for the second time. Prior to this, he was formerly the Dean from his faculty.
- Informant C: Dean of Postgraduate Studies. She is an experienced Professor in the field of Linguistic.

8. DATA ANALYSIS

The interview sessions were conducted at the informants' offices between April and June 2014. A total of four interview sessions were conducted as Informant A was interviewed twice. This was done out of necessity because the first interview was shortened due to his busy schedule. Data coding and theme generation commenced after direct transcription, which afford the researcher to be immersed in the data. This really aided the generation of themes by the authors in accordance with the describe, compare and relate paradigm [38].

A template was used to generate the themes. The themes and information obtained from documents analyses formed the basis of the findings. These themes were benchmarked with the enterprise governance of IT best practices [34]. Primarily the finding section is guided by the:

- Interview sessions with the three informants.
- University's ICT Strategic plan for obtained from the informants.
- University's ICT Regulation from its website.

This sense-making effort was geared towards benefitting from the data by contrasting, relating and sorting the objects of the study and analysing them [38]. The Inter-Rater feedback and agreement from Experts were sorted out. Three of these are from the field of Information Systems while the fourth one, is a renowned qualitative expert in Malaysia. Their rating was satisfactory. The Cohen Kappa's reliability ratio expressed as: No of agreed to Themes ÷ Total No of Rated

Themes × 100 were good. For example, the 2nd rater's rating is as given: $28 \div 33 * 100 = 84.85$

The overall rating stand, averagely for each of the capabilities at: Structure capability = 86.36; Process capability = 85.48 and Relational capability = 84.21. The average inter-rating Cohen's Kappa ratio was 85.48. This is an acceptable value from the known threshold of 70 [39]. The themes, which numbered twenty five initially were so categorised putting in mind the advice of the inter raters and the extant literature on Enterprise Best Practices [34] which was supported by a review on IT Mechanism [6]. The belief is that the identified nineteen themes of ITG in this study are premised on formidable structures with processes to guide the relationship between the IT provider and non-IT side of an organisation to enable functional objectives. It is in this light that the themes so generated are presented.

9. FINDINGS

The application of IT within an organisation's operational and strategic activities and processes fixes IT and business managers together in an environment that creates sharing, exchange, relationship and partnership. Thus the flow of knowledge in the university was said to be facilitated through appropriate IT structures and processes as IT performs a critical role in the development and preservation of organisational capacity [41]. The findings show that when structures and processes are in place in an organisation the HEI, relationship between the IT and business side of the organisation tells on how IT delivers desirable IT behaviour. The extent of the relationship explains the organisational capability of attaining effectiveness in governing IT. This is likely to bring forth desirable dispositions from all stakeholders, especially when there is some sense of responsibility.

Such dispositions ensure compliance with best practices, which eventually result in proper and effective governance of IT resources. Furthermore, a good relational capability implies that ITG practices influence or result in IT and business alignment of an organisation as the enterprise is aware of the direction of IT [2; 16]. The result of such awareness is higher governance performance. This is because senior management can describe the ITG [21] given their capability to explore knowledge and thus leverage on IT for organisational goals [40]. Past research has indicated that irrespective of the sector; effective governance of IT helps organisation achieve better



understanding of issues surrounding the strategic nature of IT [8]. These findings are now discussed.

9.1 Perception on Structural Capability of IT

This is a more technical issue that requires the attention of experts or managers to give a direction on how the university situates IT roles, responsibilities and positions. In order to get this perception, questions and responses of informants relating to the way IT is being organised; roles it plays and IT committees in the university were examined. On the committees *...ICT committee is the highest level committee chaired by the VC and the representative from some of the Faculty/CDI... (IB: DU 16). We do have currently the highest in the university we call it ICT committee... (IA: DU 2).* Functional units and their roles for making IT decisions include high level committees: ICT Committee, IT Co-ordination Committee whose details and modality of operation were explicitly stated in the ICT Regulations document. IT decisions were arrived through participatory process in ICT Strategic Plan.

The role IT occupies is a mixture of both strategic and operational, which shows its level of importance. *...to me it's very...important and IT plays a very important part in making the processes efficient, so that I see alright... (IC: DU 54).* The pattern of organising IT is moving from a decentralised to centralise one as if appreciating the concern of Brown (2002). The IT provider said: *It was decentralised from the beginning: now there are 16 other offices...which have IT personnel at their offices managed by officers... (IB: DU 2; 20). ...Now we are moving toward centralisation, restructuring the IT...to address issues pertaining to monitoring. Making our resources more meaningful... (IA: DU 6; 16).*

Since what matters is how well the governance is positioned to achieve a desirable goal, the position occupied by IT at executive or board level was inquired into. This depicts the role of CIO in the picture of thing. It was found that in the case organisation the CIO is ably representing this interest. *...at the Senate level, it is actually well covered in the sense that I sit in the Senate...whenever we have Senate (IA: DU 10).*

This goes to show the important role of the board and the C-level executives in IT governance [12; 21]. However, the non-existence of an IT strategy committee at the board level is observable. Furthermore, is the fact CIO occupies other roles in the university. This according to him, is a Malaysian experience: *...So I went to*

head: the Deputy [VC] and Innovation and as well as the CIO. Other universities in Malaysia: public universities, they...are moving towards having the Chief Librarian as the CIO... (IA: DU 10).

9.2 Perception on Process Capability of IT

In the university, there are formalised strategic efforts in making IT decisions or monitoring procedures to ensure that desired IT behaviours sees the light of day in the organisation [11; 12; 34]. This consists of various ITG frameworks like CobiT 5.0 on which the university was externally audited: *...Our university went through the CobiT audit with...consultant from... And the audit was conducted for the period of August ...until September last year... (IA: DU 2).* Also is the automation of the Balanced Scorecard (BSC) as a performance tool. The IT BSC, which is being cascaded down the unit, has its model well spelt out in the website. These are tools to examine and control IS resources and value to business [1]. *...you have men; machines; money; methods...methods, if you are talking about integrity, it's governance, so the ends doesn't justify the means... course budget...the money (IAb: DU 14). ...roadblocks for us to implement the system is in the manpower to develop the system and in the money that's needed to pay for this Manpower... (IC: DU 54).*

The themes also include IT Resources Control; Users' Feedback Management. *...right now IT is optimally used, but it is not optimally provided. You see, optimally yes. We are using the best we can from a system that is not meeting our needs... (IC: DU 56).* The involvement of all stakeholders in strategic information system planning (SISP): *...through our series of workshops, the management call all the Deans and Directors to come together to decide on our strategic direction for 2014 onwards...normally we have like one or two-day workshop... (IB: DU 10).* Change and Benefit Management whereby users should see themselves as making demand for IT and being champions in an integrated environment. The process capability also dictates that there should be performance measurement where skill sets of staff are adequately managed: competency-based management systems and IT assets measured to ensure optimality. This is to ensure that IT function is capable of achieving delivery services that are both effective and efficient. It evolves an atmosphere of governing the project in a matrix organisation sense: IT driving business needs. *...I...see the need for an effective...I mean part of it is using computer... (IC: DU 54).*

This situation would go a long way to increase data-sharing capabilities of the university and generate keeping of meaningful data for business intelligence. This is likely to enhance management decision-making process greatly. The “ICT Strategic Plan” document enumerates importance of strategic direction. It records:

- Process of taking inputs into the making of the Plan.
- Feedback from users on satisfaction on IT services.
- Strategic direction as well as the Key Result Areas.
- Implementation plans for each identified KRAs.

In summary, in this category, while users see the importance of IT and some of them are actively involved, there are lots of rooms for improvement on the side of IT provision. Such improvement will no doubt place IT as an efficient and effective driver in the educational direction of the university. Active participation and collaboration are seen as existing in the university as a form of involvement in the SISP, shared learning and participation between business (non-IT) and IT and among stakeholders at the functional level within the enterprise [11; 34]. This is usually expected among organisations’ corporate executives; business and IT side of the management.

9.3 Perception on Relational Capability of IT

IT is seen an enabler and partner in progress. *...The role of ICT not only unique to [us]. As far as the higher institution of education is concerned is moving from a tool to an enabler and eventually to become the driver. And we understand this correctly (IA: DU 4).* The provider says: *...the users understand; they agree...as the developers agree and the management agree to implement... (IB: DU 12).* The user confirms: *So...but we see the need for that you know, we see the need for an effective shall I say an effective...system... (IC: DU 50).* To this end, the business managers are seen as giving the good leadership examples [34] by not only, owning IT processes but also seeking management understanding in terms of sponsorship: *...so to that extent...I’m fully involved I see the need, and I’m trying to pressure the right people to do that... (IC: DU 54).* It is a case of business manager being on top of IT-business relationships: *...and my job is to lobby to make the*

need felt to the top management of the university to provide us with these...(IC: DU 58). ...to ensure that these...is developed and...for the management to understand that it is very important to have a system (IC: DU 72).

Part of this is CIO providing required IT Leadership [12; 34] in a way IT can be used to drive educational need in this global environment where convergence of technology is inevitable. The CIO believes that for IT to be a driver, there must be a compensation drive where performing staff will be rewarded and non-performing to be improved upon. Training and Career Development where issues of succession and balanced training for enterprise IT staff as well as IT proficiency for non-IT, is thus also seen as being germane: *...they need to have some forms of trainings to upgrade...in line with their career path development...(IA: DU 22). Well, I think the first of course is the training for those who are not IT savvy...to ensure that these...is developed ... (IC: DU 72).*

Job Rotation is seen happening at the level of the IT function. Here personnel are allowed to learn from the business side or even at times swapped: *...when we see that ok, he is already capable of handling the systems ...and seeing that, for example, when they have been too long in one place...we can station them to Human-Resource Department, taking the human-resource personnel we swap with them to come to IT (IB: DU 34).*

The effect of such rotation is the acquirement of IT-business Knowledge. This is, over time, transformed and applied for performance. Employee who moves from one function to another not only acquires the technical knowledge but also the varied business knowledge and is thus equipped with progressive experience. *...Of course there are also times that they may be under IT support. After three or five years, we feel that ok his capability is more on IT support. He can answer questions for...the helpdesk... (IB: DU 34) ...ok, to be, to allow us to manage effectively, I see; I feel that there has to be enhanced IT capabilities...you see; I see that I do see that...if our IT capabilities were more sophisticated...like a One Stop IT thing that from here I know, ok who is, who is not... (IC: DU 56).* This is knowledge that has added up to the absorptive capacity of the organisation [30; 40]. ACAP explains why some organisations are able to exhibit greater success than others in the use of IT to enable organisation's operational strategic activities. This concept, when applied to IT, suggests that an organisation's

capability to be effective in the use and application of IT is a function of its ability to develop a mixture of IT-related know-how and processes [40].

Acting responsibly is another call for concern. This has to do with the enthusiasm of the employee that will add value to the university's efforts. It is a will to act in good manner *This kind of things, if every one of us...if they have a sense of responsibility and execute it to gain excellence, then I think the university will prosper... (IA: DU:18)*. Details of all these themes are as given in Table 2.

10. RECOMMENDATION

The essence of the findings is that organisation that adapts these capabilities as a result of interactive relationship between the IT, and other functional parts are able to benefit from the knowledge evolved over time. These themes are categorised based on best IT practices [34] which were later confirmed based on a review of extant literature by Almeida, et al. [6]. The capabilities arrived at based on the data (interview and document analyses) with their operational definitions are as shown in Table 2.

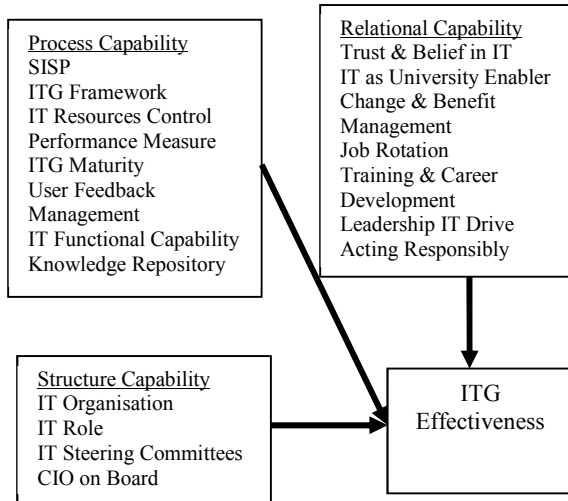


Figure 1: Model of ITG Effectiveness

It goes to say that these capabilities, which are as dimensioned in Figure 1, should be considered when an organisation is routing to know how it fares in its level of IT governance. These identified ITG capabilities as operationally defined in Table 2 should be part of what to be considered in deriving value from effective governance of IT. Equipped by ACAP construct and Van Grembergen Enterprise ITG Best Practices, this

study sees a sense building up around structure, process and relational capabilities of IT in universities that are posed to beget effectiveness in their governance of IT.

This is in line with literature as espoused by Weill, Peterson as well as Van Grembergen. It is convenient to state that, ITG mechanism is a multidimensional construct. Its dimensions are structure, process, and relational capabilities. Consequently, structure; process and relational capabilities determine the effectiveness of IT governance in universities that leverage on IT. This by extension implies they influence the IT-business knowledge capacity ACAP of the university in ITG.

However, the focus of this study is limited to education sector and the use of qualitative method. It is an attempt to represent a systemic research on influence of effective ITG in HEI limited to a developing nation context. No doubt this need and limitation are justifiable, but the interpretation of the findings has to be done with these facts in view.

11. CONCLUSION

The empirical findings show that though some sort of governance may be ongoing in most HEIs in developing nation's context but fewer of such have been reported. More importantly, the current effort is looking at things from insight in the general context of HEIs ITG vis-à-vis the domain of ITG. The theoretical and practical implications of this study are that:

- For ITG to bring the desired IT behaviour credence should be given to the capabilities of its structure, process and relationship that exist between IT and the non-IT functions of the organisation.
- The capabilities as understood through the lens of organisation learning theory, vis-à-vis the ACAP construct, is an essential ingredient when researcher thinks of ITG phenomenon.
- Practically, the management of HEI in Malaysia should see the need to govern the use of IT to achieve value from investment and best behaviour as being important. This is achievable when these 19 capabilities are taken into consideration when leveraging IT.

From this effort, it is certain that when structure, process and relational capabilities of IT are adequately planned, to complement IS resources,



designed and then harmonised together then IT will in shorter time assume the role of a driver for the business. In the university empirically used for this study, this is yet to be attained albeit the situation is quite appreciable. The observation is that IT is yet to be the board of governors' concern in form of having a strategy committee at this level. However, executive managers at the C level are seen as been acquainted and involved in the governance. Such realisation is a good thing to note so that when, the senior management, the IT provider and the non-IT unit managers that leverage on IT, most are on 'same page' on IT domains then effective ITG may follow. The next issue will be to sustain the effectiveness so that organisation performance could be achieved. That is the essence of investing in IT after all, though such may not be an easy thing to achieve. The need for multiple case study on universities in Malaysia to test the viability of this model is noted and is an ongoing endeavour.

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Table 1: Empirical Studies on ITG in Malaysia

AUTHOR	PURPOSE	METHOD	FINDINGS
Ismail [23]	Issues of ITG, funding & structure in a Malaysian university	Case study method wherein interview was conducted with executive and senior-level staff.	The university lacks common approach to decision making or forum for making comprehensive assessments of IT planning and funding strategy.
Lin et al. [24]	ITG practices and awareness among senior managers	Questionnaire designed and administered on senior managers.	There is tendency that IT has been looked upon more as a commodity rather than as a means of gaining competitive advantage.
Maidin and Arshad [25]	ITG Practices in Malaysian Public Sector	Questionnaire designed, and administered on IT personnel in Putra Jaya and Klang Valey.	The awareness of practitioners on effective utilisation of IT resources to deliver competitive advantage was identified among other discoveries.
Othman et al. [26]	Barriers to ITG Adoption	Exploratory and Interview	Identified factors that were barriers to adoption of ITG were justified with empirical data.
Tan et al. [27]	Applying ITG in the Malaysian SMEs	Exploratory and survey administered on company's owners or managers in Melaka	SMEs must identify ownership of decision-making in IT and business-related decisions. SME needs a formal governance mechanism to aid proper process of decision-making.

Table 2: Operational Definitions of Themes

Index	Construct	Operational Definition	Enterprise ITG Best Practices
S1	IT Steering Committee	The executive and top management involvement in governance of IT.	IT strategy committee at level of board of directors
S2	CIO on Board	The place of Chief Information Officer vis-à-vis IT in board level management of the university.	CIO on executive committee
S3	IT Role	The strategic or operational role IT occupies in university.	
S4	IT Organisation	The way university arranges its IT.	
P1	ITG Framework	Process-based ITG and control framework in use in the university.	IT governance framework CobiT
P2	Strategic Information Systems Planning	Formal process to define & update IT strategy university uses in its structure.	Strategic information systems planning
P3	IT Resources Control	University's assets and capabilities employed in achieving value through proper governance.	IT budget control and reporting
P4	Performance Measure	Ways through which IT resources are being measured to enable performance.	IT performance measurement (e.g. IT balanced scorecard)
P5	Knowledge Repository	The design of IT systems to make decision tools available to executive management.	Knowledge management (on IT governance)
P6	Users' Feedback Management	Monitoring procedures that university IT put in place to access users' view on their services.	
P7	IT Governance Maturity	Optimal use of IT to enable a distinctive effective IT governance.	
P8	IT Functional Capability	The experience of user over time given availability of IT expertise.	
R1	Change & Benefits Management	Ability to manage expected adjustment by users and values accruable in the use of IT.	Benefits management and reporting
R2	Job Rotation	Recognising competencies of employees by rotating or swapping them within and from one job function to another.	Job-rotation and Co-location
R3	Training & Career Development	Way IT employees are exposed and are encouraged to be professional in their fields.	Cross-training
R4	Leadership IT Drive	Top managers acting as IT partners as well as the CIO's capability in marshalling a vision for IT role in university.	IT leadership and Executive/senior management giving the good example
R5	Trust & Beliefs in IT	The esteem position IT is held as users recognise that IT understands their processes, related information needs and is ever willing to help.	
R6	IT as a University Enabler	Recognition that IT could eventually drive university goals.	
R7	Acting Responsibly	Enthusiasm of employees to add value to university IT through actions.	