

STRATEGIC MANAGEMENT INFORMATION SYSTEM APPROACH FOR MALAYSIA LAND ADMINISTRATION INFORMATION SYSTEM WITH SPATIAL DATA INFRASTRUCTURE

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ABSTRACT

The Strategic Management Information System (SMIS) with integrated approach as a one of method to achieve the capability information system for organization such land administration. However, must concern several issue such as integrate legal and institutional infrastructures; governance & cross-government collaboration; structure and cultural management; and information security; from implementation of spatial data infrastructure for land administration information system at national level. The result from strategic grid analysis identifying four main factors in SMIS (human-centred vs. technology-based; approach to corporate strategy; alignment perspective; and sustainable competitive advantage). And make as a guide for strategic information systems need to adjustment or changing or remove from strategic plan especially to improve land delivery services system and decision maker in land administration toward to achieve '*the triple bottom line*' and spatially enabling government. The findings of this research would be help to top-management of land administration, decision makers and researcher.

Keyword: *Strategic Management Information System, Land Administration System and Spatial Data Infrastructure*

1.0 INTRODUCTION

Land administration started as a coherent approach to building land related infrastructure after World War 2 (Dale & McLaughlin, 1988) and the significance of organising lands information and the use of fundamental tools of the cadastre (or parcel map) and registration systems to deliver security of tenure and alleviate poverty (UN-ECE, 1996). Land administration evolved from a focus on core functions of regulating land and property development, land use controls, land taxation and disputes to an integrated land management paradigm designed to support sustainable development (Dale & McLaughlin, 1999).

The players of land administration are experts in designing, building, managing and they are experienced in creating, describing and defining land parcels and associated rights. By the mid nineteenth century, land administration involved buying, selling, mortgaging and leasing of rights in land and the mid twentieth century land administration and cadastral officials and associated legal and surveying professionals, assumed that they understood land markets and developed appropriate professional skills to serve the needs. Land administration activities needs to support emerging of government, business and society to deliver more integrated and effective information. At the same time, land administration can support several norms to achieve good governance such as sustainability, efficiency, transparency and accountability, equity and security.

Today, land administration more on a multi disciplinary endeavour with a focus on land use, land management, services delivery system and organisation and provides the supporting framework for trading in complex commodities. The adaptation of modern land markets to support a constant stream of new commodities and show how fundamental infrastructure in the prosaic activities of tenure, use, development and value underpins these wealth accelerating activities.

The aim of this paper is to identify several important points related to strategic information system using SMIS integrated approach especially for Malaysia land administration with spatial data infrastructure.

2.0 STRATEGIC MANAGEMENT INFORMATION SYSTEM

The evolution of information systems (IS) in organization according to the four era model (Ward & Peppard, 2002). According to this model there are fourth distinct, albeit overlapping, eras of IS, dating back to the 60's. The relationship over time of the four eras of IS shown in table 1.

Table 1: The Four Era Model of IS (adapted from Ward & Peppard, 2002)

ERA		CHARACTERISTICS
60s	Data Processing (DP)	Standalone computers; remote from users; and cost reduction function
70s & 80s	Management Information Systems (MIS)	Distributed process; interconnected; regulated by management service; supporting the business; and user driven.
80s & 90s	Strategic Information Systems (SIS)	Networked; integrated systems; available and supportive to users; relate to business strategy; and enable the business-business driven

2000	Capability Information Systems (CIS)	An effective use process; flexible and reusable IT platform; and fusing business knowledge and IS knowledge
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Ward & Peppard (2002) mention again CIS goes beyond seeking alignment or searching out for competitive opportunities from information system or information technology. Basically CIS having three central dimensions first, fusing IS knowledge and business knowledge more to ensure the conception of strategies to utilize technological innovation; to seize opportunities quickly; and to implement these strategies successfully. Including managing change and making appropriate technology-sourcing decisions and involves knowing the extent of change that the business is capable of absorbing. Second, a flexible and reusable IT infrastructure provides the technical platform and resources needed to have the ability to respond quickly to competitor moves as well as the capacity to launch innovative IS applications supporting new process designs or business initiatives. Third, an effective use process to link IS/IT assets with value realization, through the application of the technology to creating the environment conducive to collecting, organizing and maintaining information, together with embracing the right behaviors' for working with information. The use process has two aspects; using the technology and working with information.

Robson (1997) and Johnson, Scholes, & Whittington (2005) mention Strategic Management (SM) not only the management of the process of strategic decision making. The scope of SM is greater than that of only one area of operational management. SM concerned with complexity arising out of ambiguous and non-routine situations with organisation-wide rather than operation-specific implication. SM characterised by its complexity, it is also necessary to make decisions and judgements based on the *conceptualisation* of difficult issues. Robson (1997) and Johnson, et al. (2005) also stressed SM involve three main elements; first the strategic position (including strategic capability, expectations & purposes and the environment); second strategic choice (including business-level strategies, corporate-level & international and development direction & methods); and third strategic into action (including organising, enabling and managing change).

From two aspect discussion before, Clarke (2007) identify one integrated approach to achieve CIS, it is Strategic Management Information Systems (SMIS). The framework of SMIS approach including three level, it is IS/IT analysis (involve strategy grid, technology implementation and incremental); participant analysis (must consider human activity IS, competitive advantage and IT aspect); and must achieve three objective (corporate strategy, continuously and IS strategy). As suggested by Clarke (2007) to successful of SMIS approach for organization it is depend on four aspects:

- i. An approach to IS which recognizes the value of both human-centred and technology-based issues. A mix of approaches will be required, though the overwhelming perception of IS as fundamentally a social domain and should focus on the participants within the problems context.
- ii. An approach to corporate strategy which is primarily subjective: strategy must as a domain and affected by the problem situation.
- iii. An alignment perspective as a heart of the SMIS process, which is drives by information needs, as determined by those in the system of concern.

- iv. A view of sustainable competitive advantage which sees it not as emanating from the application of technology per se, but recognizes that competitive advantage can be secured by organisations even where they use the same technologies. The sustainable of advantage from information comes from how that information is used, and is therefore a human issue rather than a technology one.

3.0 SPATIAL DATA INFRASTRUCTURE AND LAND ADMINISTRATION

Spatial Data Infrastructure (SDI) used in the relevant base collection of technologies, policies and institutional arrangements facilitate the availability of and access to spatial data (Global Spatial Data Infrastructure, 2004). SDI provides a basis for spatial data discovery, evaluation and application for users and at the same time, providers within all levels of government, the commercial sector, the non-profit sector, academia and public. SDI facilitates the conveyance of virtually unlimited packages of geographic information such as the concept of a reliable, supporting environment, and set of standard practices.

Global Spatial Data Infrastructure (2004) identify SDI as a hosts geographic data and attributes, sufficient documentation (metadata), a means to discover, visualize and evaluate the data (catalogues and Web mapping) and some method to provide access to the geographic data or spatial data. An SDI function includes the organisational agreements needed to coordinate and administer at local, regional, national, and or trans-national level. The SDI concept includes within its scope neither base data collection activities or myriad applications built upon it. The infrastructure provides the ideal environment to connect applications to data especially both of data collection and applications construction through minimal appropriate standards and policies. The creation of specific organisations or programs for developing or overseeing the development of SDI, particularly by government at various scales can be seen as the logical extension of the long practice of co-ordinating the building of other infrastructures necessary for ongoing development.

On the other hand, UN-ECE (1996) and Steudler & Williamson (2002) define land administration as *"the processes of determining, recording and disseminating information about the tenure, value and use of land when implementing land management policies. It is considered to include land registration, cadastral surveying and mapping, fiscal, legal and multi-purpose cadastres and land information systems. In many jurisdictions, land administration is closely related to or facilitates land use planning and valuation/land taxation systems, although it does not include the actual land use planning or land valuation processes"*.

Land administrations are concerned with the social, legal, economic and technical framework within which land managers and administrators must operate (UN-ECE, 1996). Williamson & Wallace (2007) identify the primary tools for land administration based on current practices such as surveying, registration systems, and databases run by government organisations or institutions. Enemark, Williamson, & Wallace (2005) stressed land administration with the core cadastral components are important infrastructure, which facilitate the implementation of land policies. Today, Williamson, Grant, & Rajabifard (2005) perceive land administration moved to

The land management or land administration activities needed to support Sustainable Development and described by the three components; it is Land Policies, Land Information Infrastructures and Land Administration Functions. The developments of SDIs play a central role in facilitating a country's land information infrastructure.

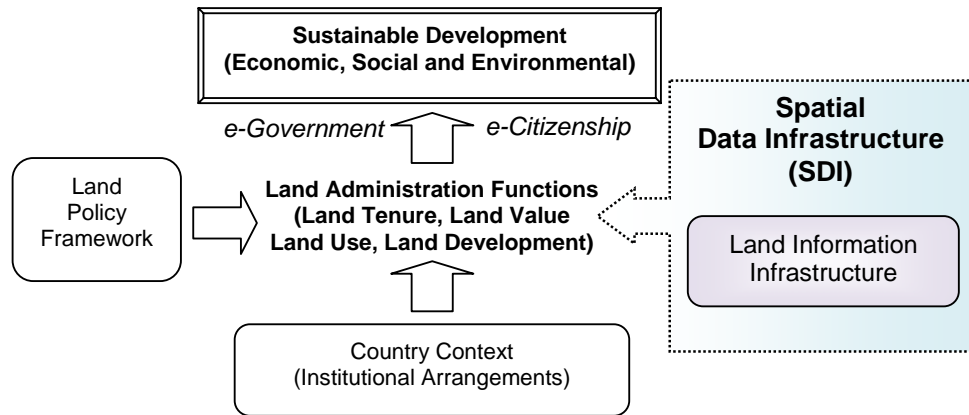


Figure 2: SDI and Land Administration Arrangements in Land Management Model (Adopted from Enemark, et al. (2005) and Rajabifard & Binns (2006))

4.0 MALAYSIA LAND ADMINISTRATION INFORMATION SYSTEM

e-Tanah Project Team (2008) mention the e-Tanah system which was implemented in April 2004 in the Ministry of Natural Resources and Environment (NRE) towards the modernization for Malaysia land administration. The Penang State was selected as a pioneer state to run this project. e-Tanah Project Team (2008) also stressed that the structure of e-Tanah project management in e-Tanah system has 2 levels, first federal level lead by NRE secretary leader as chairman for e-Tanah steering committee and supported from e-Tanah advisor committee, Quality Assurance Group, e-Tanah Legal Committee, e-Tanah Project Team and e-Tanah Contractor/Vendor. Second state level lead by state government secretary as a chairman for Electronic Good Governance Steering Committee supported from state e-Tanah team (Land and Mines Officer as secretariat) and all district e-Tanah team.

Chong (2008) stated that the concepts of e-Tanah system involve nine core module of land administration such as registration, land development, disposal of land, consent and land revenue. The e-Tanah system has several important characteristics such as combination of concepts of centralised and distributed systems (Hybrid System) between the Land and District Office and the Land and Mines Department; a system that emphasises the management of Workflow system/processes; and a system that is safe to use, simplifies work, and prepares information on land administration in an accurate, expedient, efficient, integrated and uniform manner.

Chong (2008) also stressed that the e-Tanah project can give several benefits to government such as increases the revenue collection of the state and federal governments; enables the government to plan correctly land development in a specific area is accurate and current; and contribution with Malaysia Geospatial Data Infrastructure (MacGDI) can make easy and faster comment or suggestion from among technical department. At the same time, this project can give several benefits

to public such as public can obtain information and services online; *Single Point of Contact Concept* are more client-friendly, centralised counters and direct transactions; and public will get fast, effective, secure & user-friendly services.

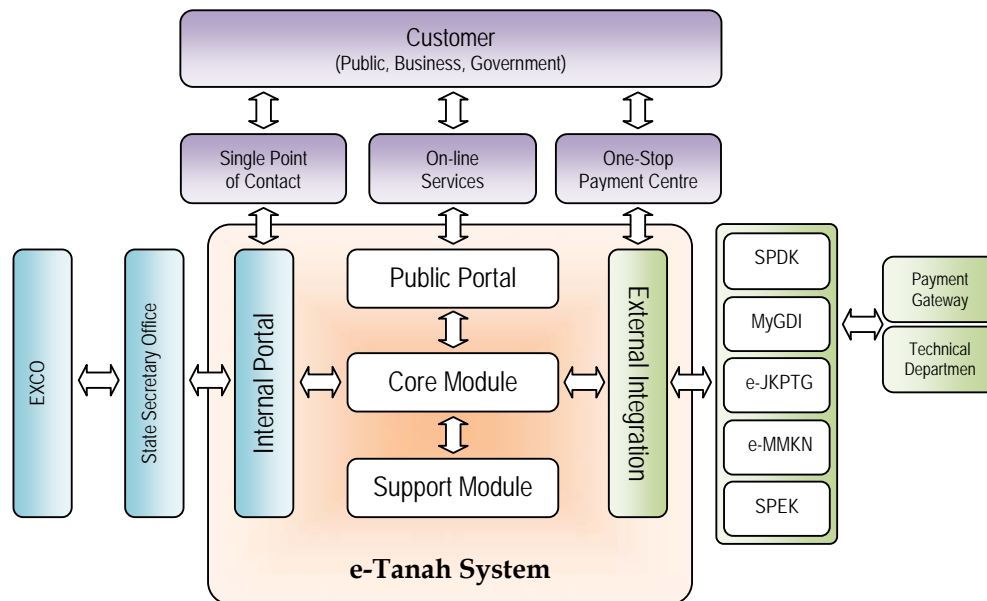


Figure 3: The Concept of the e-Tanah System
Sources: Chong (2008)

Isahak (2005) identify four aspects if Malaysia government need land administration organisation need move to toward world class, it is:

- i. *System*; Land Office must identify electronic land tax payment method and generate the coverage and develop a comprehensive of National Land Information Centre.
- ii. *Technology*; land administrators must use electronic hardware if they need to do their job related land services. At land offices, automation and electronic hardware is use from counter services to completion of task.
- iii. *Structure*; physical structure (the building design and office layout need greater cleanliness and create a happy environment especially related to the image and credibility of land office) and organizational structure (improve the service quality for public).
- iv. *Human Resources*; skills, knowledge and experience are basic ingredients in creating professional specialists in land administration and at the same time have good leadership especially related to organization. '*The right man for the right job*' concept must implement if they need to build the expert's in land administration.

5.0 INDICATOR EVALUATION

Table 2 demonstrated the SMIS integrated approaches in the implementation of spatial data infrastructure for Malaysia land administration information system. This point based on four factors to how successful SMIS integrated approach for organization by Clarke (2007).

Table 2: SMIS approach for Malaysia Land Administration Information System

Main factors Clarke (2007)	Malaysia Land Administration Information System with spatial data infrastructure	
human-centred vs. technology-based	<i>Combining: Client-led Design (CLD)</i>	e-Tanah Project Team, Ministry of Natural Resources and Environment (NRE) <ul style="list-style-type: none"> e-Tanah system <ul style="list-style-type: none"> project management structure (federal-NRE and state-land and mines department) framework e-Tanah structure (land district office) National Land Code (new amendment – Section 5D and sixteen schedule)
approach to corporate strategy	<i>Strategy as a plan by discovery</i>	<ul style="list-style-type: none"> public, business and government support from single point of contact, online services and one stop payment centre Disaster Recovery Center (National Land Code new amendment – Section 375)
alignment perspective (IS as a domain)	<i>A service level perspective</i>	Department of Director General of Land And Mines, Ministry of Natural Resources and Environment (NRE) <ul style="list-style-type: none"> New Strategy for Malaysia Land Administration (toward achieve modern public services)
sustainable competitive advantage	<i>Interaction of independent subsystem within a system of human activity</i>	Malaysian Centre for Geospatial Data Infrastructure (MaCGDI), Ministry of Natural Resources and Environment (NRE) <ul style="list-style-type: none"> Malaysia Land Integrated Information System (MyLIIS) <ul style="list-style-type: none"> need supported from e-Tanah system

Base on strategic alignment from Clarke (2007), the IS as a domain for Malaysia land administration. The strategic grid (Figure 4) is the right method to analysis the information infrastructure and processes commences with an internal and external environment audit to summarize the current position in organization, potential application and potential value.

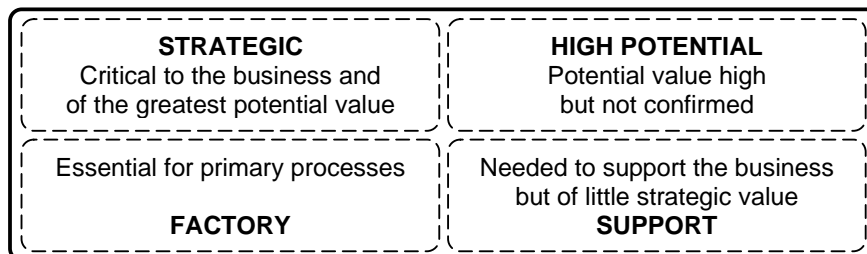


Figure 4: The Strategic Grid
Sources: Clarke (2007)

6.0 CONCLUSION

As the conclusion, SMIS integrated approach can identify and evaluate several factors especially for Malaysia land administration information system with spatial data infrastructure. The result from analysis can identify several current information systems strategic needs to adjustment or changing or remove from strategic plan (short term, middle term or long term) from several government agencies such as the Director General of Land and Mines Department, e-Tanah Project Team and Malaysian Centre for Geospatial Data Infrastructure especially toward to achieve spatially enabled government.

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