UNIVERSITI PUTRA MALAYSIA

DEVELOPMENT OF SPATIAL-BASED SYSTEM FOR BUSINESS LICENSING FOR A MALAYSIAN LOCAL TOWN GOVERNING AUTHORITY

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By

NURFARHANA BINTI MOHD NOR

Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in Fulfilment of the Requirement for the Degree of Master of Science

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Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirement for the degree of Master of Science

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Chairman : **Professor Dato' Shattri Mansor, PhD**
Faculty : **Engineering**

A local authority (*pihak berkuasa tempatan* in Malay, PBT) is an entity that is responsible for administering internal resources and providing good infrastructure for the residents. They need to be sensitive and attentive to the rapid changes in technologies and systems in order to provide the best services and sustainable life to the people. This study which involved the development of spatial-based system for business licensing for Malaysian local authorities was conducted to help the local authorities in improving their services. The Johor Bahru City Council (MBJB) was selected as the collaborator of this study and the issues encountered by them was identified. Based on the discussions, interviews and meetings with the MBJB, the licensing business was selected as the subject matter of this study. During the user requirement study (URS), various issues related to business licensing were highlighted, which include the control of the registration and renewal of premises license, monitoring of field enforcement officers, loss of documents, and complaint management. The old methods employed by local authorities were no longer relevant and need to be replaced with new tools, new technologies and new systems to increase the revenue with more cost-free options. To bridge the research gap, a spatial-based system equipped with a global positioning satellite system was proposed. The spatial-based system was developed by integrating information and communication technology, global positioning system or global navigation satellite system and geographic information system to allow tracking and tracing of field enforcement personnel or mobile workforce, preparation of online reports, efficient complaint management, and monitoring of spatial premises registration and renewal of premises on digital maps. This study had two objectives. The first objective was to develop a spatial-based system for business licensing with the concept of mobile workforce for local authorities. The second objective was to assess the acceptance level of the local authorities on the spatial-based system by evaluating the effectiveness of the system, user readiness and organizational readiness. This study has successfully achieved the first objective as the system was successfully developed according to the URS, tested and validated. Eleven evaluation procedures were

performed with 10 (90.91%) of them passed without comment and 1 (9.09%) passed with comments or corrections. Since the passing threshold was 90%, the system was considered passed and fulfilled all the requirements from MBJB. The newly developed spatial-based system offers features for better performance compared to the existing business licensing practices. The second objective of this study was achieved when the level of acceptance for system effectiveness, user readiness and organizational readiness reached 99.33%, 95.33% and 96.20% respectively, which indicated a high level of acceptance for each aspect. The overall acceptance level of the spatial-based system reached a score of 97.33%, which mean MBJB was highly satisfied to the enhanced system. This study has contributed significantly to the local authorities especially in creating smart city elements for the purpose of improving services to the community in line with the impact of the industrial revolution that will change the service landscape towards digital and global practices. The development of the spatial-based system for business licensing with the concept of mobile workforce for MBJB could be used as a reference for other local authorities or potential users at different municipal levels.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Master Sains

PEMBANGUNAN SISTEM BERASASKAN SPATIAL UNTUK PERKHIDMATAN PERLESENAN BAGI PIHAK BERKUASA TEMPATAN DI MALAYSIA

Oleh

NURFARHANA BINTI MOHD NOR

Julai 2020

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Pihak berkuasa tempatan (PBT) ialah entiti yang dipertanggungjawab untuk mengelola, mentadbir urus sumber dalaman dan sekaligus menyediakan prasarana yang baik bagi keselesaan penduduk di kawasan seliaannya. Oleh yang demikian, setiap PBT perlu peka dan perihatin dengan arus perubahan dunia global supaya tidak ketinggalan dalam meyediakan perkhidmatan yang terkini, mudah dan selesa. Kajian ini dilaksanakan bertujuan untuk menghasilkan satu sistem perlesenan yang berasaskan spatial. Ianya juga bertujuan untuk membantu PBT meningkatkan serta menambah baik perkhidmatan perlesenan semasa dan sedia ada di kawasan seliaan PBT di Malaysia kepada satu sistem yang lebih mesra pengguna dan penyelenggara. Sebagai permulaan kajian, Majlis Bandaraya Johor Bahru (MBJB) telah dipilih sebagai kolaborator dan beberapa siri perjumpaan, mesyuarat, soal selidik dan juga temubual telah dilaksanakan untuk berbincang dan mendapatkan maklumat dan persetujuan daripada pihak kolaborator mengenai beberapa isu seperti gunapakai serta akses kepada data MBJB serta isu-isu yang berkaitan dengan perlesenan perniagaan iaitu mengenai cara mengawal pendaftaran dan pembaharuan lesen premis, memantau pegawai penguatkuasa lapangan, kehilangan dokumen dan menguruskan aduan dengan berkesan. Hasil daripada kajiselidik keperluan pelanggan (URS) didapati supaya isu-isu yang diketengahkan akan digunakan sebagai punca atau katakunci bagi menagani permasalahan yang ada serta untuk merapatkan jurang penyelidikan, dan sekaligus menghasilkan satu sistem perlesenan yang berasaskan spatial dengan diadaptasi bersama teknologi satelit yang memberikan maklumat ruang serta lokasi sejagat. Sistem yang dibagunkan ini adalah satu sistem yang berasaskan spatial yang berintegrasikan teknologi maklumat dan komunikasi. Dimana elemen-elemen seperti Sistem Satelit Navigasi Sejagat dan Sistem Maklumat Geografi adalah komponen utama yang membolehkan penjejakan dan penelusuran pekerja di lapangan (dalam konteks perlesenan adalah pegawai penguat kuasa lapangan) membuat pemeriksaan premis dengan pantas, laporan atas talian, menerima aduan dengan pantas dan memantau pendaftaran dan pembaharuan lesen premis secara di atas peta digital dengan boleh dicapai pada bila-bila masa dan dimana

sahaja dengan menggunakan talifon pintar yang terdapat dipasaran. Oleh yang demikian, untuk memastikan kajian ini berjaya, dua (2) objektif kajian telah ditetapkan. Objektif pertama adalah untuk membangunkan sistem perniagaan berlesenan yang berspatial di kawasan seliaan PBT. Hasil dapatan daripada kajian pertama akan menjadi penentu atau tanda aras bagi mencapai objektif kedua iaitu untuk mengkaji tahap penerimaan PBT terhadap sistem berasaskan spatial dengan mengukur keberkesanan sistem, kesediaan pengguna dan kesediaan organisasi. Kajian telah berjaya mencapai objektif pertama apabila sistem berjaya dibangunkan mengikut URS, diuji dan disahkan. Sebelas prosedur telah dijalankan dengan 10 (90.91%) prosedur lulus tanpa komen dan 1 (9.09%) lulus dengan komen atau pembetulan. Oleh kerana skor lulus adalah 90%, sistem telah lulus dan memenuhi semua fungsi seperti yang disyaratkan oleh MBJB. Sistem berasaskan spatial yang baru dibangunkan menawarkan fungsi untuk prestasi yang lebih baik dibandingkan dengan amalan perlesenan perniagaan semasa. Objektif kedua kajian telah dicapai apabila tahap penerimaan untuk keberkesanan sistem, kesediaan pengguna dan kesediaan organisasi masing-masing mencapai 99.33%, 95.33% dan 96.20%. Hal ini menunjukkan tahap penerimaan yang tinggi untuk setiap skop penerimaan. Tahap penerimaan keseluruhan sistem berasaskan spatial mencapai 97.33% bererti MBJB sangat setuju untuk menggunakan sistem yang dipertingkatkan. Kajian ini memberikan sumbangan yang besar kepada PBT terutama dalam mewujudkan elemen bandar pintar untuk tujuan meningkatkan perkhidmatan kepada masyarakat sejajar dengan kesan revolusi industri yang akan mengubah lanskap perkhidmatan ke arah amalan digital dan global. Oleh itu, pembangunan sistem berasaskan spatial untuk perlesenan perniagaan dengan konsep tenaga kerja bergerak untuk MBJB dapat digunakan sebagai asas untuk memperoleh perspektif PBT atau pengguna berpotensi lain di peringkat perbandaran yang berbeza.

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A-GPS	Assisted Global Positioning System
ANGKASA	Agensi Angkasa Negara or National Space Agency
API	Application Programming Interface
DBKL	Dewan Bandaraya Kuala Lumpur
ERP	Enterprise Resource Planning
GIS	Geographical Information System
GNSS	Global Navigation Satellite System
GLONASS	Global'naya Navigatsionnaya Sputnikovaya Sistema of Russia
GPS	Global Positioning System of the USA
ICT	Information and Communication Technology
IoT	Internet of Thing
JBCC	Johor Bahru City Council
JKM	Jabatan Kebajikan masyarakat
JPBD	Jabatan Perancang Bandar dan Desa
KPKT	Kementerian Perumahan dan Kerajaan Tempatan
LA	Local Authority
LBS	Location-Based Services
MAMPU	Unit Pemodenan Tadbiran dan Perancangan Pengurusan Malaysia
MBJB	Majlis Bandaraya Johor Bahru
M-GNSS	Multi Global Navigation Satellite System
MJC	A Company Name
MOBi	Real-time mobile workforce management software

MP	Majlis Perbandaran
MPPJ	Majlis Perbandaran Petaling Jaya
NSA	National Space Agency
PBT	Pihak Berkuasa Tempatan
PC	Personal Computers
PDA	Personal Digital Assistant
RFID	Radio Frequency Identification
SML	Smart Licensing Module
SSCSDE	Spatial Smart City Service Delivery engine
URS	User Requirement Study
YDP	Yang Dipertua

CHAPTER 1

INTRODUCTION

1.1   Background of the Study

Management is an important aspect of an organization. Regardless of its size, good management will create a strong, stable and financially viable organization or community. There are various fields within the context of management which one of them is the management of a city. A city is defined as a place or area that is highly populated with hustle and bustle of activities and businesses. Therefore, a city must be well-planned and managed efficiently for its inhabitants to live in a safe and sustainable environment. Local authorities are entities responsible for managing and administering a city. Their fundamental role is to ensure that development is carried out as well as providing a modern, complete and easily accessible infrastructure for the public.

According to a report released by the United Nations Department of Economic and Social Affairs in 2018, 50% of a country's population is expected to live in urban areas and the figure will increase to 68% by 2050 (UN, 2018). Special attention should be given to this matter by all local authorities or *pihak berkuasa tempatan* (PBT) in Malaysia due to its impact on various sectors such as the transport and educational systems. It will also negatively affect the job opportunity as well as increase the amount of waste on the limited lands. There is a need for a well-managed city. Apart from catering to the increasing population, another role of a city is to be the centre of state government in which various activities are carried out. The state government is responsible for matters involving state revenues and income such as licensing activities, property assessment taxes as well as other taxes and fees that is in line with the existing management system. The pattern of governance and management in Malaysia is unique. The federal government is the leading authority in the management of the country, while the local authorities or the small governments are authorized by the local government law to govern and carry out various activities that contribute to the income and development of the state. Table 1-1 below explains the types of local government in Malaysia and its characteristics.

Table 1.1 : Types and Criteria of Local Authority

TYPE	CRITERIA	EXAMPLE
City Hall	• The administrative centre of a state. • Having a population of more than 1 million. • Having an annual revenue of more than RM20 million. • Having its own business and industrial centres. • Having its own tertiary education centres such as universities and colleges.	• Kuala Lumpur City Hall • Ipoh City Council • Johor Bahru City Council • Council of the City Kuching South
City Council	• The administrative centre of a district. • Having a population of more than 100,000. • Having an annual revenue of more than RM5 million. • Having a well-organised administrative centre. • Focus more on urban services than infrastructure projects.	• Taiping Municipal Council • MPPJ, Kota Setar
District Council	• The administrative centre of a town which is usually located outside of a city. • Having a population of less than 100,000. • Having an annual revenue of less than RM5 million. • Having poor communication system facilities. • Focus more on infrastructure projects than urban services.	• Tapah District Council • Sabak Bernam District Council

The local government in Peninsular Malaysia governs both the urban and rural areas under the jurisdiction of the state government (Ruslan et al., 2010). The establishment of local governments is to provide the local community with an opportunity to participate in the administration of their own vicinities (Wong et al., 2000). Based on this fact, the development of a city highly dependent on the good governance and well-planning of local authorities. The Ministry of Housing and Local Government or *Kementerian Perumahan dan Kerajaan Tempatan* (KPKT) is the government body that assists and monitors the local authorities to ensure that they implement the development and governance of the city well.

According to the Local Government Act 1976, local authorities have certain powers as follows:

i. To enact by-laws.
ii. To collect taxes, rental et cetera.
iii. To hold and control its own funds. In other words, have financial autonomy (Ruslan et al., 2010).

Since the 1960s, information and communication technology (ICT) has dramatically changed the landscape of the workplace. The advances and verities in technology have inflicted the current working pattern, in which the speed of information transmission in communication and data security have become the major issues. Coalition and adoption of ICT in various sectors become a new phenomenon and it is viewed as an effective method and modern way to improve quality and lifestyle of the local community besides bringing a new method of managing. ICT-based systems can strengthen the management of our local authorities aside from ensuring service excellence. A good, efficient and customer friendly service contributes to a strong organization in providing a sustainable living to the citizen. Rapid development at the global level has formed a new direction in gaining effective information and services dissemination.

In recent years, the growth of ICT has substantially impacted the way local, state and national governments function. ICT refers to the technologies such as the Internets, Extranets and enterprise resource planning (ERP) which cover the spectrum from basic infrastructure implementation to service and operation improvement in an organization (Gupta et al., 2008). The use of ICT in the government, popularly known as eGovernment, is on the rise with 19% of the worldwide governmental organization offering online services (Gupta et al., 2008). eGovernment is described as the use of technology to enhance the access and delivery of government services to benefit the citizens, business partners and employees at the local, municipal, state and national levels (Gupta et al., 2008).

1.2   Problem Statement

A local authority is an entity responsible for providing the best service and creating business opportunities in the country. Successful local authority management can provide a sustainable living for the surrounding communities by taking into account the current and future environment. Furthermore, a well-run local authority produces a well-organized modern city and also provides advanced state-of-the-art services and job opportunities to the surrounding communities. However, due to the changes and advancements in technology, the existing systems used to provide services are no longer relevant and outdated. With the world shifting to the more manageable concept of smart city and the explosion of technology and the Internet of Thing (IoT) concept, the existing systems have become less impactful to the local authorities and at the same time, consumers are less satisfied with the long-standing, outdated government services. The existing systems need to incorporate ICTs to enable better business licensing services from the government. For instances, some developed countries use the IoT concept in processing business license that is more convenient, accessible and reliable everywhere and anywhere with just the use of smart gadgets.

The mobile workforce is another concept that can be adopted to enhance government services. It is special due to its tracking and tracing capabilities. Previous studies stated that the adaptation of the mobile workforce in administrative systems is able to increase productivity, efficiency and at the same time, reduce cost. However, this statement has never been proved by data and precise figures in any studies with a local setting.

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Therefore, this study was conducted to bridge the research gap by proving that the adaptation of mobile workforce concept is effective and relevant in improving productivity and reducing the costs of the local authorities in Malaysia. In the current practice of mobile personnel of Majlis Bandaraya Johor Bahru (MBJB), the enforcement officer will inspect each premises in their authority area. Usually, they have to bring a hardcopy list of registered premises with them. The enforcement officer will check the license status and any breach of licensing conditions. Inspection findings will be recorded and submitted to the licensing officer who will then update and record the findings on each premises provided by the enforcement officer. Compound and confiscation will be issued to the premises that has breached the licensing conditions.
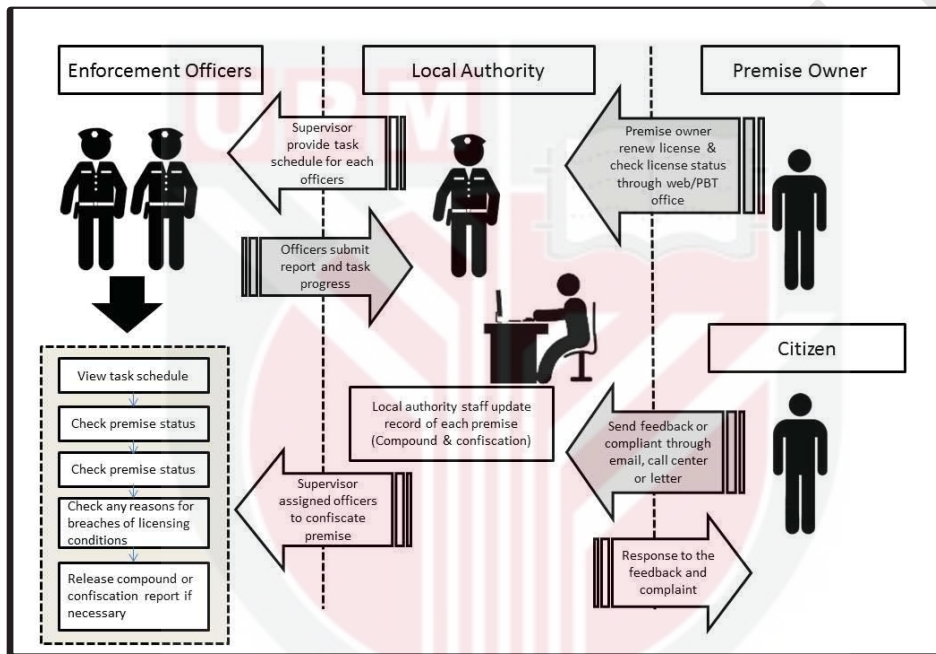
Figure 1.1 : Current Process Flow of the Licensing Management by the Local Authority

Figure 1-2 shows the articles on the issues related to the licensing of premises which are persistent and even worsening. New approaches are needed to reduce the burden of the local authority, especially those that allow society to work together with the local authority. Ideally, smart licensing approaches should allow the premises owners to take precaution in their business activities while the local authority can inspect business premises effectively.

Premis tawar khidmat seks diberi amaran

Dikhtmakan, seramai 826 anibruho warga asing ditahan dalam pelbagai serbuan di pusat hiburan sekitar daerah ini sepanjang tahun lalu.

Arjunandi berkata, tangkapan dijalankan selepas mendapati mereka terbabit dalam aktiviti pelacuran atau menawarkan perkhidmatan seks.

Menurutnya, daripada jumlah itu, seramai 543 orang yang ditahan adalah pada pelunan pelanggan (GRO), tukang urut (259 orang), penyapu premis (170 orang) dan pelacur di hotel murah (47 orang).

"Mereka yang ditahan keban yakan warga Thailand, Chan dan Filipina serta berusia antara 20 hingga 40 tahun. Kesalahan yang dikesan pula adalah menyalahi gunakan pas lawatan sosial dengan menjalankan kegiatan tidak bermoral," katanya, semalam.

Beliau berkata, terdapat juga premis yang sudah tamat lesen, namun masih meneruskan operasi seperti bina dan melanggar syarat pihak berkuasa tempatan (PBT) serta undang-undang seka-sala.

Katanya, banyak premis masih tidak serik walaupun sudah diberi amaran dan diserbu banyak kali oleh pihak berkuasa.

"Apabila kita tidak benarkan mereka memperbaharui lesen, pemilik premis ini bertambah licik dengan mendaftarkan nama lain, kemungkinan ada syarikat yang akan menguasahi oleh premis terbabit yang sudah disenaraihitamkan," katanya.

Browse > Home / Mahkamah/Jenayah / Hotel murah operasi tanpa lesen

Hotel murah operasi tanpa lesen

August 18, 2011 by admin   + Share | f y o o
Filed under Mahkamah/Jenayah   Leave a Comment

KANGAR: 18 Ogos – Kawasan Kuala Perlis yang terkenal sebagai lokasi transit pelancong untuk ke Langkawi, kini menjadi lubuk kepada hotel murah dan rumah tumpangan haram apabila majoriti premis terbabit beroperasi tanpa lesen sah.

Keadaan itu bukan saja menimbulkan imej kurang enak kepada Kuala Perlis selaku antara lokasi tumpuan pelancong, malah turut memberikan gambaran betapa kurangnya sikap prihatin pengusaha dalam menjaga kepentingan premis masing-masing, terutama dalam soal keselamatan dan keselesaan pelanggan.

Ahli Majlis MPK, Chan Poo Pee, berkata pihaknya percaya hampir 90 peratus daripada hotel murah dan rumah tumpangan yang beroperasi di sekitar kawasan Kuala Perlis tiada lesen.

Ini, katanya, terbukti apabila operasi bersepadu anjuran MPK dan beberapa agensi lain malam kelmarin, mengesan lima daripada enam premis yang diperiksa, gagal mengemukakan lesen ketika diminta, sekali gus mengesahkan mereka beroperasi secara haram.

Figure 1.2 : Articles on Issues Related to the Licensing of Premises

The main issues that were highlighted by MBJB regarding premises licensing were:

    i.   control of the registration and renewal of premises license;
   ii.   monitoring of enforcement officers in the field;
  iii.   missing document and development of the paperless system, and
  iv.   complaint management.

One of the resolutions to the above-mentioned issues are the use of the spatial-based system incorporated with space-based technology such as the positioning satellite system to ease the premises location identification and navigation. Figure 1-3 shows the flow of smart enforcement licensing that integrates various technologies such as ICT, the global positioning system (GPS)/global navigation satellite system (GNSS) and geographic information system (GIS).

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Figure 1.3 : Example of a Smart Licensing Enforcement Flow

Figure 1-4 shows the benefits of the smart licensing module (SML) in helping the local authority to track and locate premises. The module stores the information of premises in a spatial database that can be retrieved and presented using the GIS-based management system. With this, the enforcement officer can easily locate premises on the map.

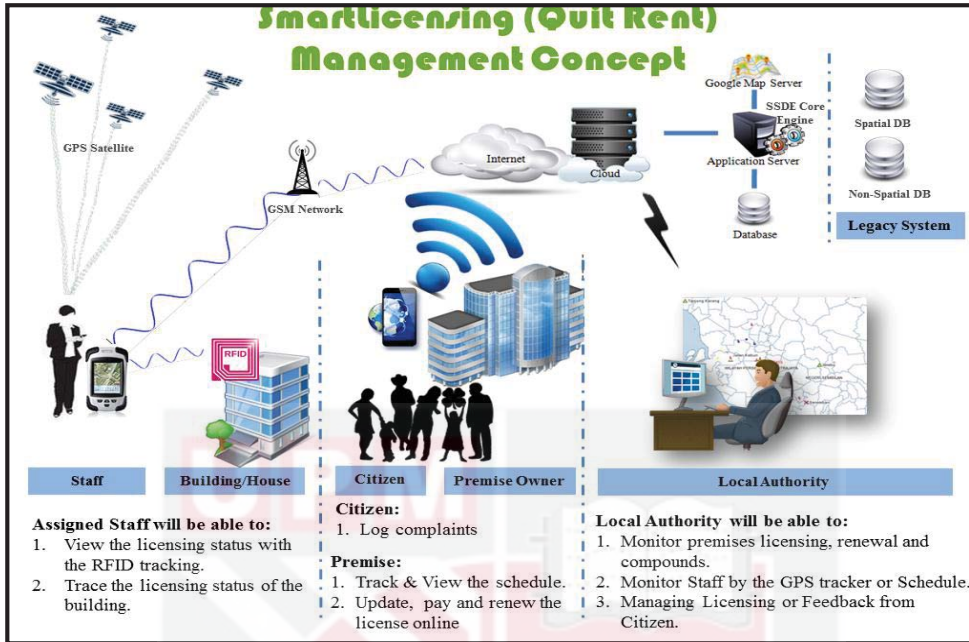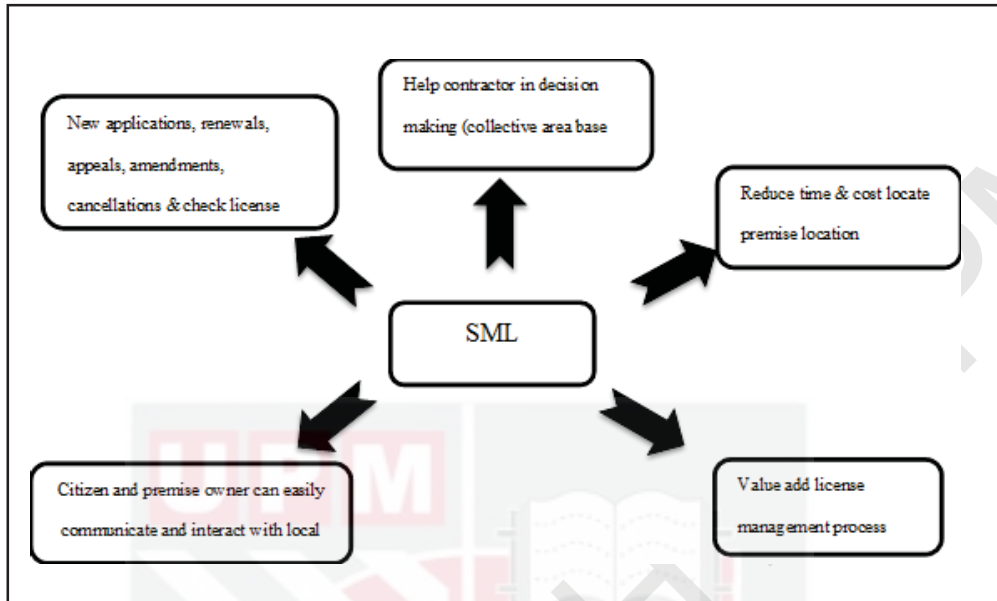**Figure 1.4 : Benefits of the Smart Licensing Module (SML)**

1.3 Objectives of the Study

In order to study the levels of acceptance and readiness of the local authority in adopting the spatial-based system for business licensing, an integrated system with spatial data elements and the concept of mobile workforce need to be developed first. The system was enabled by positioning satellite technology such as the GPS or now known as GNSS to provide positional tracing and tracking capabilities. This study was an extended study from the previous research project by ANGKASA, namely "Satellite-Based Tracking and Tracing for Mobile Workforce Application" and the current project of ANGKASA which entitled "Spatial Smart City Service Delivery Engine (SSCSDE)". Both the research projects were granted by the Ministry of Science, Technology and Innovation with grant numbers 04-05-05-SF0014 and TF00813E269 (K2).

The first objective of this study which involved the development of a spatial-based system for business licensing was the precursor to the second objective of the study. The second objective involved quantitative research elements to assess the acceptance level of the local authority in using the spatial-based system with the mobile workforce concept for business licensing by measuring its effectiveness and the readiness of user and organization.

The objectives of this study were:

i.   To develop a spatial-based system for business licensing with mobile workforce concept for the local authority.
ii.   To study the acceptance level of the local authority in using the spatial-based system by measuring the system effectiveness and the readiness of user and organization.

1.4   Importance of the Study

As mentioned before, this study was conducted to close the research gap by proving that the adoption of the mobile workforce management system is effective and relevant in improving productivity and reducing the costs of the local authorities in Malaysia. Today, satellite technologies have been used to add values to ICT in most developed countries. The same satellite technologies can be used to improve the current systems used by the local authorities, especially those that are used to service the citizens such as Sistem ePBT, Portal ePBT Online and OSC Online. This is because the local authorities in Malaysia need to improve their systems to a comparable level with the systems employed by the local authorities in developed countries. Furthermore, the local authority also needs to be competent and ready in achieving its goals and objectives for urban management, which ultimately is to provide a sustainable life for the present and future generations. Hence, this study helped to enhance as well as to provide new, up-to-date and reliable management working system for the local authority in Malaysia.

1.5   Scope of the Study

This study was carried out to improve the existing practice of business licensing of the local authorities to a better and more efficient system by adopting the concept of the mobile workforce that uses the global positioning satellite technology as its basis.

To begin the study, the foremost important task was to collaborate with a local authority as a partner. This study selected MBJB as the research partner and the communication was carried out using the Delphi technique. The scope of the study covered only the business licensing practice of MBJB as agreed through the URS with MBJB. The study area selected to study the licensing activities involved was the Mount Austin in Johor Bahru as agreed by MBJB. This study aimed to improve the existing licensing field operation in the study area with the mobile workforce concept that utilizes spatial data.

Figure 1.5 : Study Area - Mount Austin, Johor Bahru

1.6 Limitation of the Study

There were limitations and restrictions when conducting this study, which were the cooperation from the local authority and the availability of input data. Overall, the local authority was cooperative and welcoming throughout the idea gathering and proposal formation stage. However, there were still challenges when dealing with government agencies such as there were various barriers and restrictions in terms of data sharing and limited involvement from the local authority, especially during the system testing as they were always occupied with internal responsibilities and programs. The local authorities with more funding had appointed their own consultants to build their systems. There were also issues related to data transformation. Most of the local authorities in Malaysia were not ready to transform their data into spatial data. This situation might be caused by the limitations in human capital or facilities which are usually costly. All these limitations have been delaying the development of a spatial-based system by the government agencies and local authorities.

1.7 Thesis Outline

The organization of the thesis is described as the following. The first chapter describes the background of the study, problem statement, objectives of the study, the importance of the study, the scope of the study and limitation of the study. The second chapter provides insight from past studies which is related to the field of the study and the existing gap to obtain the desired output. The third chapter illustrates the data and software used in this study along with the methodology adopted. Besides, the manipulation of data and detailed process are also documented in Chapter 3. The fourth chapter shows the results pertaining to this study and also the discussion of the results. The final chapter summarizes the findings, concludes the findings according to the desired objectives and makes recommendations for future research studies related to the topic of this study.

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