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# Public Real Estate Performance Measurement: A case study of a Bangkok Government Complex

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อาคารศูนย์ราชการ กรุงเทพฯ

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## Abstract

Various studies have shown that corporate real estate can contribute to organisational performance. However, the concept of Public Real Estate Management (PREM) has not been well known in Thailand. This paper aims to present the concept of PREM, to describe Key Performance Indicators (KPIs) that are being used in practice, to discuss KPIs that should be developed furthermore, and to explore which organisational characteristics affect the selection and prioritisation of KPIs. The empirical study is based on data from a case study of Dhanarak Asset Development Company Limited (DAD). Research methods include interviews, walk-through observations and document analysis. The findings from the case study confirm the assumed relationships between performance measurement and organisational characteristics such as organisational objectives, structure and management style. Although the DAD organisation applies a systematic performance measurement approach, it is recommended to elaborate some KPIs furthermore such as employee satisfaction with the work environment and the rate of customer retention. The findings from the case study can be used to improve the current knowledge of the impact of public real estate management on organisational performance, and to develop a holistic performance measurement system for public real estate in Thailand.

## บทคัดย่อ

เป็นที่ยอมรับกันว่าสังหาริมทรัพย์มีส่วนสนับสนุนต่อความสำเร็จขององค์กร อย่างไรก็ตามแนวคิดในการบริหารอสังหาริมทรัพย์ขององค์กรภาครัฐ (Public Real Estate Management; PREM) ยังไม่เป็นที่แพร่หลายในประเทศไทย การศึกษานี้มีวัตถุประสงค์เพื่อนำเสนอแนวคิดในการบริหารอาคารราชการ อธิบายดัชนีชี้วัดผลการปฏิบัติงาน (Key Performance Indicators; KPIs) ที่ใช้อยู่ในปัจจุบันและที่ควรถูกพัฒนา และสำรวจคุณลักษณะขององค์กรที่ส่งผลกระทบต่อ การคัดเลือกและการจัดลำดับความสำคัญของดัชนีชี้วัดผลการปฏิบัติงาน การศึกษานี้อาศัยข้อมูลจากกรณีศึกษา บริษัทธนารักษ์พัฒนาสินทรัพย์จำกัด (Dhanarak Asset Development; DAD) ซึ่งได้มาจากการสัมภาษณ์ การสำรวจพื้นที่ และ

การวิเคราะห์เอกสาร ผลจากการวิเคราะห์แสดงให้เห็นถึงความสัมพันธ์ระหว่างการวัดผลความสำเร็จของการปฏิบัติงาน และ คุณลักษณะด้านต่าง ๆ ขององค์กรเช่น วัตถุประสงค์ โครงสร้าง และรูปแบบการบริหารงาน ถึงแม้ว่าองค์กรที่ใช้เป็นกรณีศึกษาจะมีระบบการวัดผลความสำเร็จของการปฏิบัติงานที่ชัดเจน แต่ก็ยังมีดัชนีชี้วัดผลการปฏิบัติงานด้านอื่น ๆ ที่สามารถนำมาพัฒนาต่อได้ เช่น ความพึงพอใจของพนักงาน (Employee satisfaction) ต่อสภาพแวดล้อมในการทำงาน และ อัตราส่วนของฐานลูกค้า (Rate of customer retention) ข้อมูลที่ได้จากกรณีศึกษาสามารถอธิบายผลกระทบของการบริหารจัดการอสังหาริมทรัพย์ขององค์กรภาครัฐที่มีต่อความสำเร็จในการดำเนินงานขององค์กร และสามารถนำมาใช้เพื่อการปรับปรุงระบบการวัดผลความสำเร็จในการบริหารจัดการอสังหาริมทรัพย์ขององค์กรภาครัฐในประเทศไทยให้เกิดความสมบูรณ์มากขึ้น

### **Keywords (คำสำคัญ)**

Public Real Estate Management; PREM (การบริหารอสังหาริมทรัพย์ขององค์กรภาครัฐ)

Performance Measurement (การวัดผลความสำเร็จในการปฏิบัติงาน)

Key Performance Indicators; KPIs (ดัชนีชี้วัดผลการปฏิบัติงาน)

Balanced Scorecard; BSC (บาลานซ์สกอร์การ์ด)

Employee Satisfaction (ความพึงพอใจของพนักงาน)

## 1. Introduction: Public Real Estate Management

Governments show an increasing interest in being involved in real estate development as an equity player, loan guarantor or developer, through the use of government-owned lands. An important governmental driver is to stimulate economic development in the community by using real estate as an economic development tool (Simons, 1992, pp. 639-654). This justification for government involvement is based on the public capital hypothesis i.e. investment in public lands and infrastructure is believed to be associated with job and income growth in the private sector (Tatom, 1991, pp. 3-15). Unlike a private investor, a public real estate manager does not focus primarily on the financial interests of real estate. By definition, Public Real Estate Management (PREM) is the management of a government's real estate portfolio by aligning the portfolio and services to (1) the needs of the users, (2) the financial policy set by the Treasury and (3) the political goals that the government wants to achieve (Van der Schaaf, 2002). As one of the organisation's resources, real estate needs to support the primary processes of the organisation. From a government perspective, real estate should meet the needs of the various departments and agencies. On the other hand, real estate is perceived as a means of accomplishing the organisation's political goals (Van der Schaaf, 2002). Kaganova and Undeland (2006) mentioned three principles that reflect a change in public asset management:

1) Recognising property as a productive asset, it is important to focus attention on systematically assessing the efficiency of real estate use and the financial performance of public property, including accounting for total costs of real estate ownership, operation, and management and life-cycle costing.

2) Because governments are usually no efficient property owners and/or managers, various countries adopted substantial privatisation of governmental real estate and a change in government's role - from a

"provider" of real property for end-users (such as families, business tenants, governmental organisations and educational institutes) to a "partner" that collaborates with the private sector.

3) The private sector asset management practice can be used as a source of benchmarking for public-asset management, for instance by systematic performance monitoring and valuation of assets, subdivision of the portfolios with defined utilisation and performance targets, and clear-cut legal relationships with users.

Up until now PREM is not a well-known concept in Thailand. These three principles of PREM may be used to provide guidelines for the development of public real estate.

## 2. The need for performance measurement

Considering all three principles mentioned above, performance measurement can play an important role to achieve superior levels of effectiveness and competitiveness of PREM. According to Zairi (1994), the function of performance measurement is to generate information that will be useful for solving a wide variety of problems and which can be applied to certain situations. Performance measurement provides the basis for an organisation to assess how well it is progressing towards its predetermined objectives, to identify areas of strengths and weaknesses, and to decide on future initiatives, aiming to improve organisational performance (Amaratunga & Baldry, 2002, pp. 217-223). Performance measurement can also be described as an important aid for making judgements and decisions on business development. Performance measurement can help managers to answer five strategically important questions: 1) where have we been? 2) where are we now? 3) where do we want to go? 4) how are we going to get there? and 5) how will we know that we got there? (Lebas, 1995, pp. 23-35). Sinclair and Zairi (1995) provided a list of seven dimensions to emphasise the impor-

tance and need for performance measurements.

Performance measurement:

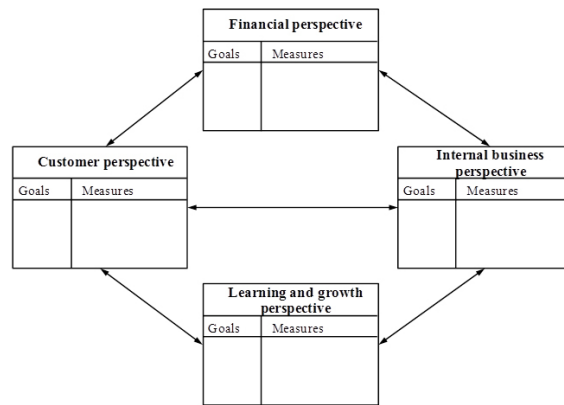
- enhances improvement
- can ensure that managers adopt a long-term perspective
- makes communication more precise
- helps an organisation to allocate its resources to the most attractive improvements activities
- is central to the implementation of an effective and efficient planning, control, or evaluation system
- can affect the motivation of individuals and encourage right organisation behaviour
- can support management initiatives and manage change

In connection to performance measurement, Neely et al. (1995) made a distinction in three terms:

- Performance measure: a metric to quantify the efficiency and/or effectiveness of an action
- Performance measurement: the process of quantifying the efficiency and effectiveness of action
- Performance measurement system: a set of metrics to quantify the efficiency and effectiveness of an action

One of the most well-known organisational performance measurement systems is the Balanced Scorecard (BSC) that was developed by Robert Kaplan and David Norton in 1992 (Figure 1). Nowadays many Thai organisations have adopted the BSC for measuring the organisational performance. The basic notion of the BSC is that organisational performance ought to be evaluated from more than simply a financial perspective. The BSC helps to translate the strategy into actions from four perspectives:

- Financial: Traditional measures of profitability, revenue, and sales growth
- Customer: Customer retention, customer satisfaction, and market research
- Internal business processes: Processes to meet or exceed customer expectation
- Learning and growth: How the organisation and its people grow and meet new challenges.



**Figure 1.** The Balanced Scorecard framework (Kaplan & Norton, 1992, pp. 71-79)

There is a growing need for organisational performance management and measurement that covers these four perspectives, and that can be applied in various situations in a changing internal and external context. A careful selection of appropriate performance measures i.e. Key Performance Indicators (KPIs) that takes into account the organisational context is essential to be able to evaluate the influences of the corporate real estate performance on the organisational performance, achieving the organisational objectives and supporting the core business.

In a previous study (Riratanaphong, 2014), a step-by-step plan for prioritisation of corporate real estate performance measures and KPIs has been introduced to enable an evaluation of the influences of the corporate real estate performance on organisational performance, achieving organisational objectives and supporting the core business. This step-by-step plan includes six main steps:

- 1) Inventory of KPIs that the organisation currently applies.
- 2) Clustering of all KPIs in two groups: organisational performance and real estate performance.
- 3) Classification of all measures in a limited number of clear performance areas in order to get a clear overview, e.g. into the six categories of Bradley (2002).

4) Comparison of possible and currently applied measures and KPIs; for a list of possible KPIs that came to the fore in an extensive literature review see Riratanaphong (2014).

5) Reflection on similarities and dissimilarities between currently applied and possible KPIs in connection to the vision and mission of the organisation, its main objectives and contextual characteristics such as economic prosperity or a depression.

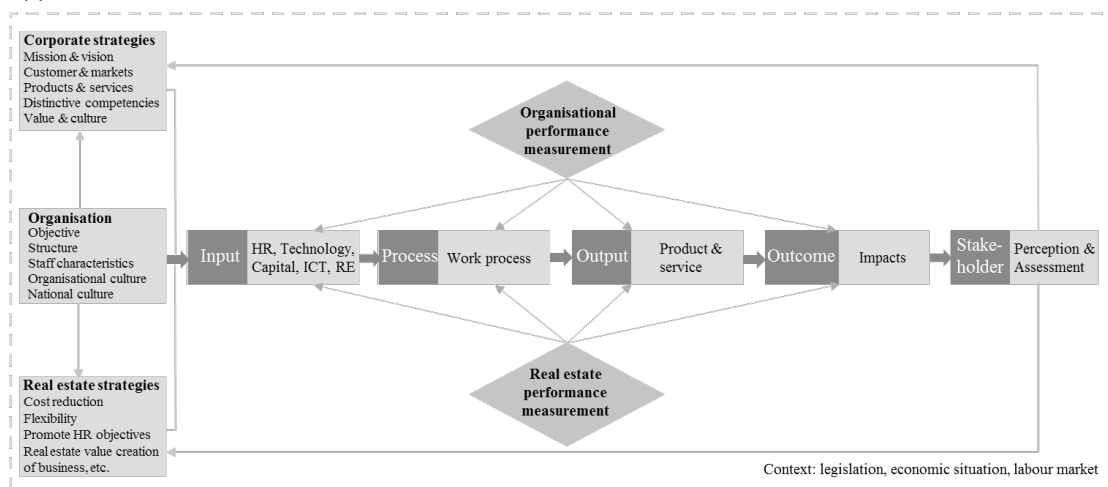
6) Prioritisation of KPIs in connection to the main objectives and contextual variables such as economy and competitive advantage.

It is recommended to implement these six steps by using the conceptual model of performance measurement that was developed by Riratanaphong (2014), see Figure 2.

This paper builds on this conceptual model of performance measurement (Riratanaphong, 2014). Figure 2 shows the conceptual model that is aimed to provide the understanding of performance measurement in different perspectives (i.e. organisation and corporate real estate performance) and in the different processes of an organisational system (i.e. input, process, output, outcome). The conceptual model shows how an organisation and real estate performance measurement can be applied to align with corporate and real estate strategies. According to the model, performance measurement can be firstly applied to monitor actions and resources which

have been used to support these actions in order to achieve the set targets. Performance measurement can be discussed in connection to the organisational characteristics (i.e. objective, structure, staff characteristics, organisational and national culture), operations, resources, impacts and stakeholders. The second purpose is to use the conceptual model of performance measurement for the prioritisation of corporate real estate performance measures and KPIs.

Table 1 shows a number of key questions according to the conceptual model of performance measurement. These key questions can help to select KPIs by assessing the corporate and real estate strategies, input, process, output, outcome, stakeholders and the external context, and exploring how to optimally align real estate performance to aimed organisational performance. Regarding the suggested KPIs of employee satisfaction of the work environment and rate of customer retention, key questions that could be considered in the step-by-step plan are for example: what are the focus points of customers and markets? Which KPIs can be applied to align the input, process and output of the organisation to the needs and interests of particular customers and markets? What are the impacts of business operations on different stakeholders? Which KPIs can be applied to measure the perceptions of different stakeholders?



(Source: Riratanaphong, 2014)

Figure 2. Conceptual model of performance measurement

**Table 1.** Key questions for the prioritisation of KPIs according to the conceptual model of performance measurement

Variables in the conceptual model of performance measurement	Key questions regarding the prioritisation	
	Assessment of the organisational objectives and characteristics	CRE performance measures and KPIs selection
<b>Organisational context:</b>		Which CRE performance measures/KPIs can be applied to align with:
Objective	What are the objectives of the organisation?	- organisational objectives?
Structure	What characteristics can describe the organisational structure?	- structure of the organisation?
Staff characteristics	How can staff characteristics be described?	- staff characteristics of the organisation?
Organisational and national culture	How can the organisational and national culture of the organisation be described?	- particular types and dimensions of organisational and national culture?
<b>Corporate strategies:</b>		Which CRE performance measures/KPIs can be applied to align with:
Mission & vision	What is the mission for today and vision for the future?	- mission and vision of the organisation?
Customer & markets	What are the focus points on customers & markets?	- particular customers & markets of the organisation?
Products & services	Which strategies have been used to organise products & services?	- particular products/services of the organisation?
Distinctive competencies	Which strategies have been applied to develop competencies or skills unique to the organisation?	- distinctive competencies of the organisation?
Values & culture	Which strategies have been introduced to improve the values & culture of the organisation, e.g. work-life balance initiatives?	- values & culture of the organisation?
<b>Real estate strategies:</b> Cost reduction, flexibility, promote HR objectives, real estate value creation of business, etc.	Which approaches of real estate can be aligned with and reinforce real estate and corporate strategies?	Which CRE performance measures/KPIs can be applied in connection to real estate approaches (e.g. quality, cost, quantity, location, technology of space and practices for providing space) in order to support real estate and corporate strategies?
<b>Input:</b> HR, technology, capital, ICT, real estate	How are resources utilized for business processes to accomplish the set targets?	Which CRE performance measures/KPIs can be used to evaluate how an organisation's resources are used?
<b>Process:</b> Work processes	What are the work processes of the organisation?	Which CRE performance measures/KPIs can be used to evaluate work processes?
<b>Output:</b> products & services offerings	What type of products and services does the organisation offer?	Which CRE performance measures/KPIs can be used to evaluate output (i.e. products/services)?
<b>Outcome:</b> Impacts	What are the impacts of an organisation's input process and output to core business, real estate and environments?	Which CRE performance measures/KPIs can be applied in regard to different aspects of core business, real estate and environments?
<b>Stakeholders:</b> Perception and assessment	What are the impacts of business operation on different stakeholders?	Which CRE performance measures/KPIs can be applied to different perception of stakeholders?
<b>External context</b> Legislation, economic situation, labour market, societal value	What are the impacts of legislation, economic situation, labour market on performance measurement?	Which CRE performance measures/KPIs can be applied with regard to legislation, economic situation, labour market and societal value?

(Source: Riratanaphong, 2014)

This paper aims to explore which KPIs are being used in practice by the Thai government, which organisational characteristics affect the selection of KPIs, what similarities and dissimilarities come to the fore between current practice and performance measurement theory, and what recommendations can be given to improve the current performance measurement practice in Thailand.

### 3. The Dhanarak Asset Development case

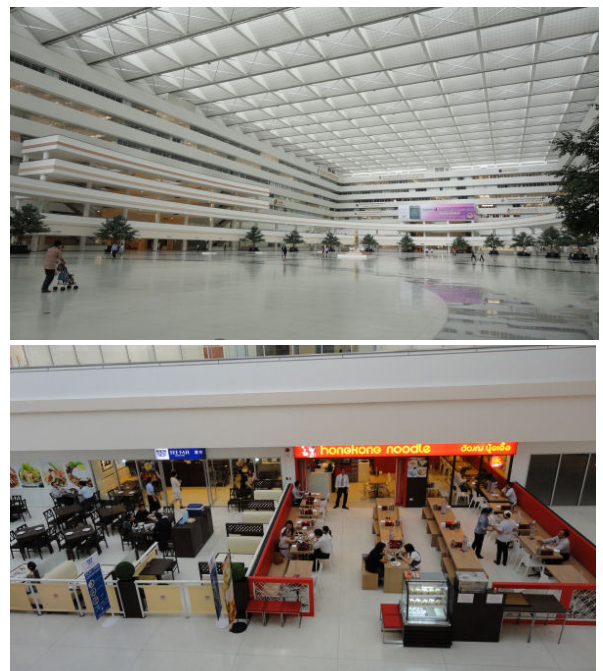
To get a better understanding of PREM in Thailand, Dhanarak Asset Development company limited (DAD) has been selected to collect reliable and valid data. The DAD organisation is a state-owned enterprise established in 2004 as a unit of the Thai Ministry of Finance. It is the only public sector organisation in Thailand that has a role in managing and maintaining the government's real estate. The organisation was set up to initiate, construct and operate the new Bangkok government building-complex Changwattana and other government assets according to the governmental policy. The company's mission covers two main areas: 1) to manage government assets according to government policies and 2) to develop the government building-complex as a new dimension of government housing. The main organisational objectives: 1) to achieve economies of scale and 2) to provide value for money to the client. The organisational structure consists of five departments: 1) policy, 2) administration, 3) business development and marketing, 4) finance, and 5) operations (Dhanarak Asset Development [DAD], 2009). The government has set up a committee of which the members are appointed by the government. The task of this committee is to assign personnel to a risk management committee and an audit committee. The audit committee works in connection with TRIS corporation limited, a performance evaluation consulting company, to evaluate the organisation's performance.

The Changwattana complex provides office spaces to 30 public organisations of Thailand. The complex consists of three main zones: A (40 acres), B (78 acres), and C (60 acres). The DAD organisation occupies 3 separate offices located in zone B of the Government Complex. The complex building users include employees of the public organisations, visitors and renters of the commercially rented areas. Amenities include banks, post office, hospitals, shops, restaurants, food outlets and open meeting spaces that are provided throughout the complex. Figure 3

shows the exterior of the building, whereas figure 4 shows two interior spaces of the Government Complex buildings.



**Figure 3.** The Dhanarak Asset Development building (A) and The Bangkok Government Complex (B)



**Figure 4.** Main hall of the Government Complex buildings (A) and the commercially rented area (B)



#### 4. Research methods and findings

Research methods include an interview with senior management personnel, walk-through observations, document analysis and observations. Data on performance measurement were collected from company reports and documents from the human resource manager. Semi-structured interviews were conducted with the chief marketing officer, senior specialist and public relations manager. The interviewees were asked about DAD's performance measurement. Documents used for the analysis include the company's annual report, roles and responsibilities handbook, and the code of conduct handbook. Observations were conducted by a walk through the Government Complex and the DAD workplace and by recording where and when certain behaviour occurred such as a record of unoccupied spaces in the DAD workplace.

##### 4.1 Performance measurement system

The performance measurement of all state enterprises in Thailand is directed by the State Enterprise Policy Office (SEPO), which plays an important role in regulating and supporting state enterprises' good corporate governance and competitiveness. The development of the performance agreement between a state enterprise and SEPO comprises three key steps.

###### *Step 1: Identifying the Performance Criteria*

The current performance measurement system specifies performance criteria used for assessing state enterprises' operational efficiency in three key areas:

1. Adherence to policy
2. Operating performance of the state enterprise
  - Financial
  - Non-financial
3. Organisational management
  - Management roles of board of directors
  - Risk management
  - Internal control
  - Internal audit

- IT management
- Human resource management

###### *Step 2: Defining Criterion Weights*

The weighting of performance criteria is related to operational performance. DAD is a state enterprise that aims to provide public facilities that consider highly efficient operational aspects, especially service quality. Details of the weights per criterion are:

- Adherence to policy 20% ( $\pm 10$ )
- Operating performance of the state enterprise 50% ( $\pm 10$ )
- Organisational management 30%

###### *Step 3: Defining Performance Targets for Each Criterion Value*

For each criterion, performance targets are classified by SEPO into five levels. Level 1 is considerably lower than the set target in the annual enterprise plan. Level 2 is slightly higher than level 1, but still lower than the target. Level 3 is the set target in the annual enterprise plan. Level 4 is slightly higher than the set target. Level 5 exceeds the set target. Only state enterprises with outstanding management can achieve a Level 5 target. When determining annual performance targets, government representatives use past performance as the basis for benchmarking against the private sector in nearby locations (see Table 2 showing benchmarking against competitors in a commercial space rent market and Table 3 showing benchmarking against a competitor in an office market). In the DAD case, the benchmarking against the private sector is carried out in 2 categories: commercial and office spaces for rent. This is to encourage state enterprises to improve their operational performance and to be on a par with the private sector. Even though improvement of state enterprise standards may not be achieved in one year, by setting the targets higher each year, the personnel can be encouraged to operate more efficiently.

Table 2 shows benchmarking data between the Government Complex and competitors in a commercial space rent market in nearby locations. In terms of the available lettable floor space, the Government Complex has a lower square metre area of a commercial space rent compared with five competitors including IT Square, Central Plaza Changwattana, Central Plaza Rattanaibet, The Mall Ngamwongwan, and Siam Makro. However, the Government Complex offers a more flexible contract ranging from 1 to 60 months with a rather low rental rate compared with other competitors in the market. The lower rental rate of the Government Complex's commercial space compared to the competitors may attract customers. However, the

lower occupancy rate caused by the less attractive location of the complex may affect the creditability of the business.

Table 3 shows benchmarking data between the Government Complex and a competitor in an office market. The findings show that the Government Complex has a much larger office space to let with a lower rental rate in comparison with Central Pattana. Although the Return on Asset of the Government Complex (0.31%) is much higher than the set target (0.08%), the much lower percentage compared with the competitor (1.32%) reflects the area for improvement in terms of the ability to convert investment into profit.

**Table 2.** Benchmarking against competitors in a commercial space rent market (DAD, 2009)

Organisation	Benchmarking (commercial space for rent)						
	Available lettable floor space (sq.m.)	Rental rate* (Baht/sq.m./month)	Electricity (Baht/unit)	Water (Baht/unit)	Contract (Months)	Deposit** (Months)	Occupancy rate
The Government Complex	26,055	360 - 1,300	4.5	25	1 - 60	3	25 - 50 %
The Avenue	21,173	700 - 2,000	4	18	36	6	98%
Major Hollywood	N/A	670 - 900	5	-	3	1	98%
IT Square	120,000	650 - 1,200	N/A	N/A	24	3	70%
Central Plaza Changwattana	300,000	1,100 - 2,500	N/A	N/A	36	6	80%
Central Plaza Rattanaibet	105,000	800 - 1,000	N/A	N/A	12	4	95%
The Mall Ngamwongwan	45,000	1,000 - 2,000	N/A	N/A	N/A	N/A	95%
Siam Makro	60,000	1,500	N/A	N/A	N/A	N/A	100%
Big C Changwattana	20,000	600 - 1,200	N/A	N/A	N/A	N/A	98%
Tesco Lotus Changwatana	20,000	1,000 - 1,500	Included in the rent	Included in the rent	1	2,000 (Baht)	100%
Carrefour Changwattana	20,000	1,200 - 1,500	Included in the rent	Included in the rent	1	1	100%

Notes - information at the end of 2008 NA = no data available

\* Rental rate of a commercial space rent market is varied depending on the location of the space that has a high/low potential to attract customers.

\*\* Deposit refers to a sum payable as a first instalment or as a pledge for a contract.

**Table 3.** Benchmarking against a competitor in an office market (DAD, 2009)

Organisation	Benchmarking (office space for rent)			
	Available floor space to let (square metre)	Rent/month (Baht/square metre)	Occupancy rate	Return On Asset (ROA)
The Government Complex	484,000	360	100%	0.31%
Central Pattana	144,280	500 - 700	94%	1.32%

Notes - information at the end of 2008

#### **4.2 Performance Appraisal System Procedures**

According to SEPO, the procedure to appraise the actual performance is composed of six steps:

1) A state enterprise submits its business/strategic/enterprise plan to SEPO after receiving approval from the board of directors' and the line ministry.

2) A subcommittee of SEPO i.e. the State Enterprise Efficiency Improvement committee and related agencies such as TRIS corporation limited jointly review the business/strategic/ enterprise plan in order to define performance indicators, criterion weights and targets.

3) SEPO informs the state enterprise of the agreed key performance indicators, criterion weights and targets so that the performance agreement can be written.

4) The state enterprise presents quarterly and annual reports to SEPO and the State Enterprise Efficiency Improvement committee.

5) The State Enterprise Performance Appraisal committee acknowledges the state enterprise's operating performance at the first half of the year.

6) The annual report of the state enterprise's operating performance is submitted to the cabinet.

#### **4.3 Performance indicators and data**

Table 4 presents the agreed performance measurement criteria and criterion weights and the results for the DAD case in three main areas: adherence to policy, operating performance of the state enterprise and organisational management. Each area includes subcategories of performance indicators. Table 5 shows an example of the calculation method i.e. the performance indicator 'percent of work done according to the Dhanarak Nontaburi housing 2009 plan' (first sub-category of item 1.1. in Table 4). The operating result is estimated by the total construction cost of Dhanarak Nontaburi housing. The total construction costs of 184,155,630 baht equals to 94.60 percent of the total construction costs at the end of 2009. The percentage of 94.60 is between level 3

and 4, and was calculated to 3.92 points. This value was multiplied by the criterion weights of 4 percent (0.04) that is equal to 0.16 weighted score.

#### **4.4 Findings from the interviews**

The interviews with the chief marketing officer, senior specialist and public relation manager showed that the DAD case adopted the Balance Scorecard approach in the three main areas of the organisation's performance measurement system:

1. Adherence to policy covers work processes of the DAD case such as work done according to the assigned plan from government and the ability in managing investment plan that align with the internal business process of the BSC

2. Operating performance of the state enterprise includes financial performance such as income from commercially rented area and return on asset that is considered as the financial perspective of the BSC. This criterion also includes the satisfaction of the Government Complex building users that aligns with the customer perspective of the BSC

3. Organisational development includes human resource management that aligns with the learning and growth perspective of the BSC

Accommodated by most of the country's public agencies, the Bangkok Government Complex has implemented the centralisation concept by sharing resources and facilities of the complex to the occupied agencies. With regard to this concept, the involved public agencies such as the Administrative Court, the Office of Justice Affairs, and the Supreme Court provide a one stop service to the citizen. However, there are some public agencies that finally decided not to move into the complex as previously agreed because of a psychological reason that they prefer to be accommodated in a single tenant building. In addition, some of the public agencies' current accommodations were renovated from old palaces that provide more cultural value to the occupied organisations than the Government Complex (R. Vorakitpokatorn, personal communication, September

14, 2010). This finding agrees with McMillan (2006) statement. This caused problems regarding the allocation of office spaces and other resources, and had also an impact on energy consumption of the complex. The energy consumption relies heavily on the integrated system of energy conservation taking into account that all offices are occupied (Thirakomen, 2009). In addition, the absence of these public agencies

results in a lower number of complex building users, which caused shop owners to hesitate to rent spaces in the commercial areas. Due to its role of operating the Government Complex, the DAD organisation had to convince other agencies to move into the building complex. As a result, the completion of the Government Complex project as a whole was delayed.

**Table 4.** Results from performance measurement in 2009

Performance criteria	Criterion weights (percent)	Results (0-5) (points)	Weighted score (0-5) (points)
<b>1. Adherence to policy</b>	<b>21</b>		
1.1 Work done according to assigned plan from government	16		
- Percent of work done: Dhanarak Nontaburi housing as 2009 plan	4	3.92	0.16
- Percentage of handed over unit of Dhanarak housing in Phuket, Chiang mai and Suphanburi	5	1.00	0.05
- Success level of Zone C building construction project	7	5.00	0.35
1.2 Ability in managing investment plan	5	3.42	0.17
<b>2. Operating performance of the state enterprise</b>	<b>44</b>		
<i>Financial</i>	19		
2.1 Income from commercially rented area	6	3.65	0.22
2.2 Earnings (loss) before interest, taxes, depreciation and amortization (EBITDA)	10	4.97	0.50
2.3 Return On Asset (ROA)	3	5.00	0.15
<i>Non-financial</i>	25		
2.4 Work done on delivering rentable area to other government agencies	6	3.48	0.21
2.5 Percentage of allocating commercial area	5	1.00	0.05
2.6 Satisfaction of the Government Complex building users in 2009	5	3.61	0.18
2.7 Work done according to the development of building management standard in 2009	4	5.00	0.20
2.8 Work done according to the development of ICT in 2009	5	3.50	0.18
<b>3. Organisational management</b>	<b>35</b>		
3.1 Management roles of board of directors	6	2.98	0.18
3.2 Risk management	7	1.80	0.13
3.3 Internal control	4	2.94	0.12
3.4 Internal audit	6	2.62	0.16
3.5 IT management	6	1.92	0.12
3.6 Human resource management	6	2.66	0.16
	<b>100</b>		<b>3.26</b>

(Source: DAD, 2009)

**Table 5.** Percent of work done: Dhanarak Nontaburi housing as 2009 plan

Performance Criteria	Criterion weights (%)	Level 1	Level 2	Level 3	Level 4	Level 5	Operating results	Scores (points)	Weighted Scores
Percent of work done: Dhanarak Nontaburi housing as 2009 plan	4	80 %	85 %	90 %	95 %	100 %	94.60 %	3.92	0.16

(Source: DAD, 2009)

## 5. Discussion

Overall it can be noticed that the performance measurement system and procedures in the DAD case do not make an explicit distinction between organisational performance and real estate performance. With regard to the first principle of public asset management (Kaganova & Undeland, 2006, see section 1 of this paper), the DAD case showed that the organisation has an important role in developing Thailand’s public real estate as a productive asset. The mission of the DAD case does not only include the operational management of the government buildings, but also the steering on efficient investments in the governmental real estate. This is being measured by KPIs such as “percentage of work done according to Dhanarak Nontaburi housing plan”, and “percentage of handed over unit of the Dhanarak housing in Phuket, Chiang Mai and Suphanburi”. These KPIs are aligned with the government’s policy and are also important for the DAD’s financial performance. The second principle of the public asset management, the changing role from a provider of real property to a partner with the private sector (Kaganova & Undeland, 2006), has been shown in a hotel management of the Centra Government Complex Hotel & Convention Centre operated by Central Plaza hotel public company limited. The DAD has used data from the private sector to benchmark its corporate assets including data about the office market and commercial space rent market. Benchmarking against the private sector also aligns with the third principle of the public asset management (Kaganova & Undeland, 2006).

Three groups of building users including employees of the public organisations, visitors and renters of the commercially rented areas have different needs and preferences, which have an impact on various aspects of the organisational performance. The performance measurement of public organisations in Thailand is generally being monitored by TRIS Corporation limited. In the DAD case, although the corporate real estate related KPIs such as satisfaction of the Government Complex building users, and land income from commercially rented area have been included in the audit system, employee satisfaction of the work environment has not been included in the evaluation by TRIS. Employee satisfaction of the work environment relates to safety, health and environment within the human resource management category. However, except for the IT system for human resource management, most of the human resource related KPIs evaluated by TRIS focused on the social work environment. According to the literature, employee satisfaction with work environment is directly related to their job satisfaction and indirectly related to organisational commitment and turnover intention (Carlopio & Gardner, 1992) and should as such be included in the DAD KPIs. In addition, the preference to be accommodated in a single tenant building and satisfaction/dissatisfaction with shared facilities of the Government Complex should be included in the Government Complex building user survey.

In a case from the private sector, Philips Thailand (Riratanaphong, 2014), employee satisfaction with work environment was regarded as an important KPI

that has been evaluated both from the organisation and the mother company in The Netherlands (by Philips Real Estate). On the other hand, compared to the Philips case DAD has put more concern to the environmental impact as is shown in KPIs such as percentage of complaints from public regarding environmental impact. This item has not been included in the Philips Thailand's performance measurement system.

The percentage of commercially rented area was lower than previously expected. This was caused by the delay of the delivering of the rentable area to government agencies. Because the commercially rented area has a direct impact on the financial performance, KPIs such as the rate of customer retention are important as well (Carpenter, 2014). This can provide the organisation with information about the customers that the organisation managed to keep and to attract. The organisation needs to compensate for every customer that gets lost by finding new customers in order to continue the business. The customer retention rate gives an indication of how loyal the customers are and how well the organisation's customer service performs.

The built environment can have an influence on cultural value. In the case study, the building characteristics that promote cultural value respond to the preference of public organisations' employees and have an impact on organisational performance (R. Vorrakitpokatorn, personal communication, September 14, 2010). Thus, the cultural value of the building should be included in the Government Complex building user survey.

The responsibilities of TRIS cover the review of operating performance of the state enterprise in connection to the business/strategic/enterprise plan in order to suggest changes of the selected performance indicators, criterion weights and targets. This step is considered as the shift from performance measurement to performance management by helping the organisation to set the agreed-upon performance

goals. With regard to the conceptual model of performance measurement (Figure 2), this step has been shown in the feedback loop from the perception and assessment of stakeholders to the adaptation of corporate and real estate strategies.

## 6. Conclusions and recommendations

The DAD case implemented a performance measurement system that has been directed by the State Enterprise Policy Office (SEPO). Various indicators show that the DAD performance measurement system fits with the principles of public asset management (Kaganova & Undeland, 2006) such as adopting the role of real estate developer and the systematic way of performance monitoring using benchmarking with similar data from the private sector.

Although the operating results are monitored by TRIS annually, there are some KPIs that should be developed furthermore, such as employee satisfaction with the work environment and the rate of customer retention. Apart from the performance measurement criteria set by the government, the DAD case should select additional KPIs that align with its organisational and real estate objectives.

Although based on a single case study that no generic conclusions can be drawn, it appears that current public real estate performance measurement and management needs further improvement in order to create a coherent system of clear performance areas and KPIs that are measurable and manageable. Clear procedures of how to select most important KPIs and how and when to measure, and how to incorporate the findings from performance measurement in accommodation policy on strategic, tactical and operational level should be introduced.

The step-by-step plan and related questions developed inductively based on three case studies (Riratanaphong, 2014) have not yet been empirically tested in other cases. The next step could be to discuss the proposed procedure of an expert meet-

ing and to conduct additional case studies in search for a better understanding of the complex relationships between organisational strategies and real estate strategies and between organisational performance and real estate performance.

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