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MONITORING THE CONFORMANCE OF STATE STRUCTURE PLAN OUTPUTS DELIVERY USING DYNAMIC MODEL

BY

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ABSTRACT

Plan outputs are the material objects that are tangible and provided as a result of the implementation of a development plan. They often act as precursor to achieving plan outcomes. Therefore, it is important to monitor the performance of plan in delivering its outputs so that the prospect of achieving its outcomes remains high. However, present state structure plan monitoring programmes focus mostly on monitoring land use change and not plan output delivery. The absence of output monitoring reduces the usefulness of the programmes and contributes to under-provision of outputs, especially public facilities and open spaces. This study proposes that state structure plan monitoring programmes must include mechanism to enable outputs delivery to be monitored. However, outputs requirement are dynamically linked to the number of population. Thus, any mechanism employed to monitor outputs delivery must be able to deal with this dynamic relationship between outputs and population. Hence, the aim of this study is to develop a dynamic model for monitoring state structure plan outputs delivery, and to analyse the model's ability in performing this task. To this end, a dynamic model for monitoring selected outputs is developed using STELLA software and applied on the Selangor State Structure Plan. The model consists of several non-spatial sub-models which are population, housing, schools and open spaces sub-models. The sub-models are linked to one another to reflect the dynamics of outputs requirement. Base year stock data and present stock data for the State of Selangor are keyed in into the model. The model also underwent several refinements in order to overcome the problem of unavailability of some data. The model is then used to run simulations to measure outputs conformity to plan's target and outputs gap to existing stock. The model simulation results show that the model can be used successfully to monitor the delivery of the selected outputs. At the same time, they also show that the Selangor State Structure Plan has performed poorly in delivering the selected outputs where outputs delivery has not conform to the plan's targets. The model simulations also show that these non-conformances will remain by the end of the plan's planning period. Nevertheless, the model's definition of non-conformance is rather rigid, with any deviation of outputs delivery from the plan's targets is considered as outright non-conformance. Future studies may look further in classifying the magnitude of the deviation into several degrees of conformity. Additionally, future studies may also look into the integration of the model with spatial based plan monitoring programmes, especially those that are GIS-based in nature.

ملخص البحث

مخرجات الخطة هي الأشياء المادية التي لها تأثير ملموس، وقدمت نتيجة ل تنفيذ خطة التنمية. فإنها غالبا ما تكون بمثابة مقدمة ل تحقيق نتائج الخطة. وبالتالي، فمن المهم رصد أداء الخطة في تقديم مخرجاتها بحيث احتمال تحقيق نتائجه لا يزال مرتفعا. ومع ذلك، تركز برامج الخطة الحالية بنية الدولة الرصد في الغالب على رصد التغير في استخدام الأراضي وليس خطة تسليم الانتاج. غياب المراقبة الانتاج يقلل من جدوى البرامج و يسهم في نقص توفير النواتج، وخاصة المرافق العامة والمساحات المفتوحة. وتقترح هذه الدراسة يجب أن تشمل برامج الرصد خطة بناء الدولة آلية لتمكين تسليم المخرجات التي يتعين رصدها. ومع ذلك، ترتبط متطلبات مخرجات حيوي لعدد السكان. وبالتالي، يجب على أي آلية تستخدم ل رصد تقديم المخرجات تكون قادرة على التعامل مع هذه العلاقة الديناميكية بين المخرجات و السكان. وبالتالي، فإن الهدف من هذه الدراسة هو تطوير نموذج ديناميكي لمراقبة الدولة بناء خطة تسليم المخرجات، و القدرة على تحليل النموذج في أداء هذه المهمة. وتحقيقا لهذه الغاية، تم تطوير نموذج ديناميكي لرصد النواتج المحددة باستخدام برنامج STELLA وتطبيقها على خطة هيكل الدولة سيلانغور. النموذج يتكون من عدة غير المكانية النماذج الفرعية التي هي السكان والمساكن والمدارس والمساحات المفتوحة النماذج الفرعية. وترتبط شبه نماذج لبعضها البعض لتعكس ديناميات شرط النواتج. تم تمييز قاعدة بيانات المخزون العام و بيانات المخزون الحالي لدولة ولاية سيلانجور في في النموذج. خضع النموذج أيضا العديد من التحسينات من أجل التغلب على مشكلة عدم توافر بعض البيانات. ثم يتم استخدام نموذج المحاكاة لتشغيل لقياس المخرجات مطابقة لل هدف الخطة والمخرجات الفجوة إلى المخزون الحالي. تظهر النتائج محاكاة نموذج أن النموذج يمكن أن تستخدم بنجاح لمراقبة تسليم المخرجات المحددة. في نفس الوقت، فإنها تظهر أيضا أن خطة هيكل الدولة سيلانغور كان أداء ضعيفا في تحقيق النواتج المحددة حيث تسليم المخرجات قد لا تتفق مع أهداف الخطة. تظهر نماذج المحاكاة أيضا أن هذه غير المطابقة ستبقى بحلول نهاية فترة التخطيط للخطة. ومع ذلك، تعريف للنموذج عدم المطابقة هو جامد إلى حد ما، مع ويعتبر أي انحراف من تسليم المخرجات من أهداف الخطة كما صريح غير المطابقة. الدراسات المستقبلية قد تبدو كذلك في تصنيف حجم الانحراف إلى عدة درجات من المطابقة. بالإضافة إلى ذلك، قد تبدو الدراسات المستقبلية أيضا إلى دمج هذا النموذج مع برامج المكانية القائمة على خطة الرصد، وخاصة تلك التي تقوم على أساس نظم المعلومات الجغرافية في الطبيعة.

APPROVAL PAGE

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DECLARATION

I hereby declare that this thesis is the result of my own investigations, except where otherwise stated. I also declare that it has not been previously or concurrently submitted as a whole for any other degrees at IIUM or other institutions.

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

Talen (1997) bemoans the fact that development plan success (or failure) is increasingly being measured against factors that are detached from the traditional role of planning in the built-environment. She argues that the focus of built-environment is largely object-oriented. Thus, the core of planning function is to effect object-oriented changes in the built-environment. And since planners use development plan to guide them in their efforts to implement those changes, she opines that plan success must also be viewed in terms of its performance in effecting those changes.

In the meantime, Faludi (2000) categorises changes resulting from plan implementation into two, which are plan outputs and plan outcomes. Plan outputs are the material objects that are tangible and provided as a result of the implementation of a development plan. These, for instance, include schools, open spaces, houses, hospitals, roads, transport terminals and so on. The opposite of plan outputs are plan outcomes, which are the intangible results of development plan implementation such as improved environmental quality, safer living environment, reduced illiteracy rate and so on.

Going by Talen's suggestion that the core of planning is to effect object-oriented change, and Faludi's categorisation of plan output and outcome, it is clear that among the main functions of development plan is to deliver outputs, and that its performance in delivering those outputs must be monitored and, if necessary, improved so that the plan can succeed.

A development plan, in essence, is a statement of the planning authority's intentions towards achieving a set of specified outcomes in the future. Development plan intentions are described in its goals and objectives. These are then translated into policies that, if implemented, would result in the realisation of the specified outcomes.

In most instances, development plan's policies include the need to deliver plan outputs. These policies must be acted upon if outcomes are to be achieved (Barret, 2004; Davidson, 2000). This is because, outputs are precursors to outcomes (Vedung, 1997). For instance, in an attempt to reduce illiteracy rate, it is necessary that sufficient number of schools are firstly provided so that education can be easily accessed by the population. Inability of development plan to provide outputs as intended will jeopardise the success of the plan in realising its outcomes. Therefore, the importance of monitoring plan output delivery is not only because it is one of the core functions development plan, but also because outputs are precursors to achieving plan outcomes.

However, development plan monitoring in Malaysia is mostly characterised by two main features. Firstly, plan implementation is rarely monitored and, secondly, existing plan monitoring programmes are heavily focused towards measuring land use change and not output delivery.

Presently, despite the high number of development plans in effect in Malaysia, only a small fraction of these plans is being monitored in terms of their implementation. For instance, although eight state structure plans (SSP) have been gazetted by year 2009, only three are being subjected to some form of monitoring (Muhammad Faris Abdullah, Alias Abdullah, & Rustam Khairi Zahari, 2009). Moreover, two out of the three plans are being monitored using methods that are based on geographic information system (GIS). This indicates heavy inclination towards monitoring land use change rather than monitoring the output delivery of the plans.

Development plan is, undoubtedly, one of the core products of the planning process. Due to its importance, it is not surprising that planning authorities and scholars have thus far directed many efforts towards improving plan preparation. However, insufficient attention has been given to plan implementation and its monitoring. Planning scholars have observed that, over the years, planning research and practice have largely been centred around plan preparation, such as refining plan preparation process, and improving methods and techniques of plan-making. Meanwhile, few researches and practices deal with plan implementation and monitoring (Alterman, Carmon, & Hill, 1984; Berke et al., 2006; Laurian et al., 2010; Seasons, 2003; Talen, 1996b, 1997). Even in countries where plan monitoring is mandatory, such as in the United Kingdom, plan monitoring remains scarce (Carmona & Sieh, 2008).

In Malaysia, plan monitoring is also inadequately emphasised. Researches on development plan by local scholars follow the global trend where most are concerned with plan preparation process while only a few deals with plan monitoring. Likewise, plan monitoring is also insufficiently emphasised in planning practices. Muhammad Faris Abdullah, Alias Abdullah, and Rustam Khairi Zahari (2010: 445) conclude that "The monitoring of statutory development plan implementation has not been given sufficient attention by planning authorities in Malaysia, even at present. In fact, many planning authorities do not monitor the implementation of their development plans."

However, in recent years, there has been a growing interest regarding plan monitoring in Malaysia (Muhammad Faris Abdullah, et al., 2010; Wan Hassan Wan Ismail, 2007). Several planning authorities have begun, or are about to begin, monitoring their development plans. Similarly, a number of local scholars have also undertaken researches into plan monitoring (Ahmad Nazri Muhamad Ludin, Mohd Nuruddin Abdul Kadir, & Susilawati Sulaiman, 2009; Ahris Yaakup, 2004; Tarmiji

Masron, 2003; Tarmiji Masron & Ruslan Rainis, 2004). However, the number of researches is still small, focusing mainly on defining methods and techniques for plan monitoring in Malaysia. This is not surprising given the 'newness' of plan monitoring interest in Malaysia. Additionally, all of these studies and monitoring programmes rely heavily on the use of geographical information system to monitor land use change of the planned area.

1.2 ISSUES AND PROBLEMS

In the context of this study, the earlier discussions have shown that the present development plan monitoring scenario in Malaysia are plagued by two main issues. Firstly, plan outputs delivery is not being monitored. Secondly, plan monitoring focusses mainly on using GIS-based mechanism to monitor land use changes.

1.2.1 The Absence of Plan Output Monitoring

Despite its importance, plan output monitoring is not included in present SSP monitoring programmes. However, the absence of plan output monitoring resulted in reduced usefulness of the monitoring programmes to SSP implementing agencies.

The users of the SSP monitoring programmes are not limited to planning authorities only, but also other parties involve in the implementation of the plans. These includes the various technical agencies whose roles in SSP implementation are mainly to provide the outputs that have been identified as required by the SSP such as houses, hospitals, police stations, schools, open spaces, telecommunication systems, and so on. These technical agencies are usually termed the implementing agencies (Ahmad Nazri Muhamad Ludin, et al., 2009).

Both Harper (1984) and Kaydos (1999) agree that in order to ensure the usefulness of a monitoring programme, the monitoring measures must be easily understood and relevant to users. In the case of SSP monitoring, the variables selected for monitoring must be useful and of concern, to not only the planning authorities, but also to SSP implementing agencies. Thus, it is unfortunate that current SSP monitoring programmes in Malaysia focus largely on monitoring land use change but ignore outputs delivery. It is difficult to imagine that many of the implementing agencies would be deeply concerned about how many hectares of land being used for housing, for commerce, and so on. Similarly, it may not be very useful to them to know whether or not the change in the land use is in accordance to the land use allocation as proposed by the SSP. Instead, what are more important to them in terms of SSP monitoring would be information feedbacks such as the number of facilities already being provided and how many more of these facilities need to be provided (Muhammad Faris Abdullah, et al., 2009).

It is important to clarify here that this study does not suggest that monitoring land use change is erroneous, but focusing SSP monitoring programme solely on detecting and measuring land use change reduces its usefulness to the users. While information feedbacks from SSP land use monitoring may be useful to the planning authorities, they are not as useful to SSP implementing agencies. The outputs delivery of the plan must also be monitored in order to enhance the usefulness of the monitoring programme, especially to the implementing agencies.

Implementing agencies would need to know the status of SSP output delivery in order for them to perform their role, which is to assist planning authorities in providing the outputs required by the plan. They need to know how many of the outputs have been provided and how many more are needed. But the present SSP monitoring programmes

are unable to provide this information since they only monitor land use change. Without knowing the status of plan output delivery, it is difficult for implementing agencies to provide the required plan outputs effectively and efficiently. This could explain why outputs such as public facilities and open space are commonly under-provided in Malaysia. To exemplify, Table 1.1 below shows the status of selected public facilities and open space provision in several states at the beginning of the states' SSP planning period. For public facilities, the table compares the number of existing facilities against the required one. Meanwhile, for open space, the comparison is in terms of land size. Highlighted cells in the table denote under-provision of facilities and open space.

From Table 1.1, it can be seen that under-provision of public facilities and open space was common in all of the states. Except for primary schools in Perak, Pahang, Negeri Sembilan and Terengganu, all the other public facilities and open space were under-provided in all the states.

Identifying and analysing the needs for public facilities and open space are among the important functions of a development plan. For instance, the Town and Country Planning Act 1976 (Act 172) states that development plans shall, among others, formulate and propose measures to improve physical living environment and social well-being, as well as the making up of open spaces ("Laws of Malaysia: Town and Country Planning Act," 1976). Similarly, Mohd. Zin Mohamed (2004) suggests that the roles of planning authorities are not limited to urban management, but also improvement of living quality and standards within the areas under their jurisdiction. Nevertheless, despite the existence of prior plans that guided the development in the states, public facilities and open space were still being under-provided.