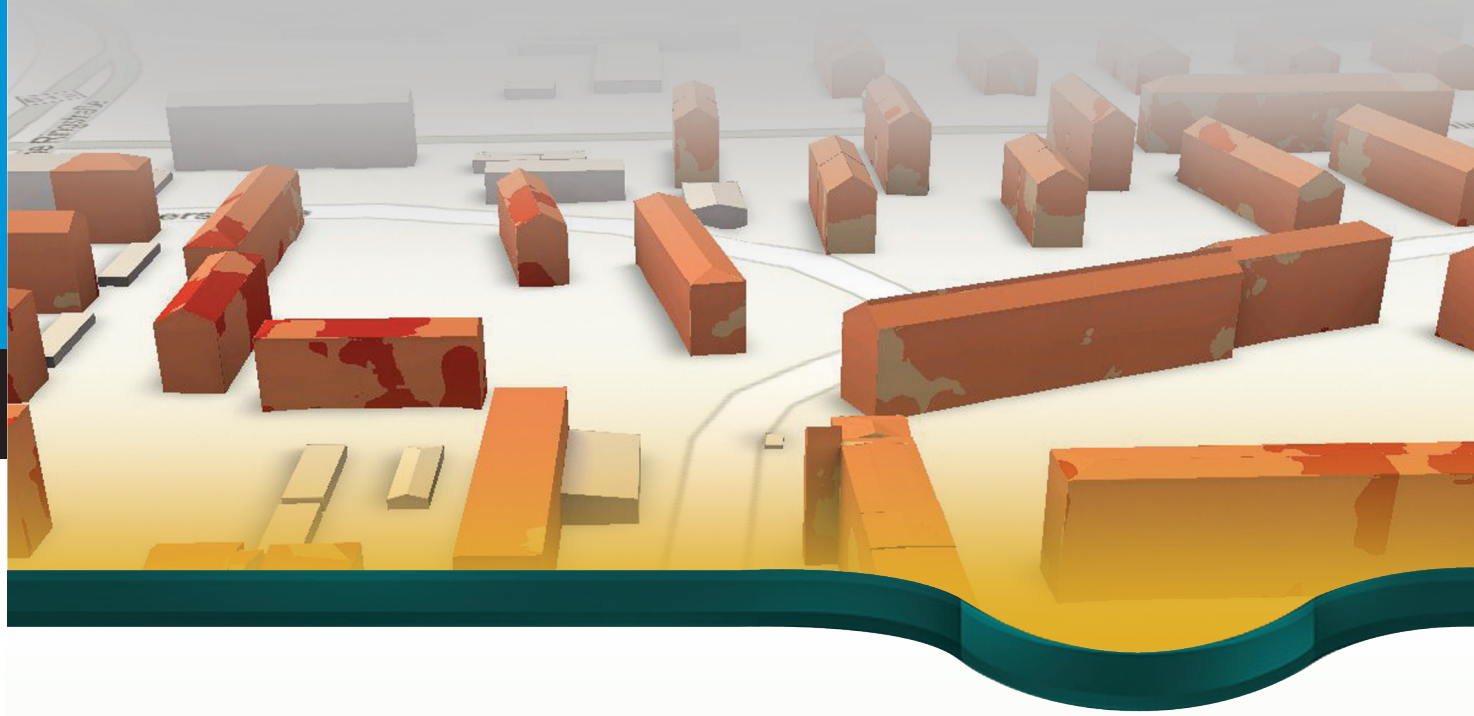

A SURVEY RELATED TO 3D PROPERTY IN MALAYSIA

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ABSTRACT

A questionnaire survey was carried out on 114 personnel from government authorities and professional companies administering cadastre registration in Penang, Selangor, Kuala Lumpur, Putrajaya and Johore. The aim of the study was to elicit the opinions of the respondents and to appraise their understanding on five study areas, viz. land legislation, land administration, cadastre registration, cadastral survey and mapping issues. The respondents were from six main groups: State Lands and Mines Office, State District Land Office, Department of Survey and Mapping Malaysia, Department of Director General of Lands and Mines Office, State Local Authority (Valuation and Property Management Department and/or Town Planning and Development Department) and Licensed Land Surveyors. From the present survey, the majority (57.5 %) of the respondents felt that the current land laws failed to define 3D property rights clearly. A high number (83.9%) of respondents thought that new legislation which integrated 3D aspects in cadastre registration, survey and mapping issues would address this anomaly. It is timely that a Cadastral System and Land Registration System that caters to the needs of 3D properties and property rights are instituted in Malaysia.

Keywords: land administration, 3D property rights, legislation, cadastre, cadastral survey

INTRODUCTION

Forrai and Kirschner (2002) observed that the availability of land use for future and further construction would be both expensive and limited. As the demand and competition for space on the two-dimensional land surface intensifies, the third dimension in property formation assumes increasing importance. In recent times, this third vertical dimension is seen to play a significant role in determining the rights of real property, especially in areas with multi-level mixed development. One of the important issues with regard to real property is the inadequacy of vacant land for rapid development. Many countries, including Malaysia, do not have enough vacant land on the ground surface to cater for the rapid development. This is particularly true in big cities that see increasing numbers of mixed settlements amidst modern skyscrapers.

Present cadastral mapping is moving towards a system whereby real property can be manipulated, processed, and managed in a 3D environment. This mapping system that is being contemplated in Malaysia provides vital information, including location and ownership for real properties. Whereas the current cadastral information serves present needs, there will be a time when the currently compiled information can no longer cater to more advanced and complex situations that result from innovative developments of the big city. What will inevitably be needed, therefore, is a more advanced system that incorporates suitable legislative and technical solutions in parallel with the implementation of 3D property rights.

PROBLEMS AND CONSTRAINTS

In Malaysia, there is a lack of proper legislation regarding 3D property in land and cadastral law to cater for the registration of any related legal and technical aspects. Many conflicts seem to exist between laws and statutes with the current cadastral status. Therefore, the rights associated with this registration should be clear in the registry titles issued. For example, Strata Title Act 1985 (Act 318) & Rules and Order allows land to be subdivided into parcels or land parcels based on the area occupied, and National Land Code 1965 (Act 56 of 1965) & Regulations allow air space rights above ground surface up to a maximum of 21 years in form ranging from an absolute conveyance to splitting off individual rights associated with the air space parcel. This is always used in a complication urban multi-level mix development, or in the allocation of property rights concerning underground facilities in large urban areas (Mitrofanova, 2002).

There are currently many arguments about the surface under different categories of land use, subdivision, partition and amalgamation; these arguments would evidently be different if 3D property rights are used. Without the possibility of using 3D properties, other legal rights have to be used to allow separate parties to use different parts of one building or property. To make such rights possible, different and new legal institutions have to be created, such as mineral and air rights (Sandberg, 2003). Again, 3D property rights can take on different forms and can vary from full ownership to rights of different extents (Paulsson, 2007).

In conclusion, there are many aspects to consider in implementing the 3D property rights of a legal and technical nature. Among these aspects, the core of this research attempt to investigate problems occurs in the Malaysia cadastral system on the legal aspect which can be seen as a foundation for 3D property and its technical aspect. The main legal documents involved are National Land Code 1965 (Act 56 of 1965) & Regulations; Strata Title Act 1985 (Act 318) & Rules and Order; and Building and Common Property (Maintenance and Management) Act 2007 (Act 663). Without proper land and cadastral legislation, such property cannot be formed at all. As a result of this, it has also been necessary to look into the legal systems of other countries, where 3D property formation is already possible by law, and to gain information about what kind of problems are faced there and how they have handled; this is so as to better understand the problems that may occur for countries introducing 3D property rights into their legislation.

RESEARCH HYPOTHESIS

The hypothesis is that - what contents in general, in the relevant legal documents, documents of title and documents of strata title, certified plan and certified strata plan have to be amended or in order to translate the legal expression from traditional cadastral practice to future cadastral practice for 3D property - whether a new legislation should be introduced or only amend the present legislation where type of provisions in the new 3D property rights' regulations and practices are needed to be inserted in the National Land Code 1965 (Act 56), Strata Title Act 1985 (Act 318), and the Building and Common Property (Maintenance and Management) Act 2007 (Act 663).

On the other hand - what kinds of criteria are required to establish and implement in cadastral procedures where these 3D property rights could affect the Cadastral and Land Administration Systems practices - if the present legislation is adequate, then in regards to the technical aspects.

RESEARCH OBJECTIVES

The objectives of this research are:

a) To establish the fundamental principles in cadastral survey and mapping of 3D property rights by studying cadastral systems in Sweden, and to match those systems to the needs of the Malaysian Cadastral System.

b) To examine the rights of land and property that dimension above, on and below the ground surface as provided by the National Land Code 1965 (Act 56), Strata Title Act 1985 (Act 318), the Building and Common Property (Maintenance and Management) Act 2007 (Act 663), Certified Plan and Document of Title, and to make recommendations for changes to facilitate a modern Malaysian Cadastral and Land Administration Systems.

RESEARCH SIGNIFICANCE

In Malaysia, strata and land properties, especially in mixed multi-level development, have become common, so the basis of the land and strata title arrangement is well tested. However, critical research on the problematic areas of land and strata title development in Malaysia has not been sufficient. Although research continues in universities and law-related agencies, most of such studies relate only to the technical aspects of the 3D registration rather than to the legal aspects, the studies by Chong (2006) on the legal and organisational aspects notwithstanding. The current research will attempt to examine and address some of the most problematic issues relating to the future development of multi-level building in mixed development.

RESEARCH METHODOLOGIES

This study was divided into three stages. The first stage involved secondary data collection and analysis. The second stage involved development of the research instrument, primary data collection and data analysis. The third stage involved refinement of the research instrument, final data collection and further data analysis.

The respondents were classified into six main groups, namely, State District Land Office (PTD), State Local Authority (Valuation and Property Management Department and/or Town Planning and Development Department) (PBT), Department of Director General of Lands and Mines Office (JKPTG), State Lands and Mines Office (PTG), Department of Survey and Mapping Malaysia (JUPEM), and Licensed Land Surveyors (LLS) from Penang, Selangor, Kuala Lumpur, Putrajaya and Johore. The data was then analysed using the quantitative approach. In the third stage, the findings from second stage were used to refine the research instrument further.

DATA ANALYSIS

From 114 questionnaires that were distributed, 110 (96.5%) were returned of which 106 (96.4%) were valid. The findings focussed on five (5) aspects of the cadastral system: (a) Land Legislation, (b) Land Administration, (c) Cadastre Registration, (d) Cadastral Survey and (e) Mapping. Respondents from PTD, PBT, JKPTG and PTG are required to answer only (a), (b) and (c) where 61 questionnaires are valid while other from JUPEM and LLS are required to answer all questions with a total of all 45 questionnaires valid. Figure 1(a) shows the questionnaires distributed & received while Figure 1(b) shows the questionnaires received & validated from the respondents.

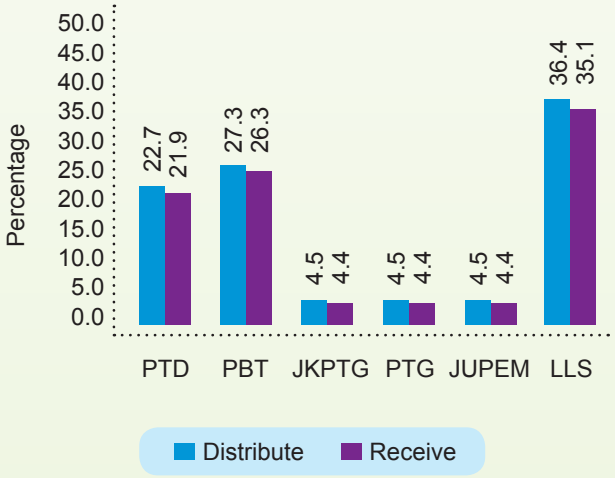

Figure 1(a): Questionnaires Distributed & Received

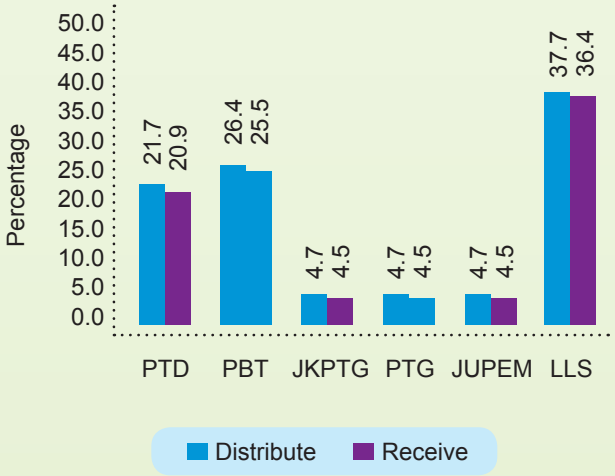

Figure 1(b): Questionnaires Received and Validated

Land Legislation

This section presents the analysis on land legislation and the questions appearing in Table 1. The responses to the questionnaire are shown in Figure 2(a) to Figure 2(d).

Table 1: Questions on Land

	Question
7	In Malaysia, there is a written Act, Code, Regulation, Rule or Ordinance which includes a right for people to hold and dispose of private rights in land in 3D environment.
8	The Strata Title Act 1985 (Act 318) is adequate and appropriate to support the land administration system in 3D environment.
9	The National Land Code 1965 (Act 56) is adequate and appropriate to support the land administration system in 3D environment.
10	The current land laws are adequate and appropriate to support the land administration system in 3D environment (besides Strata Title Act 1985 and National Land Code 1965).
11	The current land laws define 3D property rights clearly.
12	Are current land laws enforced adequately in all types of development?
13	Do the current land laws recognise the 3D property rights in mix development?
14	Does the practice on the ground reflect the provisions in the current land laws?
15	Are there sufficient legal institutions to enforce land law?
16	Does the law place responsibility for maintaining the 3D land register on a specific minister, government department, institution or official post holder?
17	Land administration officials/surveyors are well versed in the existing land law.
18	What has been your overall level of satisfaction with the Strata Title Act 1985 (Act 318) and National Land Code 1965 (Act 56) regarding 3D property?
19	Do you support the development of a new legislation that integrates 3D properties aspects?
20	Are there any government arrangements in place for the 3D property legislation?
21	This new law should serve to make the 3D property legislation available.

Based on the analysis from the 106 valid returned questionnaires, 76 (71.7%) respondents were of the opinion that there was no land law which embodied a right for people to hold and dispose of private rights in land in a 3D environment. Nineteen (17.9%) respondents thought the Strata Title Act 1985 provided for this while remaining 11 (10.4%) respondents were unsure. Only 10 (9.4%), 11 (10.4%) and 16 (15.1%) out of 106 respondents thought that the Strata Title Act 1985, the National Land Code 1965 and other land law such as Building and Common Property (Maintenance and Management) Act 2007 were respectively adequate and appropriate to support the land administration system in 3D environment. The remaining respective 86 (81.1%), 87 (82.1%), and 81 (76.4%) did not think so while 10 (9.4%), 8 (7.5%) and 9 (8.5%) respondents were not sure on these issues.

Figure 2(a) and Figure 2(b) show that 35 (33.0%) respondents thought that the current land laws defined 3D property rights clearly while 61 (57.5%) responded that they did not, and 10 (9.4%) were unsure. As a result of this, perhaps better 3D visualization should be developed and employed. Seventeen (16.0%) respondents opined that current land laws were being enforced adequately in all types of development and 56 (52.8%) thought the law recognised 3D property rights in mixed developments. Eighty two (77.4%) respondents and 39 (36.8%) respondents respectively thought otherwise. Meanwhile, the remaining respective 7 (6.6%) respondents and 11 (10.4%) respondents remained unsure. It is clear that the modern urban living and land usage needs are pushing hard on the existing laws. As an example, the transport hub at Kuala Lumpur Sentral where railroads, light rail transport systems, hotels, condominiums, car parks and various forms of utilities all crisscross over the same plot of land makes compliance with the provisions of laws difficult on the ground. Indeed, 88 (83.0%) respondents agreed that the practice on the ground reflected the provisions in the current land laws while 13 (12.3%) respondents responded that they did not.

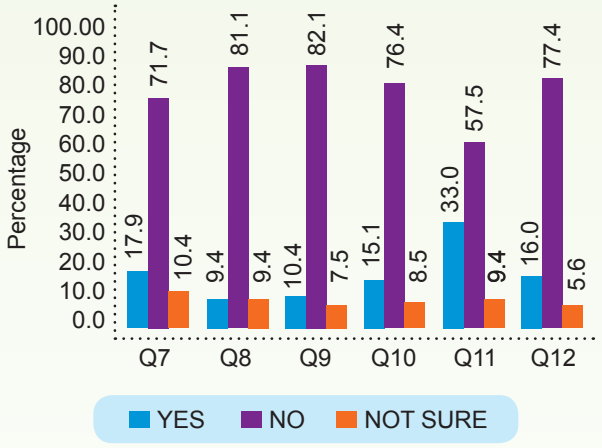

Figure 2(a): Respond Rate for Land Legislation (Questions 7-12)

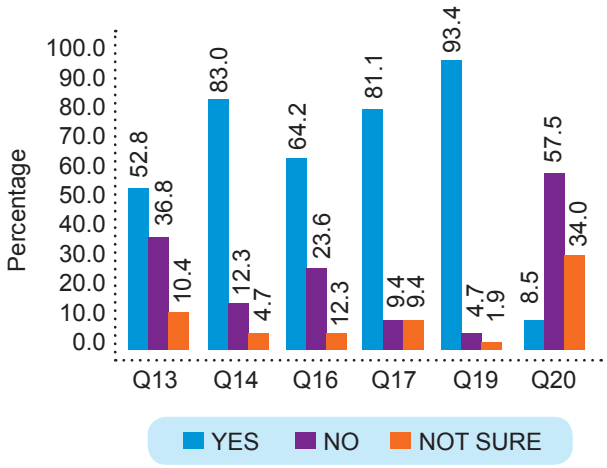

Figure 2(b): Respond Rate for Land Legislation (Questions 13, 14, 16, 17, 19 & 20)

Figure 4c shows that only 12 (11.3%) of the respondents were very satisfied and 36 (34.0%) respondents were satisfied with the current legal institutions in enforcing the land law. Forty-four (41.5%) respondents felt there were sufficient legal institutions to enforce land law. Twelve (11.3%) respondents were dissatisfied and 2 (1.9%) very much so. It would appear, therefore, that the legal institutions needed to be further improved to enforce land law satisfactorily. On top of that, 68 (64.2%) respondents felt that the law should place responsibility for maintaining the 3D land register on a specific government authority while 25 (23.6%) respondents did not agree. In this connection, 86 (81.1%) respondents considered the land administration officials/surveyors sufficiently well versed in the existing land laws although 10 (9.4%) respondents disagreed and another 10 were not sure.

Based on the above survey findings, nearly half, 48 (45.3%), out of 106 respondents were dissatisfied with the Strata Title Act 1985 (Act 318) and National Land Code 1965 (Act 56) regarding 3D property, with a further 7 (6.6%) feeling very dissatisfied. Another 33 (31.1%) respondents found the situation acceptable while only 18 (17%) of the respondents either very satisfied or satisfied on this issue. It would seem that these two legal documents need further improvement. There was a strong group of 99 (93.4%) respondents that supported the development of a new legislation integrating 3D properties aspects while the remaining seven (6.6%) respondents either did not support or were not sure.

It was found that more than half, 61 (57.5%), of the respondents felt that there were no government regulations in place for the 3D property legislation while 9 (8.5%) respondents thought otherwise. A large number, 36 (34%), remained unsure. For this reason, a large proportion (83.9%) of the respondents was either in agreement (51 or 48.1%) or in strong agreement (38 or 35.8%) that new laws should emerge to put 3D properties on sounder legal footing (see Figure 4d).

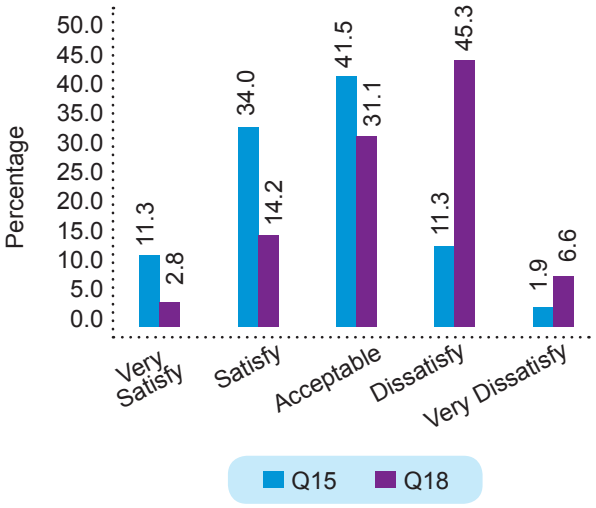

Figure 2(c): Respond Rate for Land Legislation (Questions 15 & 18)

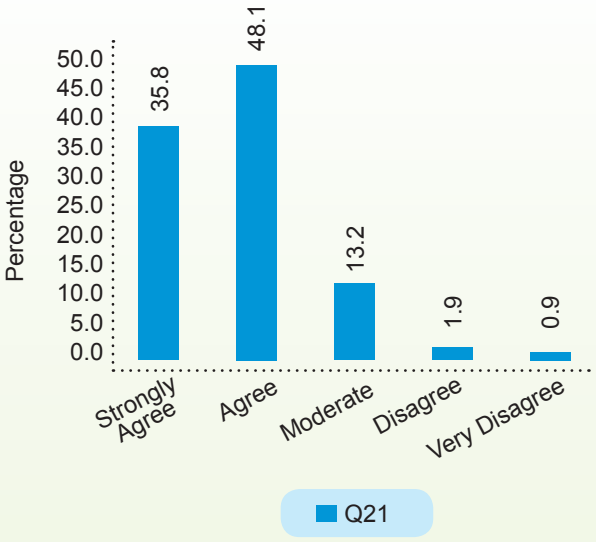

Figure 2(d): Respond Rate for Land Legislation (Question 21)

Land Administration

This section presents the analysis on land administration and the questions appearing in Table 2. The responses to the questionnaire are shown in Figure 3(a) to Figure 3(e).

Table 2: Questions on Land Administration

	Question
22	Malaysia has a statutory system of land registration which records rights in land, including ownership, in a public register in 3D environment.
23	In real estate developments, some of the buildings have been built on top of each other or they cross boundary edges?
24	The registration of properties in 3D environment is easy in multi authority or in single authority?
25	There is a need for a legal registration status of 3D property.
26	The existing law and guideline for stratum which under Part Five (A), Disposal of Underground Land, Section 92A to 92I, National Land Code 1965 can be used as a basis for 3D property volumetric land parcel alienation on and above the ground surface.
27	3D property legislation has an important role to play in achieving 3D property rights for Malaysia.
28	It is compulsory for those obtaining 3D new rights in land to register those rights.
29	What forms of land holdings should register in this new 3D environment.
30	If leases are registered, what is the minimum term in years (how long) of a lease for it to qualify for registration?
31	What, in your opinion, are the key problems with the current legislation that deal which 3D properties?
32	What have been the key benefits and issues in the development and operation of the 3D property legislation?

When asked whether Malaysia had a statutory system of land registration which recorded land rights, including ownership in a 3D environment, there was a significant group of 65 (61.3%) respondents that agreed whereas 29 (27.4%) respondents disagreed. Fifty (47.2%) out of 106 respondents agreed and 16 (15.1%) respondents strongly agreed that some of the buildings had been built on top of each other or crossed boundary edges in real estate developments. The remaining 25 (23.6%) stayed neutral and only 10 (9.4%) were in disagreement and another 5 (4.7%) in strong disagreement. It was generally felt that, there should be one, and only one, authority conferred with the authority to guarantee and authenticate land titles. There was concern that the security of tenures could otherwise be jeopardized. Accordingly, 82 (77.4%) respondents expected it to be easy to register properties in 3D with a single authority although 24 (22.6%) respondents thought it would be similarly easy with multiple authorities.

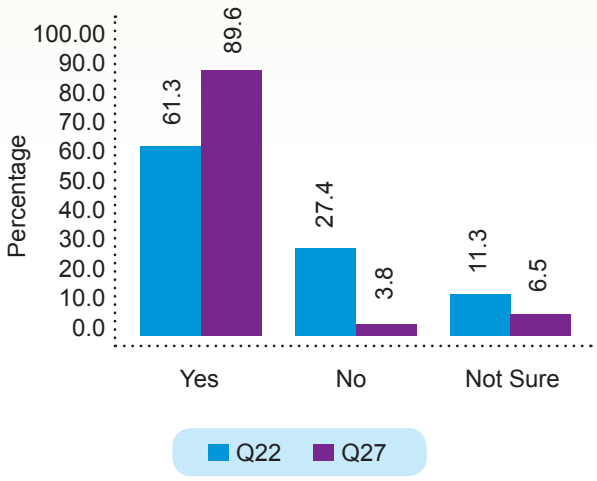

Figure 3(a): Respond Rate for Land Administration (Questions 22 & 27)

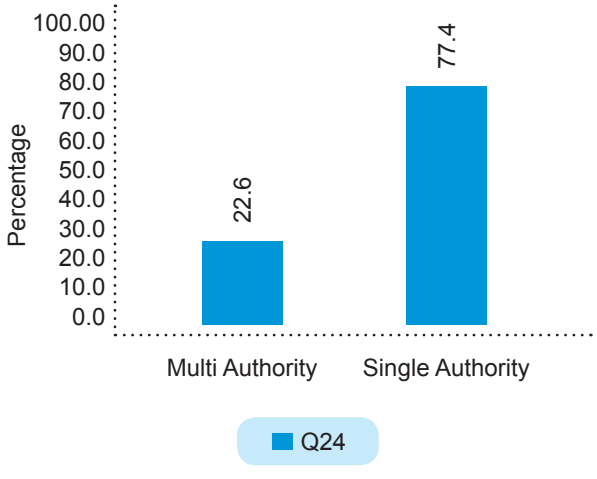

Figure 3(b): Respond Rate for Land Administration (Question 24)

Almost equal numbers of respondents (45 or 42.5% and 42 or 39.6%) strongly agreed or agreed respectively that there was a need for a legal registration status of 3D property. Fifteen (14.2%) respondents took a moderate stance and only a small number of respondent either disagreed or strongly disagreed. A great number of respondents, 74 (69.8%) either agreed or strongly agreed, opined that the existing law and guideline for stratum under Part Five (A), Disposal of Underground Land, Section 92A to 92I, National Land Code 1965 could be used as a basis for 3D property volumetric land parcel alienation on and above the ground surface. Twenty five (23.6%) respondents remained uncommitted on this issue. Altogether, 95 (89.6%) respondents responded that appropriate new legislation had an important role to play in achieving 3D property rights for Malaysia, with only four (3.8%) responding negative to the question while the remaining seven (6.6%) respondents were unsure on this matter.

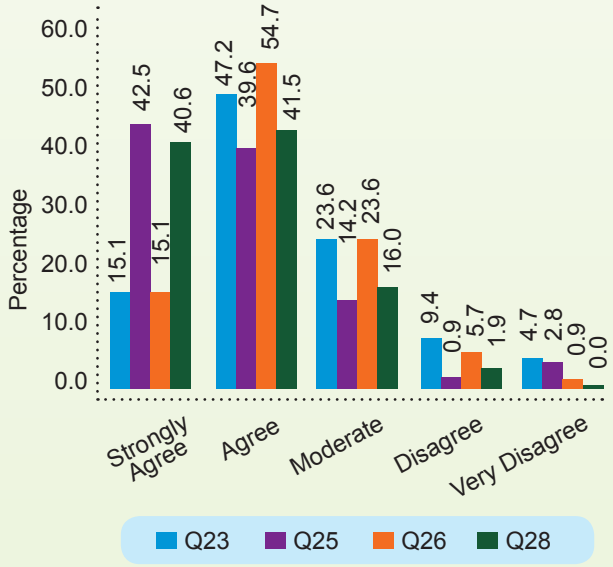

Figure 3(c): Respond Rate for Land Administration (Questions 23, 25, 26 & 28)

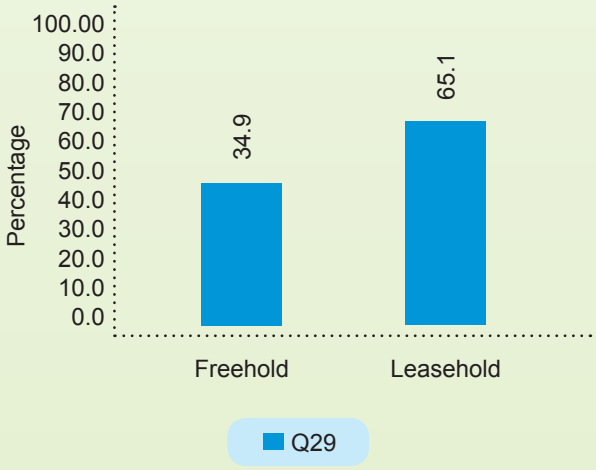

Figure 3(d): Respond Rate for Land Administration (Question 29)

Almost half of the respondents 43 (40.6%) and 44 (41.5%) either strongly agreed or agreed that it should be made compulsory for those obtaining 3D new rights in land to register those rights, whether on, above or below ground surface. At the same time, there were 17 (16%) who choose to stay uncommitted on this issue. There were another 2 (1.9%) respondents who disagreed. None strongly disagreed. A majority of the respondents, 69 (65.1%) out of 106, thought that the new 3D property should be registered as leasehold rather than freehold properties. If leases were registered, two thirds of the respondents, totalling 73 (68.9%) and 22 (20.8%) felt that the leases should run at least 60 or 99 years respctively to maintain the worth of the asset and for it to be easily transferable. Eleven (10.4%) respondents opined that the lease should only be 21 years.

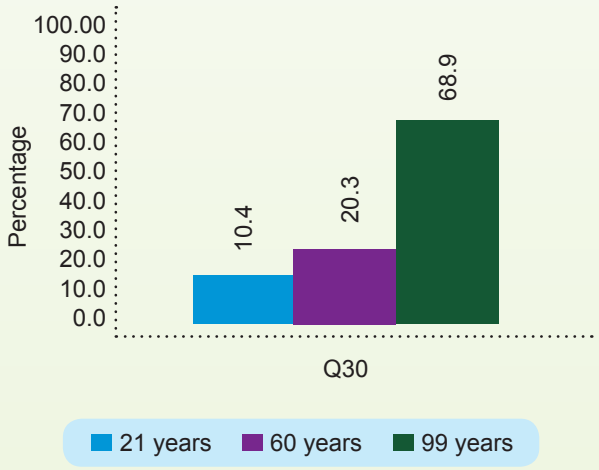

Figure 3(e): Respond Rate for Land Administration (Question 30)

Many of the respondents considered that a key problem with the current legislation that dealt which 3D properties lay with the legislators who were slow to take cognisance of, and respond to the need for changes that were essential for a better system of land registration and property management. Finally, the respondents felt that it would allow for a better quality of living in the urban centre, taking advantage of the services and facilities provided by local authorities, once the legislation on 3D environment was implemented.

Cadastre Registration

This section presents the analysis on land cadastre registration and the questions appearing in Table 3. The responses to the questionnaire are shown in Figure 4(a) and Figure 4(b).

Table 3: Questions on Cadastre

	Question
33	Does the legal system recognise the various 3D properties?
34	The traditional cadastre system and land registry that are based on 2D environment have been prepared to register property in 3D environment.
35	The current cadastre system is not able to handle the registration of 3D property within the legislation.
36	This current cadastre system is understood by surveyor and land administrator.
37	The main obstacle in adopting cadastre in 3D environment is that the legal and organisational systems are slow to change.

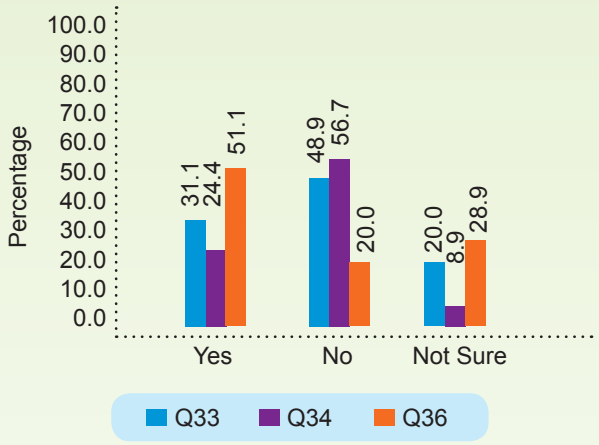

Figure 4(a): Respond Rate for Cadastre Registration (Questions 33, 34 & 36)

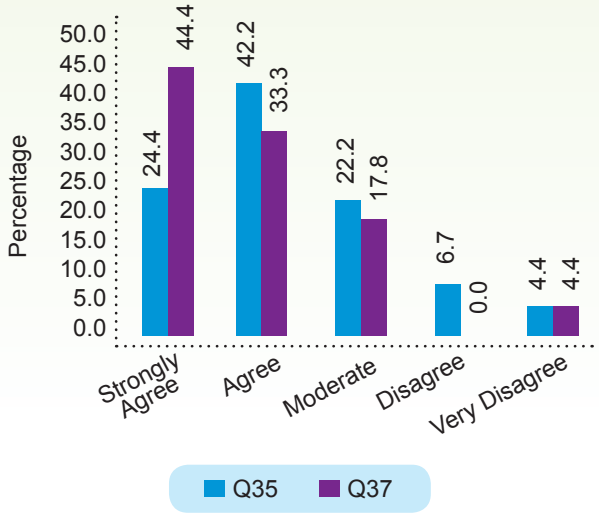

Figure 4(b): Respond Rate for Cadastre Registration (Questions 35 & 37)

Based on the analysis from the 45 returned questionnaire from DSMM and LLS responding to whether the legal system recognised the various 3D properties, 14 (31.1%) answered in the affirmative whereas nine (20%) disagreed. Nearly half (22 or 48.9%) the respondents skirted the issue. Thirty (66.7%) respondents thought that the traditional Cadastre System and land registry based on the 2D format had not been designed to cater for 3D property registration. Only 11 (24.4%) respondents felt that the current registry was adequate and 4 (8.9%) remained unsure. There were two-third, 30 (66.6%) of the respondents who either agreed or strongly agreed that the current Cadastre System was unable to handle the registration of 3D properties within the existing legislation. Small clusters of respondents disagreed and strongly disagreed respectively. Other than that, ten (22.2%) respondents stayed neutral on this issue.

Slightly more than half, 23 (51.1%), of the respondents felt that the current Cadastre Registration system was understood by surveyors and land administrators. However, nine (20.0%) respondents thought otherwise and 13 (28.9%) respondents chose to stay uncommitted on this issue. About half, 20 (44.4%) respondents strongly agreed and 15 (33.3%) respondents agreed that the main obstacle in adopting 3D cadastre was that the legal and organisational systems were slow to change and adapt. Eight (17.8%) respondents stayed neutral with two (4.4%) respondents strongly disagreeing.

Cadastral Survey and Mapping

This section presents the analysis on cadastral survey and mapping and the questions appearing in Table 4. The responses to the questionnaire are shown in Figure 5(a) to Figure 5(c).

Table 4: Questions on Cadastral Survey and Mapping

	Question
38	Department of Survey and Mapping Malaysia (DSMM) is the organisation that responsible for maintaining the survey and mapping of registered 3D properties.
39	Strata Lodgement Module, Electronic Strata Survey Module and Strata Verification Module are the surveying and mapping methods that are used/have been used in the survey of 3D property.
40	Are the surveying and mapping methods understood by the surveyor and land administrator?
41	Are all perimeter boundaries of the 3D property identifiable?
42	What other 3D property information is collected by surveying and mapping?

Figure 5(a) and Figure 5(b) show that from the 45 returned questionnaire from DSMM and LLS, more than two-third, 37 (82.2%) of the total respondents either strongly agreed or agreed that DSMM should be responsible for maintaining the survey and mapping of registered 3D properties, whereas only 5 (11.1%) respondents were moderate in their view. Three (6.7%) respondents disagreed with it while none disagreed strongly. Concerning the suggestion that the Strata Lodgement Module, Electronic Strata Survey Module and Strata Verification Module had been the surveying and mapping methods that were used in the survey of 3D property, only slightly more than one-third, 16 (35.5%) indicated either they were satisfied or very satisfied with the statement. Nineteen (42.2%) respondents stayed neutral whereas 8 (17.8%) respondents expressed dissatisfaction.

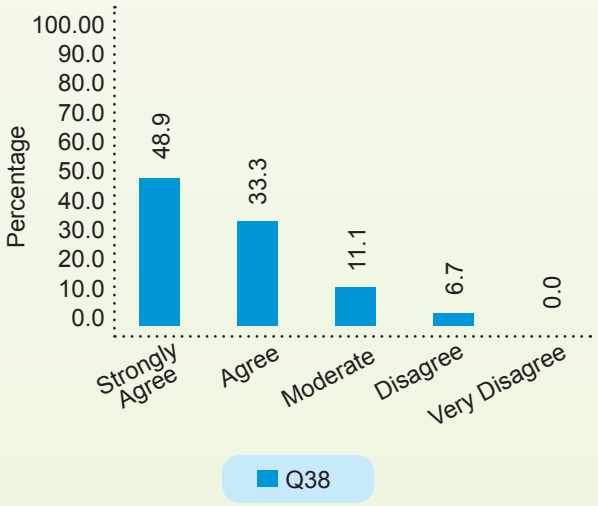

Figure 5(a): Respond Rate for Cadastral Survey and Mapping (Question 38)

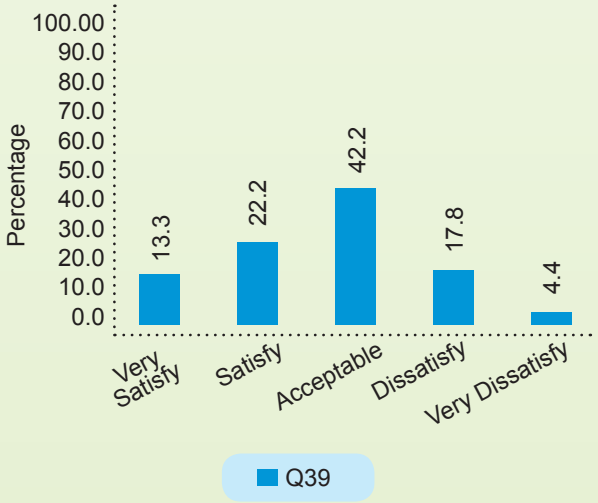

Figure 5(b): Respond Rate for Cadastral Survey and Mapping (Question 39)

The results of the survey also showed that more than half, 28 (62.2%) of the respondents considered surveying and mapping methods to be understood by surveyors and land administrators while slightly more the one-third, 17 (37.8%) respondents either disagreed or unsure. Out of 45 respondents, 26 (57.8%) respondents were of the opinion that all perimeter boundaries of the 3D property were identifiable. Nevertheless, 13 (28.9%) respondents thought otherwise, while the remaining 6 (13.3%) were unsure whether physical or virtual boundaries were identifiable (see Figure 5(c)).

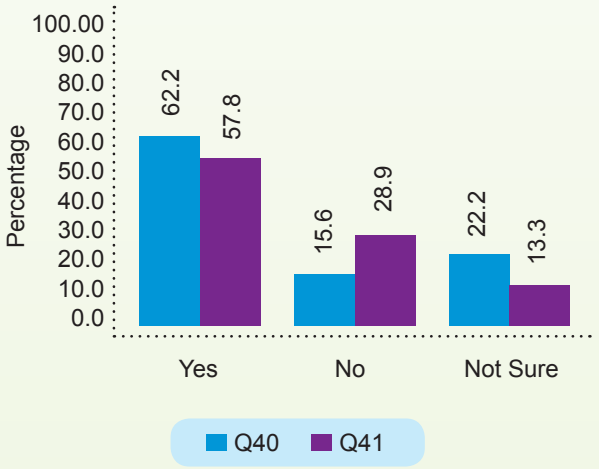

Figure 5(c): Respond Rate for Cadastral Survey and Mapping (Questions 40 & 41)

Finally, many respondents felt that other relevant information on 3D properties and their regulation should be collated. Unlike the situation where the limits of the properties were only surveyed and indicated on plans, 3D geographical visualization methods could be employed to record many identifiable features as land users, facade, front, back, and side elevations, services, utilities, lamppost, traffic lights, even the roof, and the whole multitude can be captured and shown. The captured features and data would vary according to need.

DISCUSSION AND CONCLUSION

Most traditional cadastral systems are based on two-dimensional (2D) registers that deal only with properties on the land surface. These systems are unsuitable for today's multi-level reality. To cater to both above and below surface constructions and to enable the registration of real properties that are not limited to the land surface, it is necessary to amend the legislation. A three-dimensional (3D) approach for Cadastral System and Land Registration System can provide a better means to manage our modern world. The existing Cadastral Systems do have a number of inherent advantages like responsibility for proprietary rights, up to date information coverage and good mapping (Benhamu and Doystsher, 2003). These advantages notwithstanding, they suffer from a number of weaknesses arising from their 2D limitations that result in their dealing only with properties on the land surface.

Specialists from many countries are studying the legal status of modern structures and properties with the objective to define and register these entities both legally and technically. Inconsistencies and irregularities that may crop up in future can be avoided by registering all real property objects, both under and above the ground surface, as 3D properties in the land registry. Accordingly, the legal and technical aspects of registering real property objects incorporating 3D methodologies in the Malaysian Cadastral System should be promulgated as a new field of research in both the legislative and technical frameworks. Research on 3D property rights and 3D cadastre is being carried out in several countries like the Netherlands and Sweden. The latter has been practising 3D property formation since 1st January 2004.

From the present survey, the majority (57.5 %) of the respondents felt that the current land laws failed to define 3D property rights clearly. A large number (83.9%) of respondents thought that new legislation that integrated 3D aspects in cadastre registration, survey and mapping issues would address this anomaly. In this connection, government departments and agencies under various authorities are currently involved in preparing for the Cadastral System and Land Registration System in Malaysia. This is timely in view of the need for effective registration of 3D real properties and the improvement of the legal and technical regulations concerning 3D property rights.

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