

Critical Review on the Competency Measurement Model of ICT Procurement Officer in Public Sector

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Abstract : The usage of the Information Communication Technology (ICT) elements in the Malaysian Public Sector has continuously increased, especially in upgrading the quality of services offered to public. This has encouraged more development of ICT projects. To cope with the demands, the development of the ICT projects has to be implemented by outsourcing as it can accelerate the development of the system, overcome the shortage of skilled labors, and save cost. Despite of the positive factors, the implementation of outsourcing has raised the issues and problems that influenced the success of the projects. Even though there are researches that have discussed about the project success factors, but the elaboration on the project management success (PMS) factors with the focus on competency of the ICT Procurement Officer (PO) who is involved in procurement management has yet to be expanded. The aim of the paper is to identify the attributes and characteristics that required for a PO as a principle for cluster development of the competency evaluation model by applying the Systematic Literature Review (SLR) method on selected databases. The review adopted the synthesizing process to examine the similarity of the identified attributes and characteristics based on the (i) description, (ii) definition, (iii) discussion, (iv) emphasis, and (v) levels of aggregation in the selected articles. This paper has reviewed 24 selected papers and according to the Boyatzis Model, a sum of 25 clusters for PO attributes or characteristics are named and categorized into six (6) clusters. Further synthesis then finalized the clusters into five (5) main categories; (i) Personal, (ii) Strategic, (iii) Knowledge, (iv) Skill, and (v) Performance. Future progress from the finding would be to develop a set of conceptual criteria as a fundamental basis for PO competency measurement model in Public Sector.

Keywords: Competency Measurement, Outsourcing, Procurement, Procurement Officer, ICT Project Management.

1. INTRODUCTION

ICT includes computers, the Internet, and electronic delivery systems such as radios, televisions, and projectors among others [1]. Recently, ICT has influenced the implementation of many policies and agendas for the Public Sector in many countries. ICT offers an outstanding potential for Public Sector agencies to restructure its whole system [2]. For instance, in education, ICT has turned out to be an effective educational technology, that managed to promote dramatic changes in the teaching and learning processes [3]. ICT also has a great potential to accelerate the process of learning science and thinking skills area [4] besides being a requirement for the implementation of the agendas and policies towards coordinated and efficient management, governance, teaching, and learning [5]. Overall, the purposes of ICT project development in many Public Sector agencies are to improve the effectiveness and efficiency of services offered to the public. In 2014, the Public Sector was in fourth place behind banking, manufacturing, and

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communication in its spending on ICT projects worth 447.11 billion USD [6]. As reported by [7], the Malaysia Public Sector services that are already available online has reached approximately 77%. To cope with the greater demands of ICT, most of the Public Sector's agencies have been involved in acquiring the ICT elements to support the vision, missions, and objectives of the organization by implementing the outsourcing method.

2. BACKGROUND

In the last ten years, there is an enormous increase in the involvement of Public Sector in ICT outsourcing [8]. Furthermore, the central agencies for the Public Sector themselves have promoted the implementation of outsourcing by their agencies as practiced by the Malaysian Government [9]. According to the document of [9], Malaysian Public Sector agencies has been encouraged to implement the ICT projects through the outsourcing method if they experience any of the following situation; (i) if the expertise to implement such projects is limited in any particular agency, (ii) the high level of project's complexity, and (iii) outsourcing can reduce the budget and bring more benefits to the organization. The implementation of outsourcing has involved some sort of procedure regulated by the entrusted bodies like the Treasury or the Minister of Finance. However, implementation through outsourcing method has also raised some problems that affect the implementation and success of the projects.

Based on the findings by a previous research, the following problems have been identified; (i) deterioration of vendor services, (ii) delay in data delivery, (iii) the vendor's inability to manage changes in user requirements [9], (iv) the lack of vendor commitment [10], (v) the ineffectiveness and slow vendor implementations [11]. The ability of vendors to implement the project has been regarded as a vital issue in completing the designed project.

Considering a different angle on the current outsourcing procedure, this paper has decided to give focus on the appointment procedure of the PO that is responsible for vendor selection and deemed to be one of the factors that may affect the completion of the project. The incompetency of the PO may compromise the selection of the vendors [12] and later affect the project as a whole.

This paper is really keen to summarize the existing studies about competency measurement models, to understand, analyze, and identify the attributes or characteristic of a PO. The finding shall be considered as the postulate to develop a set of conceptual criteria as a foundation for the development of the PO competency measurement model.

3. LITERATURE REVIEW

A. Outsourcing

According to [11], outsourcing is described as a decision taken by an organization to contract out or sell the organization's IT assets, people, and/or activities to a 3rd party supplier, who in exchange provides and manages assets and services for monetary returns over an agreed time period. On the other hand, [13] has defined outsourcing as the contracting of a third party to manage a business process more effectively and efficiently than performed in-house. While [14] has described procurement as the process to get the goods, works, and services, whether obtained for indoors or outdoors. This process has its own standard procedure starting from the determination of the needs until the end of the contract or the use of related assets [9]. With regards to the statement "to get something from outside or third party", as contemplated by [10], [11] and [14] have portrayed the same sentiment and significantly justified that outsourcing or procurement has the same procedure. The definition also depicts the encouraging motivation in implementing procurement as the determination for better organization business process. In other words, outsourcing or procurement is a procedure to obtain goods and services from other parties to fulfil organization needs.

It has been established by some statistics that procurement has gained a place in the implementation of projects. For example, according to Outsourcing Malaysia (OM) forecasting, in year 2015, the total

outsourcing revenue made up to RM7.1 billion and provided up to 88,000 jobs. OM also added that, the Malaysian Public Sector and industry's aspiration will generate RM13billion in revenue and a total of 200,000 jobs by 2020.

B. Procurement Procedure

Procurement has been implemented through regulations and procedures. The implementation of procurement procedure in the Malaysian Public Sector is regulated by the Malaysia Treasury Circular No. 3/2013. It has long been introduced and constantly improved by the Government. The procedure is rigorous and involves a number of important committees at various levels to evaluate and determine the right vendor to be awarded the projects, as the respective vendor should qualify and be capable of completing the projects as planned. Implementation of these procedures has involved public officers who are appointed as POs according to the regulations specified by the Treasury Circular (TC) [9].

The function of the PO is very significant as they are directly involved in carrying out evaluation of projects whose value is enormous. These officers need the particular knowledge, skills and reasoning in carrying out their tasks, as well as having appropriate personality traits such as an individual's cognitive, functional, social ability, and ethics [12][15]. While [16] also mentioned about the effect of skills in organizational performance and also claimed that purchasers with high skill levels and knowledge have a significant impact on financial performance and operational efficiency in terms of quality improvement, design, and reduction of lead times.

C. Competency Measurement

A competency model will provide a fundamental guideline for employees in how they should act and what they should be doing. Later on, with the utilization of a competency model, the management could be informed of which characteristics of the employees are related to superior performance [17].

Apparently, the competency evaluation of Public Sector's officers is a necessity and has long been practiced by public organizations [18]. For instance, currently, the evaluation applied by the Malaysian Public Sector is using a measurement procedure or model known as the Annual Performance Appraisal Report (LNPT). It has been applied to quantify the performance of Public Sector's officers in accomplishing the targets set at the start of each year. LNPT is a standard and generic approach meant for a substantive post [18]. In Malaysia, PO is not a substantive post and is appointed on an ad-hoc and temporary basis, deliberately for the procurement as regulated by the Treasury [9].

Hence, based on the current competency evaluation practice, the competency of a PO appointed is unmeasured [18], where competency is very important to be measured in ensuring that the officers appointed as procurement committee members are able to be trusted to perform crucial evaluation and decisions in procurement management.

4. METHODOLOGY

To identify and gather the attributes and characteristic of a PO, a Systematic Literature Review (SLR) was carried out on the selected databases. Based on [16] and [17], there were three (3) main phases for SLR to be complied to gather the outcomes; (a) SLR Planning – review need identification by forming the research questions, (b) Conducting SLR – resource databases identification, searching, and selection strategy, quality assessment, data synthesis, and data extraction, and (c) SLR Reporting – finding, discussion, and conclusion.

Apart from the several models of competency which is being practiced by respective Public Sector's organizations; (i) Australia, (ii) Canada, (iii) Netherlands, and (iv) United Kingdom, there were seven (7) online databases involved in this review; (i) IEEEExplore, (ii) ACM Digital Library, (iii) ScienceDirect, (iv) Emerald, (v) SAGE Journals, (vi) Scopus, and (vii) Google Scholar.

After going through critical SLR steps, the final 24 articles were gathered and reviewed for future analysis and discussion. The models that are currently applied have provided the opportunity for this paper to study the concept of the model and also consider real case studies. The analysis was used in the synthesizing process to examine the similarity based on description, definition, discussion, emphasis, and levels of aggregation of attributes discovered and discussed by other researchers.

5. FINDING

Assessment of competence began to receive attention in many organizations after it was initially introduced by David McClelland in the early 1970s. His study stated that, it is more beneficial to measure employee's competency rather than measuring their IQ in the achievement of the tasks set for them [21], [22]. The competency model that comprised of related personal attributes were then introduced and applied by many private and public sectors.

It is necessary here to elucidate just what is meant by competency. The authors of articles [22]–[26] defined that competency has been concluded as the ability or capability. On the other hand, the attributes discovered by [27]–[31], can be summarized into three (3) main components to describe competency; (i) behavior, (ii) knowledge and skills, and (iii) delivery of performance. Although conflicts of beliefs still exist, there seems to be some agreement that competency definition revolves on the person's ability in performing duties accurately to fit the objective of the assignment, compliance with the procedure, and regulation that must be cleaved.

A seminal research about the competency is the outcome of the work of Richard Boyatzis. Boyatzis had defined competency as “an underlying characteristic of a person which resulted in effective and/or superior performance in a job” [23]. His study has proposed a model that comprised of 3 primary clusters. According to the model, the maximum performance is believed to occur when the (i) person's competency or talent is consistent with the needs of the (ii) job demands and the organizational (iii) environment. The clusters were populated by eight (8) main attributes; (i) motives, (ii) traits, (iii) self-concept, (iv) knowledge (v) skills, (vi) ability, (vii) delivery, and (viii) environment as indicated in Table 1 below.

Table 1
The cluster and attribute of Boyatzis Model

<i>Cluster</i>	<i>Attribute</i>
The individual's competency	Motives, Traits, Self-concept, Knowledge, Skills, Ability
The job's demands	Delivery
The organizational environment	Environment

Referring to the three (3) clusters in Table 1 above, the attributes of the individual's competency by Boyatzis Model are illustrated as the attributes and characteristics of the PO that were retrieved from the articles reviewed by this paper.

The finding of the review has been summarized and described in Table 2 below. The table comprises of 25 clusters reviewed from 24 different articles.

6. DISCUSSION

According to Table 2, it can be seen that there are some articles that discussed the similar clusters. Referring to Boyatzis Model, the results of the review has found twenty five (25) related clusters.

The articles of [18], [28] and [29] have explained the need to consider the attributes associated with a person's motive in assessing the individual competency.

Table 2
List of Cluster Reviewed

<i>S. No.</i>	<i>Cluster Cluster</i>	<i>Cluster</i>
1.	Skills	[24], [28], [31]–[33], [35]–[40]
2.	Ability	[25], [27], [35], [39]–[41]
3.	Knowledge	[24], [28], [31]–[33], [35]–[37], [39], [42]
4.	Strategic Vision	[41], [43]–[46]
5.	Motive	[24], [33], [34], [36]
6.	Traits	[24], [33], [35], [36]
7.	Behaviour	[28], [31], [32], [34], [35], [37], [39], [40], [42]
8.	Personal Value System	[41], [43]–[46]
9.	Internal enterprise skills	[10], [41], [44], [45]
10.	External enterprise skills	[10], [19], [41], [44], [45]
11.	Potential of Information Capabilities	[43]–[45], [47]
12.	Individual	[48], [49]
13.	Motivation	[19], [27], [34]
14.	Conflict & Negotiation	[19], [43], [46]
15.	Strategic business skills	[10], [43]
16.	Communication	[19], [45], [46]
17.	Interpersonal skills	[10], [43]
18.	Self-Concept	[24], [33]
19.	Soft-Skill	[38]
20.	Leadership & Decision Making	[19], [46]
21.	Knowledge of IT	[47]
22.	Administrative and Technical Skill	[46]
23.	Technical skills	[10]
24.	Information Mind Set	[47]
25.	Capability of IT Apps	[47]

Motive is seen as an important attribute because it is a major drive for a person carrying out the task in achieving the objective. Attributes of motive were later expanded by Richard Boyatzis through the of articles [30] and [31] with emphasis on the importance of individual motivation attribute and is also supported by the articles of [22] and [29]. Hence, it can be concluded that motive is a cluster that has to be considered in the assessment of competence.

Boyatzis also suggested in his article of [23], that the cluster of traits must also be considered. Traits are described as distinguished characteristics of a person. Boyatzis' idea is also endorsed by the authors of [28] and [32]. Based on the articles written by [30], [31], [34], [36], [38]–[40], [49], traits cluster is seen as highly correlated with the attribute of behavior. Those articles have explained that the behavior is such characteristic that plays an important role in shaping personal actions to accomplish the tasks entrusted.

Moreover, the traits cluster can be complemented by also considering some other attribute that supports the role of behavior such as soft-skills [37], communication skills, personal value system [45], and interpersonal skills [10]. These attributes have also been widely applied in competency models adapted by countries such as Australia [44], Canada [43], The Netherlands [42], and The United Kingdom [41].

From the synthesizing process, this paper has found the clusters of motive and traits characterized by similar attributes. Both were populated by self-nature attributes of a person. Motive is seen as an inner nature attribute, while a trait is a reflection of the attributes. Further review process has suggested the combining of the cluster of motives and traits into a single constructed cluster of personal.

Boyatzis' model as described in [23] along with the article by [32] also described the cluster that has been proposed that is self-concept. Self-concept is how a person is aware, react, and understand the task or job entrusted to them. Rao and Palo in their article [45] has described several attributes that characterized the self-concept cluster. According to Rao and Palo, an employee needs to realize the vision and mission of the organization, leadership, ready to get to the right decisions, and handle conflicts and negotiations proficiently when dealing with such related situations. These attributes have been included by the competency model applied by The Netherlands [42]. Additionally, the article by [38] has mentioned about creating and conceptualizing a good strategic planning and the article by [30] was concerned on visions and focus. In summary, self-concept is how strategically a person translates the inner nature when interacting with the other elements or situation, whether internal or external. Obviously, the three (3) clusters mentioned above have depicted the tendency to portray the individual characteristics of employees.

At the same time, Boyatzis' Model also has emphasized on the supremacy of knowledge [23]. Knowledge is the theoretical and practical understanding of an organized body of information usually of a factual or procedural nature which, if applied, makes adequate performance on the job possible [50]. It is subsequently supported by the articles by [30]–[32], [34], [36], [40], [46], [49] that detailed out the sort of disciplines of knowledges that should be acquired like IT knowledge, work experience knowledge, comprehensive and contractual knowledge, professional and administrative knowledge, management knowledge, and technical knowledge. The review has discovered that the focus of the existing competency model do not emphasize on the attributes associated with knowledge. These models are mainly focused on attributes associated with personal traits and skills. This situation has been seen as an opportunity to further enhance the existing models by taking into account the attributes associated with the knowledge cluster.

Besides the knowledge cluster, Boyatzis Model also promoted the attributes that can possibly constitute the skills cluster. Skill refers to the proficient manual, verbal, or mental manipulation of data or things to complete the tasks given [50]. Skill is the cluster most mentioned in all the articles reviewed besides the sub-cluster of traits in personal cluster. The study by [10], [23], [30], [34], [36]–[39], [49] focused on specific sort of skills like administrative and technical skills [45], technical skills, strategic business skills, internal enterprise skills, and external enterprise skills [10].

Likewise, the articles by [22], [29] and [32] have focused on the ability of judgement, evaluation, consultation, collaboration, initiative, and decision-making. On the other hand, most of the existing models were more emphasized on business process skills and managing enterprise stakeholder skills, be it internal or external [41]–[44].

Although the cluster of knowledge and skill looks similar but this paper suggests otherwise. Both of the clusters have equally considerable influence in the aspect of competency measurement and crucial requirement for personnel to perform tasks consistently with the purposes of the tasks and organizational environment as described by [23], however knowledge do not reflect the skill acquired, but in reverse, the skill does.

Meanwhile, the review also discovered the need to measure the ability of personnel in completing tasks that comply with quality standard set by the organization [19], [20], [23], [37], [38]. It also have been applied by the models adapted by the Government of Australia [42], Canada [44], and The Netherlands [45]. There models were focused on the achievement, performance and quality of the outcomes. Ability can be evidenced by activities or behaviors that have met the requirement of the tasks [50]. It can be seen through the capacity to perform and the quality of the performance.

Referring to Table III, a total of eleven (11) clusters that characterize the individual category were then grouped into three (3) clusters, (i) motive, (ii) traits, and (iii) strategic. Further review process by synthesizing those three (3) clusters has suggested the combining of the clusters of motive and traits into a single constructed personal cluster that finally simplifies the individual category clusters into two, (i) personal and (ii) strategic.

The rest of the eight (8) clusters signifying the performance category were divided into three (3) constructed clusters; (i) knowledge, (ii) skill, and (iii) performance.

Even the clusters with characteristics of performance are fewer compared to the clusters that described the characteristics of individual but significantly more than half of the characteristic of performance.

Table 3
Summary of the Clusters Reviewed

<i>Cluster Reviewed</i>		<i>Cluster Constructed</i>	
Individual	Individual	Motive	Personal
	Motivation		
	Information Mind Set		
	Behaviour	Traits	
	Personal Value System		
	Communication		
	Interpersonal Skills		
	Soft-Skill	Strategic	
	Self-Concept		
	Conflict & Negotiation		
Leadership & Decision Making			
Performance	Knowledge of IT	Knowledge	
	Internal Enterprise Skills	Skill	
	External Enterprise Skills		
	Strategic Business Skills		
	Administrative and Technical Skill		
	Technical Skills	Performance	
	Capability of IT Apps		
	Potential of Information Capabilities		

7. CONCLUSION

Competency assessment was introduced and practiced for many years by the organizations. This assessment is very important for organizations to evaluate and determine the performance of an officer in particular and the achievement of the objectives of the organization in general. In the implementation of ICT procurement, the most important objective is to gain return from the investment that has been spent.

However, the ICT outsourcing has put the project at stake due to the incompetence of vendor appointed. Therefore, the performance of an officer involved in the operation of the procurement process especially in evaluating and selecting vendor is crucial to the organization.

Hence, this paper reviewed the existing studies along with current applied competency measurement models and came out with the possible list of PO's attributes and characteristics. The SLR method was conducted to identify, select, assess, extract, and synthesis the related articles to search for that relevant attributes and characteristics.

Finally, the paper suggested the attributes and characteristics that should be possessed by a PO. It can be based on the five (5) constructed clusters. (i) personal cluster, (ii) strategic cluster, (iii) knowledge cluster, (iv) skill cluster, and (v) performance cluster.

For future research, the paper proposes those clusters to be considered in the conceptual criteria as a foundation in the development of the PO competency measurement model.

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9. REFERENCES

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