

**GIS INTEGRATED SMART MEASURES FOR PRIVATE
ACCOMMODATION FOR
UNIVERSITY STUDENTS REFERENCE TO UNIVERSITY OF SRI
JAYEWARDENEPURA**

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ABSTRACT

Accommodations are the basic need for university undergraduates to carry out their studies. Universities of all over the world responsible to provide accommodation within the campus or off campus to university students. According to the statistics of the Student Council of the University of Sri Jayewardenepura, about 40% of undergraduates are selected for university hostel accommodations and 60% of students must find a private accommodation. So, there can spring up a demand for student private accommodation by undergraduates. Hence, private accommodation providers are entering to the current market and automatically fulfill the demand of student accommodation. Student private accommodation can be simply defined as a room or space where the students live in or stay at there by paying a rental fee. This study mainly focuses on digitizing student private accommodation in Sri Lanka reference to the university of Sri Jayewardenepura. It attempted to develop some specific model regarding that. The objectives of the research are analyzed the nature of the existing student private accommodations, analyze the factors that affect to choose private accommodations by university students and develop a smart measure to identify student private accommodations surrounding area of the University of Sri Jayewardenepura. The primary data were collected through the google forms and questionnaires. The questionnaire and google form consisted with open ended questions, close ended questions, five-point Likert scale questions and checklists. Piolet test is done to verify the accuracy of the questionnaire. The secondary data were collected through the journal articles, reports and websites. The research was carried out by using Geographic Information Systems (GIS) software and developed a smart measure by using google my maps. 100 student private accommodations were selected as the sample within the 800m buffer zone from the University. Four sets of zones (100m, 250m, 500m and 800m) around the university was used to stratify the data. The results summarize that the nature of the existing private accommodations indicating type of occupants, type of private accommodations, type of rented rooms and other physical differences of the student private accommodations. Also, summarize that the factors that affect to choose private accommodations by university students such as location, cost, security and facilities of the accommodations. Also, the smart measure helps to find suitable private accommodation by university students.

Keywords: Student Private Accommodations, Location, Cost, Security, Smart Measure

1. INTRODUCTION

Education is the basic right of all student world over and higher education provide degree awarding for students in all over the world. Universities are responsible to provide accommodation for them. Student accommodation can be described as a place that has been given to students whose homes are located far from their educational institute and it is essential need for students and called as student hostel/housing (Chiguvu & Ndoma, 2018). Tabassi, et al.,

(2015) denoted that on campus student accommodations are built in the university environment, supervised and owned by university authority and the student's freedom is limited.

In Sri Lanka most of the students are coming from rural areas to urban areas for the purpose of higher education. Also, higher education in Sri Lanka is totally get free and with the increase of the rate of higher education enrollment, the government face many challenges to provide university student accommodation as a facility. So, there can spring up a demand for student private accommodations (SPA) by undergraduates. Hence, SPA providers are entering to the current market and automatically fulfill the demand of student accommodations.

However, private accommodation providers provide SPA and there are some factors which should be concentrated by the responsible parties. There is not any enacted law to control or regulate the student private accommodations while have rules and regulations for university hostel accommodations. So, most of the accommodation providers provide private accommodation as wish them. The 90% of undergraduates have huge problems when selecting the SPA as soon as possible. There are no proper guideline or database to identify the SPA for anyone. Indeed, it has become as a major problem to both undergraduates and property owners frequently.

Considering these research gaps, this research study focused to attempts following objectives.

- To analyze the nature of the existing student private accommodations.
- To analyze the factors that affect to choose private accommodations by university students.
- To develop a smart measure to identify student private accommodations surrounding the University of Sri Jaywardenepura.

2. LITERATURE REVIEW

Generally, most of the students come from different rural areas to get higher education. So, university student accommodation is become as a basic requirement in all countries. In developing countries, government is the main provider of student accommodation for higher education institutions.

Primarily, the student accommodation can be divided into two parts, based on location. They are living "on campus" and living "off campus". The accommodations which are in university premises is called "on campus" and some literatures cite as "hall of residence" (resident hall). Student accommodations which are located outside of the university is called "off campus" living and some literature cited it as "non-resident hall."

Providing accommodation facility to university students is a basic requirement for their learning process (University Grant Commission, 2004). Due to the limited supply of university accommodation, University Grant Commission have been proposed some criteria to select students who are essentially provided hostel accommodation. Year of the study, more than 30km distance away from home to university, different kind of disability students and economic condition of the student's family are some of that criteria that is given priority to select students to university hostel accommodations. Table 1 is denoted the statistics of the hostel facility distribution in University of Sri Jaywardenepura in 2020.

Table 1: Hostel Facility Distribution - USJ

Faculty	No: of undergraduates in the university		No: of undergraduates who are eligible to get hostel facility	
	Girls	Boys	Girls	Boys
Management Studies & Commerce	3019	1776	1229	343
Humanities and Social Science	2786	659	1853	322
Applied Science	1402	870	200	110
Engineering Faculty	123	359	48	167
Technology Faculty	388	549	188	357
Medical Science	493	303	109	125
Paramedical Science	210	55	124	44
Total	8421	4571	3751	1468

Source: Student Council – USJ - 2020

Location of the private accommodations, cost of private accommodation and safety & security are the major factors that is affecting to choose private accommodations by university students. Students like to find a suitable private accommodation proximity to their university to reduce walking distance to reduce spent time or minimize their transport cost (Ghani & Suleiman, 2016). Agreeing with that statement, Chiguvu & Ndoma (2018) explained that some location where the students are staying in is not quite and not comfortable for their studying purpose. As well as some locations are located too far from the university and it is getting late to attend to lectures on time.

Economic condition and rental values are mostly affect to select a private accommodation by students who are seeking for choice an accommodation at lower rental value. According to the economic demand and supply theory, “high price” of the accommodation is induced a “lower demand” for that (Ghani & Suleiman, 2016). Most of the students don’t have an affordable economic condition to pay rental values, so students are agreeing to live in a shared house or a shared room rented by a private landlord by sharing the rental values among them. Through this way, students can save money or reduce their cost in certain extent. Proving this idea, concerned that, students share a private room to save their cost on rental value (Rugg, et al., 2000).

Safety is an essential element to carry on students’ studies properly. Chiguvu & Ndoma, (2018) noted that parents of students may be worried about their children’s safety and security at the off-campus than the on-campus.

Sekar, (1991) denoted that present time a house should have the basic infrastructure facilities such as clean water supply, sanitary facilities, drainage, kitchen, electricity and access road etc. to consider as a house. Similarly, many scholars agreed that with this statement by explaining presently, a house should have an obligatory element such as electricity, water, sewerage, toilets, bathroom and kitchen without satisfying with shelter to get a better living.

3. METHOD

Student Private Accommodations situated where within the 800m buffer zone from the main gate of the University of Sri Jayewardenepura is the designed case study area of this research. The stratified sample size of the 100 student private accommodations were selected for this study and the primary data were collected through the google forms and questionnaires.

3.1. Study Area

University of Sri Jayewardenepura is a leading state University in Sri Lanka and it is the second oldest University in Sri Lanka which is located close to Colombo. Today the University stands strong with eight faculties, with over 12,000 Undergraduates, over 1000 postgraduate students. It is considered the largest University in terms of Student Population in Sri Lanka. But 40% of undergraduates are selected to get hostel accommodations and rest of others (60%) must find a private accommodation to carry out their studies. In this percentage include undergraduates who are coming from their own home and living on private accommodations.

4. RESULTS AND DISCUSSION

The research is focused to analyze the nature of the existing situation of the SPA, factors that affect to choose SPA and develop a smart measure to identify SPA for university students. Following data were used to analyze SPA and develop a smart measure.

Table 2: Student Private Accommodations Database and associated Literature

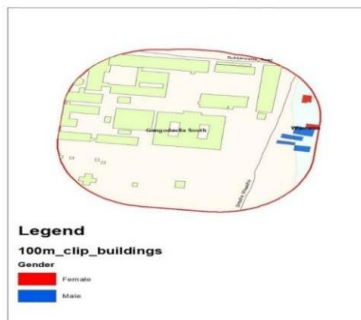
Category	Variables	Literature
<i>Nature of Existing SPA</i>		
Gender	Male	Primary Data (Piolet Survey and Observations)
	Female	
Type of Private Accommodations	Rented Rooms	
	Rented Houses	
	Private Hall of Residences	
Number of Floors	Single Storied	
	GF + 1	
	GF + 2	
	GF + 3	
Accommodation Rooms	GF + 4	
	Single Rooms with Individual use Bathroom	
	Single Rooms with Shared Bathroom	
	Double Rooms	
	Shared Rooms with more than Two Occupants	
<i>Factors affect to choose SPA</i>		
Location	As per the Grama Niladhari Divisions (Egodawatta, Rattanapitiya, Gangodawila South B, Wijerama, Navinna)	(Ghani & Suleiman, 2016) (Chiguvi & Ndoma, 2018)
	Distance to University (Less than 100m, Between 100m to 500m, Between 500m to 1000m, More than 1000m)	

Cost / Monthly Rent Value per student	Single Rooms with Individual use Bathroom	(Ghani & Suleiman, 2016)
	Single Rooms with Shared Bathroom	(Rugg, et al., 2000)
	Double Rooms	
	Shared Rooms with more than Two Occupants	
Security Condition	CCTV Facility	(Chiguvi & Ndoma, 2018)
	Watchman Facility	
	Boundary Walls	
	Door Locks	
Facilities	Core Facilities	(Nimako & Bondinuba, 2013)
	Enabling Facilities	
	Supporting facilities	

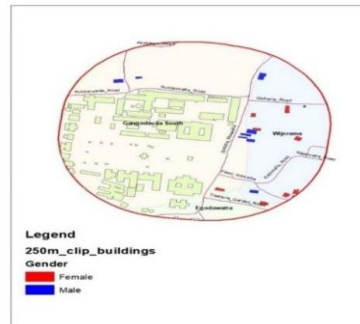
Nature of the existing Student Private Accommodations

The private accommodations were analyzed based on four buffer zones which are 100m, 250m, 500m and 800m buffer zones. Within the 100m buffer zone, majority are males' private accommodations and when it extends to 250m buffer zone majority are females' private accommodations. Within the 500m buffer zone, it similarly divides between males and females. Map 1 to 4 represents the gender wise SPA within the study area.

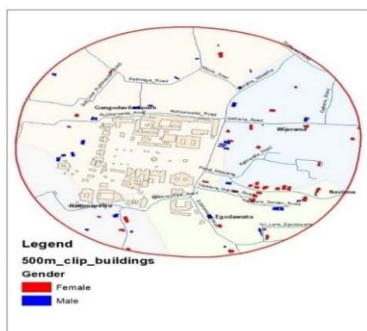
Map 4: Gender wise Private Accommodations -



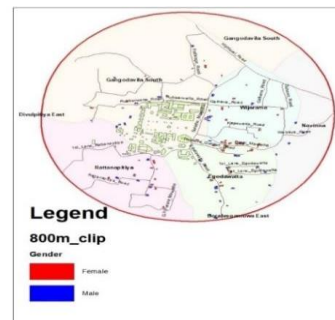
Map 4: Gender wise Private Accommodations -



Map 4: Gender wise Private Accommodations

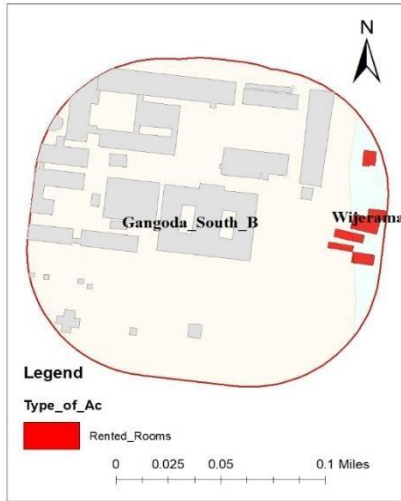


Map 4: Gender wise Private

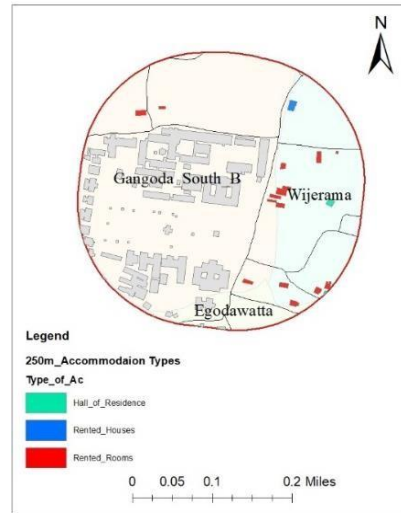


Map 5 to 8 show that the distribution of type of SPA under the above mentioned four buffer zones. Compare with other type of student private accommodations, majority are rented rooms.

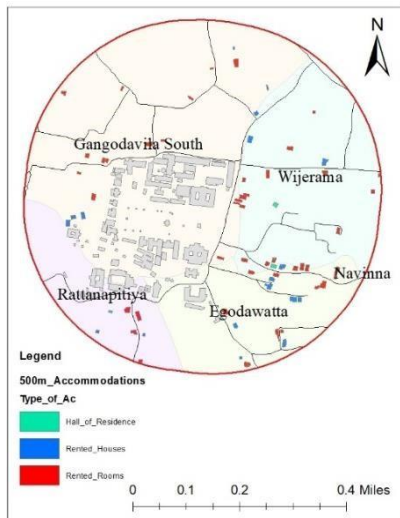
Map 8: Type of Accommodations - 100m Buffer Zone



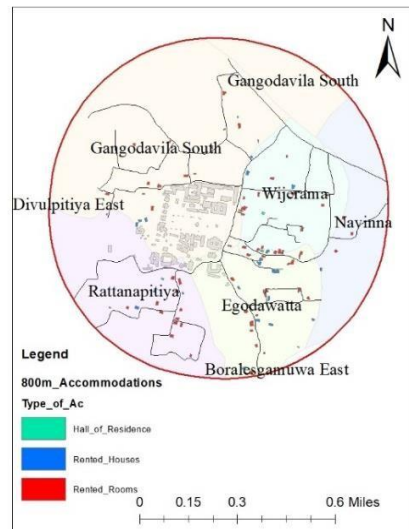
Map 8: Type of Accommodations - 250m Buffer Zone



Map 8: Type of Accommodations - 500m Buffer Zone



Map 8: Type of Accommodations - 800m Buffer Zone

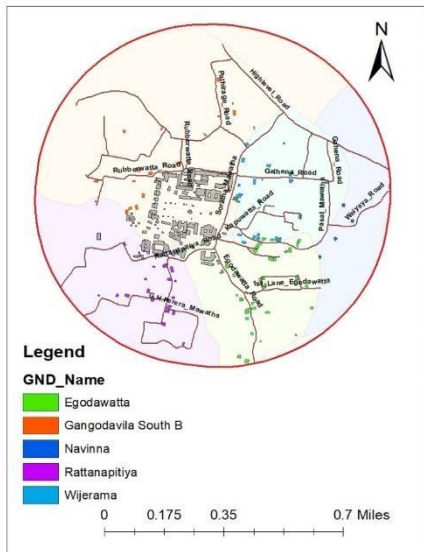


Factors affect to choose Student Private Accommodations

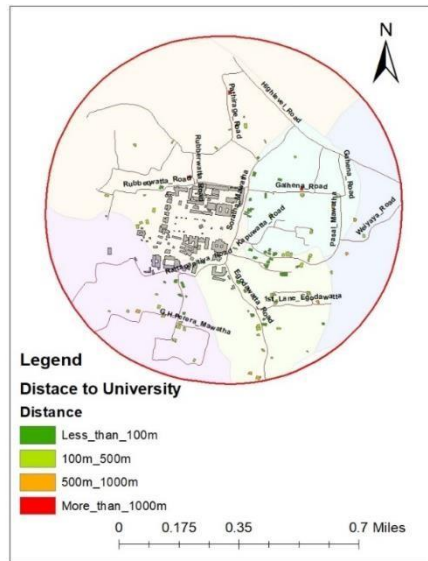
- **Location**

Five Grama Niladhari Divisions (GND) are included to study area and students like to find a suitable private accommodation with walking distance. Then 46% of SPA are located between 100m to 500m distance from the University. Map 9 & 10 represents SPAs based on the locations of the SPAs.

Map 10: Location of the Accommodation



Map 9: Distance to University



3.2.2 Security Condition

Availability of CCTV facility, watchman, door locks and boundary walls are taken to analyze the security condition of the SPAs. Availability of CCTV facility is so limited in SPAs and significantly, females’ accommodations have security facility than the males’ private accommodations. Not only CCTV facility, other security facilities are available in females, accommodations than the males’ accommodations.

- **Cost / Rental Fee**

Table 3 represent that the rental fee per month per student within the 800m buffer zone from the University of Sri Jayewardenepura.

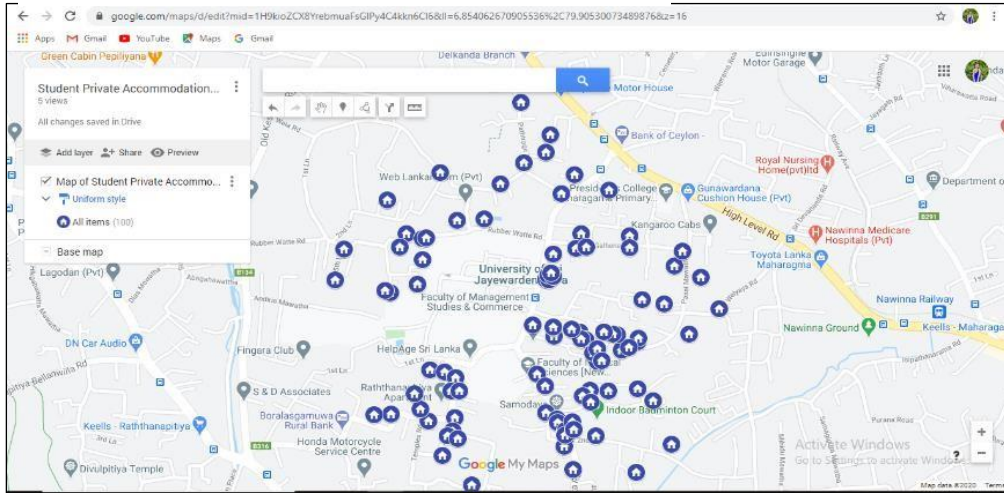
Table 2: Rental Fee Per Month Per Student

Type of Rooms	Mean	Minimum	Maximum
Single rooms with Individual use bathroom	10781.25	7000	15000
Single rooms with shared bathrooms	8115.38	5000	12000
Double rooms	5285.71	3000	8000
Shared rooms with more than two occupants	3632.85	3000	7500

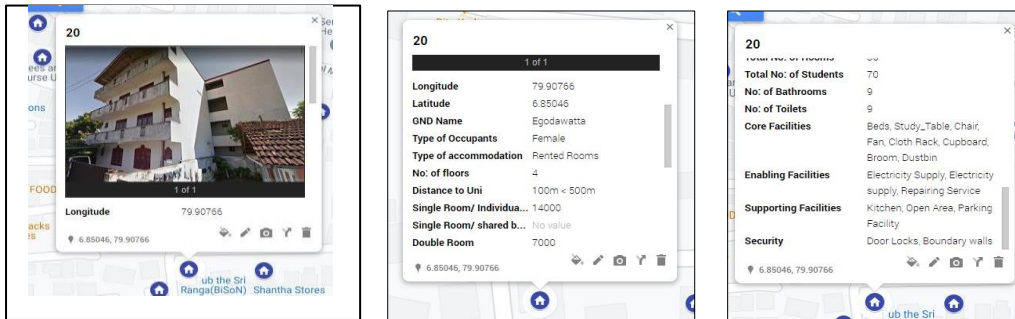
- **Smart Measure to Identify Student Private Accommodations**

Google my maps used to create and share maps in different manner. The map shows that the location of the SPA. Also, it includes the type of the accommodation, type of rooms available, distance to university, number of floors of SPA, number of occupants, rooms, bathrooms, toilets, monthly rent value as the type of rooms and available all facilities under the core facilities, enabling facilities and supporting facilities.

Map 11: Map of Student Private Accommodations



Map 12: Details of the Student Private Accommodation



5. CONCLUSION

This study attempted to digitize private student accommodation in the university using GIS based database with limited facilities. Based on this data base, a mobile app can be created to find private accommodations for university students. The private accommodation providers can be invited to register with the app and provide private accommodations with demanded facilities. Also, there should be periodic inspection and monitoring of student accommodation condition existing in student residence.

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