

The Critical Success Factors for Effective ICT Governance in Malaysian Public Sector: A Delphi Study

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Abstract—The fundamental issues in ICT Governance (ICTG) implementation for Malaysian Public Sector (MPS) is how ICT be applied to support improvements in productivity, management effectiveness and the quality of services offered to its citizens. Our main concern is to develop and adopt a common definition and framework to illustrate how ICTG can be used to better align ICT with government's operations and strategic focus. In particular, we want to identify and categorize factors that drive a successful ICTG process. This paper presents the results of an exploratory study to identify, validate and refine such Critical Success Factors (CSFs) and confirmed seven CSFs and nineteen sub-factors as influential factors that fit MPS after further validated and refined. The Delphi method applied in validation and refining process before being endorsed as appropriate for MPS. The identified CSFs reflect the focus areas that need to be considered strategically to strengthen ICT Governance implementation and ensure business success.

Keywords—IT Governance, Critical Success Factors.

I. INTRODUCTION

THE exponential growth in the usage of Information and Communication Technology (ICT) within the last few decades has turned ICT into a vital agenda in business environment [43], [44]. It offered endless opportunities and potentials to the day-to-day running of the business world. The same must be said about public service [3], [10], [12], [41] [42]. The rapid change of public demand for government services requires ICT to evade projects failure and misused organizational objectives to accomplish the demand [32]. Even though ICT resources are capably and operationally expensive, business and government kept investing in their ICT unit, but when ICT cost continues heading north, they began to question the value of ICT investment. Decades of ICT spending has resulted in large and complex computing environments which are too expensive to operate and provide very little strategic value [34], [39].

However, nowadays, we need to manage the large portions of our ICT infrastructures more rigorously to reduce capital investment and operating expenditure [5], [6], [8], [9], [45]. We also need to be more severely focus on potential vulnerabilities and more aggressively manage for reliability

and security [7]. There is a demand for accountability, transparency and agility to support a dynamic and complex business process and in fulfilling the business needs. There is a need to explain how to justify ICT expenses, optimize existing resources, managing risk and deliver better outcomes. ICT must establish the processes necessary to ensure accountability, fairness and transparency. ICT needs governance to institute optimum ICT performance [24] and generate values to business [2], [16], [17], [25]. Thus, it is important for private and public sector to establish good ICT Governance (ICTG) [1].

ICTG links to several key business elements, such as cost reduction, innovation, agility, customer satisfaction and compliance [30]. This is part of strategic alignment that ensured business appreciates and provides active support to the ICT initiatives. ICTG also focus on another aspects such as leadership, direction and control which driven from the highest level within organization.

II. BACKGROUND TO THE STUDY

Public sector demands a different kind of ICTG practices, due to contextual differences of its environment [19], [21], [22], [26], [31], [33], [35], [42]. Such contextual differences include Organizational Structure and Decision Making, Political Influences, Regulatory and Bureaucratic, and Service Oriented [11], [20], [36], [18], [40].

There are many literatures which conclude that Critical Success Factors (CSFs) determined the key areas to focus for resources optimization and investment, and help to improve and enhance the effectiveness of ICTG process. Identifying the right influential factors is complex, because the existing factors are unique, which, they may not be applicable for all organizations, even within the same sector [15], may not readily available in existing frameworks [29], may varies due to the differences in geographical aspects, culture, objectives and goals [37].

Research done on this issue for public sector is still limited [38]. There is a need to explore the specific influential factors for local environment, and this motivates us to carry out this research. We are interested in exploring the state of ICTG implementation, or the lack of it, in Malaysian Public Sector (MPS) [23], [28]. Are there initiatives put in place to ensure that the inflated ICT investment each year do provide value to all stakeholders, particularly the citizen.

This research will be carried out in three successive phases – identifying the CSFs for MPS ICTG, developing the

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maturity model and introducing instrument as performance measurement tool. Each and every phase will have several activities. The first phase consists of CSFs identification, validation and refinement. This paper presents the results of the first phase of our study. We went through the activities associated with the processes of identification, validation and refinement of CSFs.

III. RESEARCH METHOD

This research is an effort to identify the CSFs for MPS ICTG implementation. We conducted a structured literature review of academic articles selected from a large pool of articles on ICTG, focusing on ICTG practices, ICTG for public sector and influential factors for ICTG.

In the final analysis, sixteen (16) CSFs were identified. Our initial reaction was to categorize the CSFs into the five domains of ICTG - Strategic Alignment, Value Delivery, Risk Management, Resource Management and Performance Management. The categorization was a futile effort. Bearing in mind that the final outcome of this research is a maturity model, a one-to-one mapping of CSF and domain is imperative. It does not happen in our case since there are factors that belong to more than one domain. Assigning weightage to each CSF in our maturity model will be a major challenge. Clearly, a new categorization is needed.

TABLE I
CSFs IN ITBSC PERSPECTIVES

Management Contribution	-Human Behaviours -Organizational Behaviours -Mitigate ICT related risks -ICT strategic plan -Management Support -Managing change -Management expectation
Operational Excellence	-Optimizing Resources -Compliance issues -Conformance issues -ICT Project Management -ICT project governance structure
Stakeholders Orientation	-Good Stakeholders Focus -Success rate
Future Orientation	-External service provision -External service provision

We, then, turned our focus to IT Balanced Score Card (ITBSC). ITBSC can be specifically customized to address ICTG issues [15], particularly transforming ICT strategy to a measurable tool and demonstrating ICT value to the business [4], [13], [14]. In addition, ITBSC would give a very supportive link between ICT and business objectives [15] and prepare top management with firm and comprehensive view of overall performance, making it easier for organization to measure ICT performance. The categorization of our CSFs in ITBSC Perspectives listed in Table I. A one-to-one mapping of CSFs to ITBSC dimension is achieved.

A. The Validation and Refining Process

As mentioned earlier, CSFs may not be applicable for all organizations. Having identified all CSFs from literatures

related to public services, we need to be certain that they are applicable to MPS. Our CSFs need validation.

A modified Delphi method was adopted for the validation process. We selected consultants, practicing professional and academic experts to assist. The high-level expertise selected was based on their knowledge and vast experience in ICTG and their involvement in various MPS National ICT projects to add credibility to the research.

This extensive validation process is to confirm the identified factors fit MPS environment. To simplify the process of gathering experts' consensus, the validation form was constructed. The experts were asked to prioritize or rate the proposed factors using a given Likert type of scale 1 to 5 (from Strongly Disagree to Strongly Agree). Additional comments were also solicited to ensure missing CSFs are accounted for. The first cycle of Delphi exercise saw a reduction of factors and regrouping of several interrelated factors. The result obtained from the first round of validation had been thoroughly modified and refined, and another validation form constructed for the second cycle.

The refined validation form was sent back to the experts to gather to solicit their consensus, confirmation and additional comments. The second cycle is about prioritization: prioritize or rate the refined factors using a given Likert type scale 1 to 3 (Disagree, Neutral and Agree) as well as requesting additional comments, if necessary. Minor comments were recorded in this cycle.

Having gone through the validation process, in the final analysis, the CSFs for MPS is shown Table II. The factors reflect the focus areas that need strategic consideration in strengthening ICTG process and business success.

TABLE II
REFINED CSFs FOR MPS

Management Contribution	Enabling Environment	Management Practices	
	-Internal coordination -Management and Leadership styles	-Management support -Management expectation -Managing change -Managing risks	
Operational Excellence	Optimizing Resources	ICT Project Performance	Regulatory
	-ICT personnel -ICT infrastructure -ICT processes -Information governance structure	-ICT Strategic Plan -ICT Project management -ICT project governance structure	-Compliance issues -Conformance issues
Stakeholders Orientation	Stakeholders Expectation		
	-Good stakeholder focus -Service success rate		
Future Orientation	Service Improvement		
	-Continuous Human Resources Development -Research		

IV. DISCUSSION

TABLE III
THE CSFs WITH ICT FOCUS

ICT Focus	CSFs
Cost Reduction	Internal coordination Management and Leadership styles Management support Management expectation Managing change Managing risks ICT personnel ICT infrastructure ICT processes Information ICT Strategic Plan ICT Project management ICT project governance structure
Innovation	Research Continuous Human Resources Development
Agility	ICT Strategic Plan ICT Project management ICT project governance structure Internal coordination ICT personnel ICT infrastructure ICT processes Information Good stakeholder focus Service success rate
Customer Satisfaction	Compliance issues Conformance issues

Malaysian Government ICT initiatives focus on the planned and coordinated use of ICT to strengthen the core functions of public institutions. It is hope that with these initiatives being implemented, we will see an increase in efficiency and at the same time a reduction in operational costs of public services offered. This is what ICTG will achieved - linkage of several key elements, such as cost reduction, innovation, agility, customer satisfaction and compliance. The key question is: how do the nineteen (19) CSFs framed in ITBSC satisfy ICTG? In other words, how do they deliver cost reduction, innovation, agility, customer satisfaction and compliance? We mapped our CSFs against the ICT focus and the resultant mapping is shown in Table III.

The detailed indicators for each CSF will be our focus in the next phase. The maturity model to be developed in phase 2 will demonstrate how these indicators (as well as methods and processes) will push towards the realization of ICT focus.

V. CONCLUSION

The aim of this phase of the research is to identify the CSFs for MPS ICTG and to limit the number of determinant factors for successful ICTG implementation. Recognizing that CSFs is essential for successful ICTG, there is a need for constant attention from the management [30] and reduces the gap in implementing ICTG in most organization [27]. The next two phases will complete our research.

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