

INTEGRATION OF UNIMAP'S STUDENT BUS ROUTING TOWARDS FREE CITY-BUS SERVICE LOCAL PEOPLE IN PERLIS

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Abstract. Free public transport is mean that the public transport is funded in full by means other than collecting fares from passengers. Free public transport can generate a lot benefits to the local people either directly or indirectly. Although Perlis is the smallest state in Malaysia, but there is some rural area doesn't have a very good public transport service. This had caused problem for the citizen when they want to travel to other places. These problems can be solve by providing a new integrated free public transport service to them. In order to provide a new integrated free public transport service, UniMAP can cooperate with the local government or the local bus service to provide a better and integrated free public transport system. With public transport service, mobility is provided to the residents of rural Perlis. Free public transport services can improve rural economic growth in a various way. The local customer base for a range of services, for example, medical facilities, shopping malls, entertainment, education center services and other services can be increased. When more people tend to use public transport, it will impact on road safety cause fewer vehicles on road. Furthermore when fewer vehicles on road, traffic congestion, and parking congestion problem can be reduced or even being solved. Since the bus commute is something so significant in Perlis road today, this research is to examine the potential of integration existing students bus services extendable to Perlis local people to make advantage of the presence of the bus for their daily activities. It is hoped that this research will propose the optimized route for the bus to operate in systematic structure not only for the student's essential but also beneficial for the local people mainly in Perlis state.

Keywords: *free public transport, public bus, integrated public transport, UniMAP student*

Introduction

Transportation is very important in this modern life now. It can be say that everyone in the community is affected by transport in various way, either directly or indirectly in daily life. Transport model choices can affect many aspects of our lives (Kingham et al., 2001). In recent decades, the using of private car in everyday travel has increase steeply and resulting in a serious growing consequences for the environment. In order to motivate people to use public transport, the fares have to be lowered to a certain level whereby the traveler is tempted to choose public transport. This can be achieved by offering public transport at a cheap price or as free public transport to the public. The free public transport is the public transport which is funded in full by means other than collecting fares from passengers. One of the sample of fare-free public transport is the Central Area Transit of Perth, Australia. It is a fare-free bus service that works around the central business district of Perth. Many benefits can be generate by the fare-free public transport (Cools et al., 2016).

Although Perlis is the smallest state in Malaysia, but there is some rural area doesn't have a very good public transport service. This had caused problem for the citizen when they want to travel to other places. The finite public transport in Perlis had cause car dependence among Perlis citizen. While for those who not afford a car will have to spend more money on taxi when they are in emergency. Another from that, the mobility of people and goods also had been affected. Without a complete integrated public transport service, the rural area also having problem to find a better job because they don't have transport to go to work (Rohani et al., 2013). All of these had caused social and economic deprivation in Perlis. These problems can be solve by providing a new integrated free public transport service to them.

UniMAP is reported to have 46 buses commuting the students from all over placed in Perlis mainly for their daily educational purpose. But from observation, most of the bus only full when it is on the way to faculty. After that, the bus is either stay at there until the bus is full, or go back to hostel even the bus is not full. And sometimes the buses can stay outside the faculty up to few hours. From here we can see that the highest efficiency of UniMAP buses is haven't been carried out by the bus system of UniMAP now. But from another feedback from Transportation Unit UniMAP, the numbers of bus contract now is insufficient. Therefore, there are no enough buses to bring student to Kangar sometimes and worst come to worst there are no bus for them to go class. And I found that some hostel area doesn't cover in maybes routes. Therefore I think there are chances and opportunity to improve Perlis public transport system by integrating UniMAP buses and the public transport that we have now.

The aim of this research is to integrate UniMAP's student bus routing towards free city bus service for local people. Hence, the objectives of this research are:

1. To evaluate existing UniMAP student bus and public bus service in Perlis;
2. To assess the existing UniMAP bus operation to integrate with the public bus;
3. To recommend to the command of integration of UniMAP's student bus routing towards free city bus service for local people in Perlis.

Materials and Methods

In this study, to integrate the UniMAP's student bus routing into the public bus service to provide a free bus service to local people in Perlis, author have to design a new network and route for the bus service. Data have to be obtain by doing several questionnaire for example the hotspot for people to wait for bus, which destination is the most popular, what is the best time duration for a bus to pass by a stop and so on. Contract and every single details of UniMAP's student bus have to obtain from Transportation Unit UniMAP. Contract and details of public bus service in Perlis also have been obtained from myBAS, UniMAP Transportation Unit. These data must be obtain to study the possibility of integrate both bus service into a more efficiency bus service to provide to local people and student from UniMAP. After that integration only can be carry out and the bus planning process can be carry out. The flow chart of the methodology as shown in *Figure 1*.

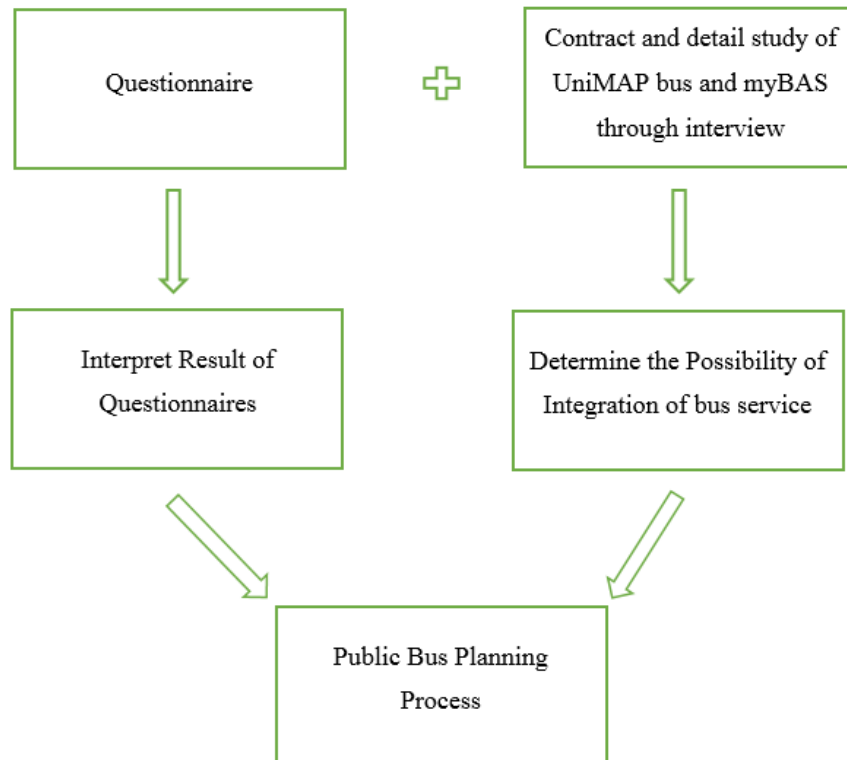


Figure 1. Flow chart of methodology.

Results and Discussion

Evaluation of Unimap bus and Mybas service

Two (2) sets of the questionnaire had been given to 700 UniMAP students and 100 citizens in Perlis to evaluate the existing UniMAP bus operation and public bus service in Perlis. The collection of data are the subsequent data analysis are based on two fundamental goals. These goals were to evaluate existing public bus service in Perlis which is the myBAS and to assess the existing UniMAP bus operation to integrate with the public bus. These objectives were accomplished. The results presented in this chapter showing the evaluation of UniMAP students toward UniMAP bus and myBAS and evaluation of citizen in Perlis toward myBAS.

The *Figure 2* showed the satisfaction of students toward the UniMAP student bus schedules, routes, and condition of the bus. Most of the student vote neutral for the satisfaction of the UniMAP student bus schedule, which is 287 votes, 46.22% of the total. There are 175 votes and 29 votes, 28.18%, and 4.67% respectively for good and very good. While for bad and very bad, they have 79 votes and 51 votes, 12.72%, and 8.21% respectively. For the satisfaction of UniMAP student bus route, half of the students vote neutral for it, which is 313 votes, 50.40%. 168 students, 27.05% of vote for good and 34, 5.48% of students vote very good. While for the bad option, 11.11% of respondents which is 67 students had voted for it and 5.96% of respondents which are 37 students vote for very bad. In question 7, 49.76% of respondents which is 309 students vote for neutral for the comfortability of UniMAP bus. 28.18% of respondents which is 175 students vote for comfortable and 2.25% of respondents which is 14 students vote for very comfortable. 91students which is 14.65% vote for not comfortable and 32 students vote for very uncomfortable which is 5.15%. From figure

we can major of respondents are voting neutral or higher than neutral for satisfaction toward UniMAP student bus. This proved that our student bus is still satisfied for students. But we can see that the vote for very bad is higher than very good is three sections. This means there are still something to improve in UniMAP student bus now.

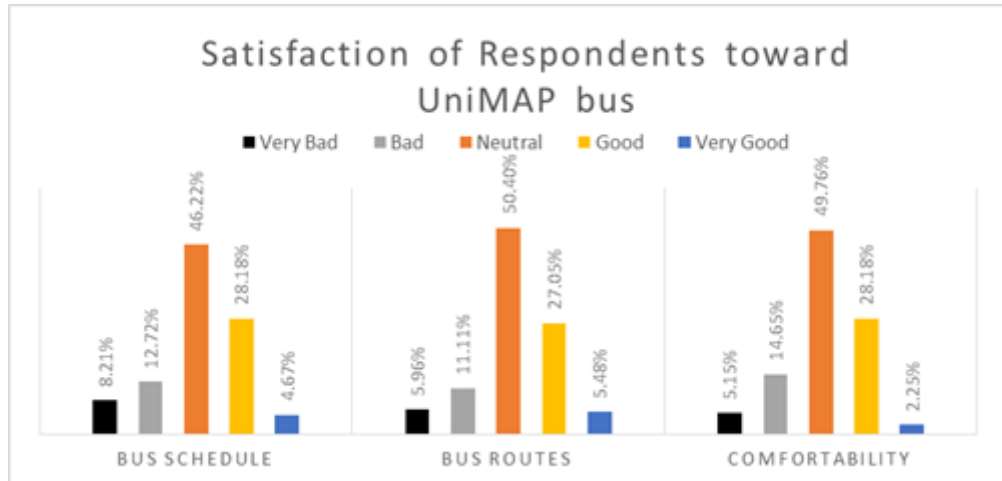


Figure 2. Satisfaction of respondents toward Unimap bus.

In this part the survey aimed to know the presence of public bus at hostel area, the number of students who want public bus service in hostel area, faculty area and the routes they requested. The *Figure 3* indicated the evaluation of the public bus service. 60.71% of respondents which is 377 students answered yes for having public bus service at hostel while 39.29% of respondents which is 244 students answered no. For the 377 respondents who answered yes, 60.74% of them feel neutral for the satisfaction of the public bus schedule, 23.34% vote good and 3.98% vote very good. There are 9.28% and 2.65% vote bad and very bad for the satisfaction of public bus schedule. 61.27% of 365 respondents feel ok with the public bus routes, 24.40% vote for good, 3.45% vote for very good, 7.96% vote for bad and 2.92% vote for very bad.

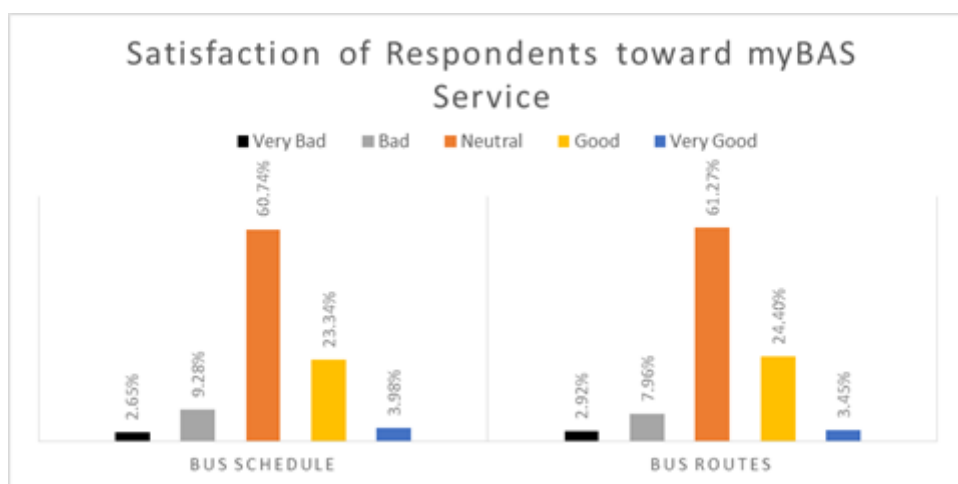


Figure 3. Satisfaction of Respondents toward myBAS Service.

Figure 4 showed the evaluation of myBAS service among Perlis citizen, it can be seen that majority of respondent chose normal. 16.36% of respondents chose bad which 5.27% is more than the respondents who chose good.

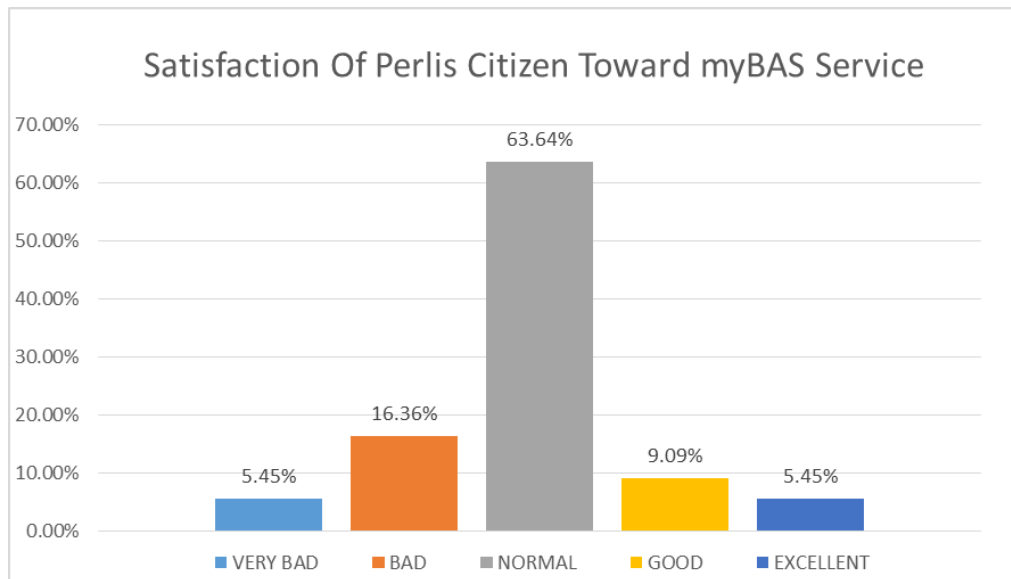


Figure 4. Satisfaction of Perlis Citizen toward myBAS Service.

Figure 5 showed the number of use of myBAS service by respondents weekly. The number of use was counted on one way trip. There are 64.29% of respondents didn't use myBAS service at all and 35.71% of respondents use the myBAS service 1-5 times weekly. In order to know why Perlis citizen do not use myBAS service more often. There are a question in the survey to know why Perlis citizen do not use the myBAS service regularly. The result is in the Figure 6.

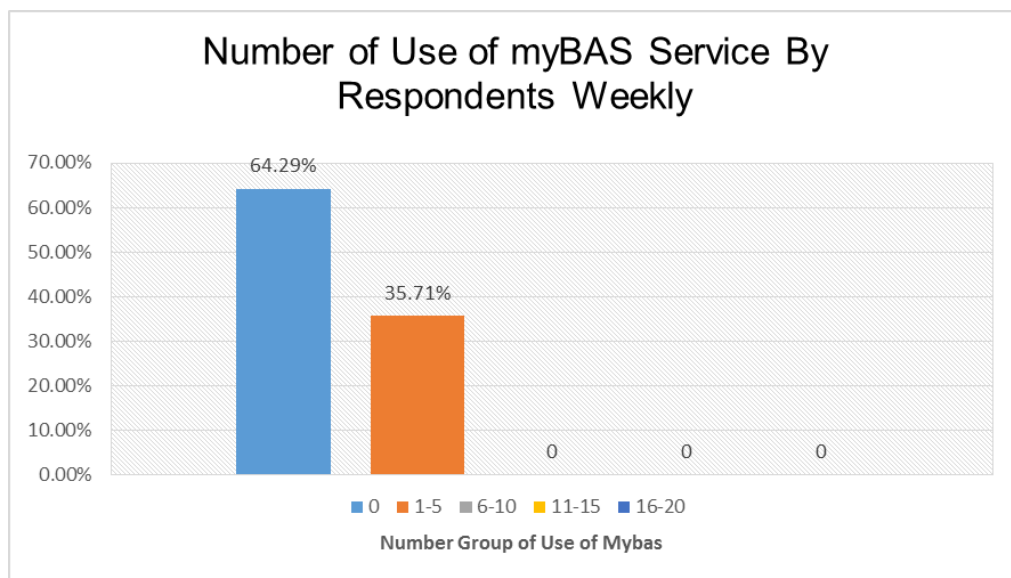


Figure 5. Number of Use of myBAS Service by Respondents Weekly.

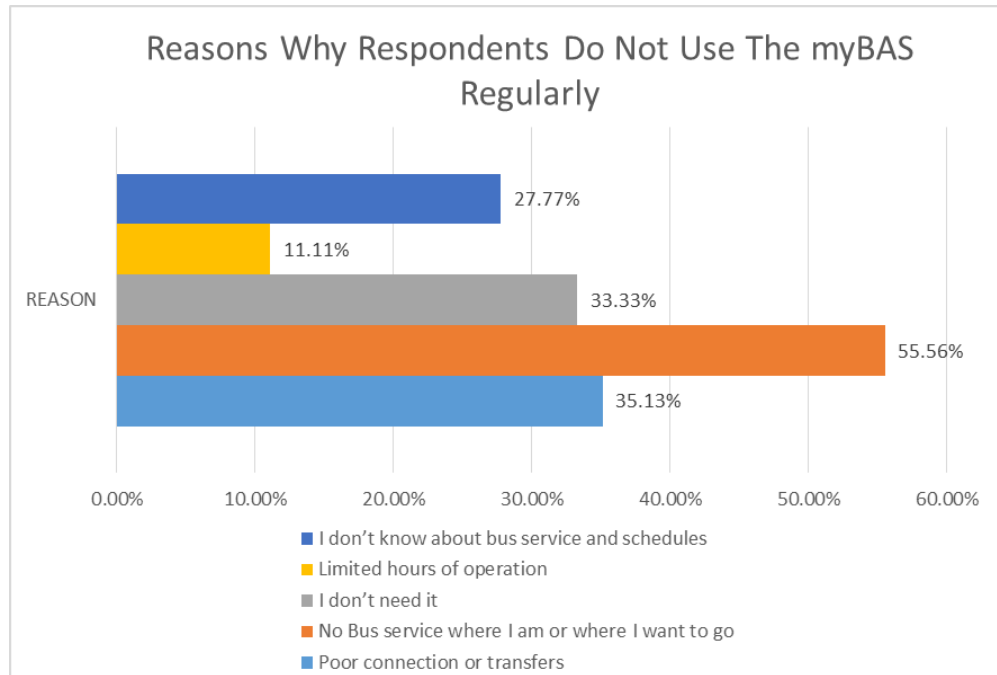


Figure 6. Reasons Why Respondents Do Not Use The myBAS regularly.

The highest percentage of reason is there is no bus service where respondents are and where they want to go, which is 55.56% of respondents. Coming next is the Poor connection or transfers, which is 35.13% of respondents vote to. This 2 results showed that the myBAS service coverage in Perlis is still unsatisfied for citizen There are 33.33% of respondents do not use public bus service regularly because they don't need it. This is because Perlis is small, citizens are tends to travel from one place to another place by using motor instead of taking public transport. There are 27.77% of respondents said that they don't know about bus service and schedules, and this is cause by lack of awareness and promote by SPAD and Maraliner. There are 11.11% of respondents stated that the hours of operation is limited and make them do not use myBAS regularly.

Integration of Unimap bus and MyBus service

Figure 7 showed the comparison of both UniMAP bus and myBAS. As we can see the T11 and T13 is completely overlapped with Red Route and Blue Route. The Orange route and Purple route is partially overlapped with T10.

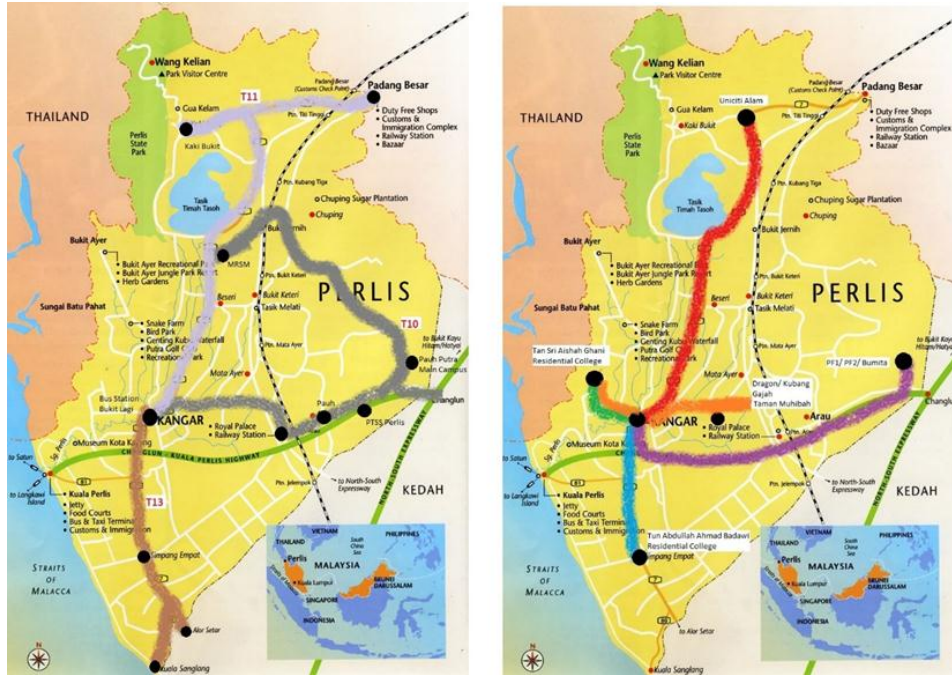


Figure 7. Comparison of UniMAP Bus Routes and myBAS Routes.
Source: Land Public Transport Commission SPAD (2015a).

The 1st integrated route is the T11 and the Red routes. Figure 8 showed the integrated route and the Table 1 showed the integrated bus schedule.

Table 1. Integrated Bus Schedule A of myBAS T11 and Unicity Alam KWSP Shuttle.

myBAS Route T11		Unicity Alam KWSP Shuttle	
Kangsar – Pdg Besar	Pdg Besar – Kangsar	Kangsar – Unicity	Unicity – Kangsar
6.00 AM	6.00 AM		
7.30 AM	7.30 AM		
9.00 AM	9.00 AM		8.30 AM
10.30 AM	10.30 AM		
		11.00 AM	
			11.30 AM
12.00 PM	12.00 PM		
1.30 PM	1.30 PM		
		2.00 PM	
			2.30 PM
3.00 PM	3.00 PM		
4.30 PM	4.30 PM		
		5.00 PM	
		6.30 PM	
			8.00 PM
			8.30 PM
		10.30 PM	
		11.00 PM	
		The bus service was stopped to make way for Friday prayers	

(12.30 pm – 2.30 pm)

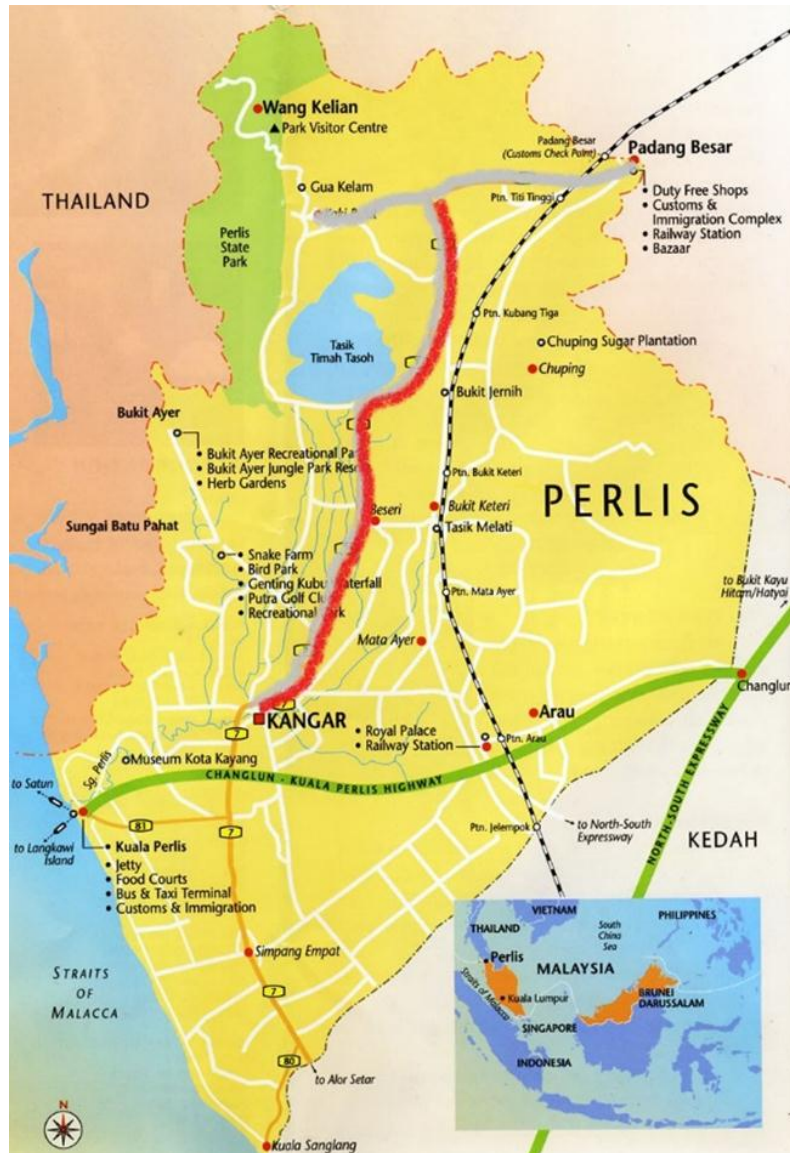


Figure 8. The Integrated Bus Route of T11 and Red Route (Own Work).
 Source: Land Public Transport Commission SPAD (2015b).

For the integrated bus schedules A, the Route T11 myBAS will maintain the same bus schedule as original bus schedule while Uniciti Alam UniMAP KWSP Shuttle Bus schedule is was redesigned without changing the number of trips. Both routes are remain the same route. It mean myBAS route T11 remain to start from Kangar to Padang besar while the Uniciti Alam KWSP Shuttle remain to travel between Uniciti Alam and KWSP. There will be a little changes on myBAS Route T11 which is the bus will go into the campus and let the student to go in the bus instead of stopping outside of the campus.

The second integrated route is the T13 and the Blue routes. *Figure 9* showed the integrated route and the *Table 2* showed the integrated bus schedule.

Table 2. Integrated Bus Schedule B of myBAS T13 and Simpang Empat KWSP Shuttle.

myBAS Route T13		Simpang empat KWSP Shuttle	
Kangsar – Alor Setar	Alor Setar – Kangsar	Kangsar – Simpang 4	Simpang 4 – Kangsar
6.15AM	6.15AM		
8.00AM	8.00AM		8.30AM
		9.30AM	
9.45AM	9.45AM		10.30AM
		11.30AM	
11.30AM	11.30AM		12.30PM
1.15PM	1.15PM		
		1.30PM	2.30PM
3.00PM	3.00PM		
		3.30PM	4.30PM
4.45PM	4.45PM		
		5.30PM	
6.30PM	6.30PM	6.00PM	
			8.00PM
8.15PM	8.15PM		8.30PM
		10.30PM	
		11.00PM	
		The bus service was stopped to make way for Friday prayers (12.30 pm – 2.30 pm)	



Figure 9. The Integrated Bus Route of T13 and Blue Route (Own Work).
Source: Land Public Transport Commission SPAD (2015b).

For the integrated bus schedules B, the Route T13 myBAS will maintain the same bus schedule as original bus schedule while Simpang Empat KWSP Shuttle Bus schedule is was redesigned without changing the number of trips. Both routes are remain the same route. It mean myBAS route T13 remain to start from Kangar to Alor Setar via Ayer Itam while the Simpang Empat KWSP Shuttle remain to travel between Simpang Empat and KWSP. There will be a little changes on myBAS Route T13 which is the bus will go into the Simpang Empat Residential Area and let the student to go in the bus instead of stopping outside of the residential area.

The third integrated route is the T10, the Green route, Orange route and the Blue route. Figure 10 showed the integrated route. The Table 3 showed the integrated bus schedule.

Table 3. Integrated Bus Schedule C of myBAS T10, Wang Ulu KWSP Shuttle, Pauh Putra KWSP Shuttle and Wang Ulu Dragon Shuttle.

myBAS Route T10		Wang Ulu KWSP Shuttle		Wang Ulu Dragon Shuttle		Pauh Putra KWSP Shuttle	
Kangar- Changlun 6.45AM	Changlun- Kangar 6.45AM	Kangar- Wang Ulu	Wang Ulu- Kangar	Wang Ulu- Dragon	Dragon- Wang Ulu	Kangar- Pauh Putra	Pauh Putra- Kangar

7.45AM	7.45AM		8.00AM	7.35AM	
8.45AM	8.45AM	9.30AM	8.45AM*	8.35AM	8.30PM
9.45AM	9.45AM		10.00AM	9.35AM	9.45AM
10.45AM	10.45AM	11.30AM		10.35AM	
11.45AM	11.45AM		12.00PM	11.35AM	
12.45PM	12.45PM		12.45PM*	12.35PM	12.30PM
1.45PM	1.45PM	2.30PM	2.00PM	1.35PM	1.45PM
2.45PM	2.45PM		3.00PM	2.35PM	
3.45PM	3.45PM	4.30PM		3.35PM	3.45PM
4.45PM	4.45PM		4.45PM*	4.35PM	
5.45PM	5.45PM	6.30PM		5.00PM	5.30PM
6.45PM	6.45PM			6.00PM	6.30PM
7.45PM	7.45PM	8.00PM 8.15PM 8.30PM		7.00PM	8.00PM
			10.00PM 10.30PM 11.00PM		8.30PM
					10.30PM 11.00PM
The bus service was stopped to make way for Friday prayers (12.30 pm – 2.30 pm)					

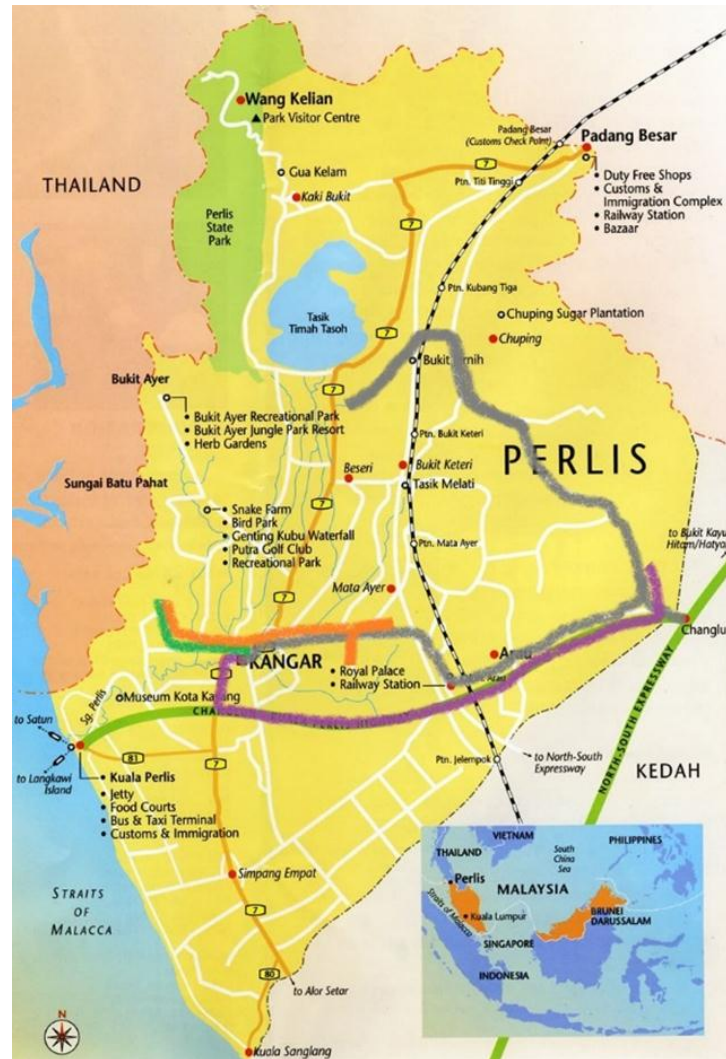


Figure 10. Integrated Bus Route of T10, Green Route, Orange Route and Purple Route (Own Work).
 Source: Land Public Transport Commission SPAD (2015b).

For the integrated bus schedules C, the myBAS route T10, Wang Ulu KWSP Shuttle route and Pauh Putra KWSP Shuttle route was adjusted to form an integrated bus schedule. While the Wang Ulu Dragon Shuttle was remained the same schedule since it is the shuttle for students to go to class, but the schedule for Wang Ulu Dragon Shuttle to go back Wang Ulu is designed to let the shuttle involved in the integrated bus service. For the Wang Ulu KWSP Shuttle schedule and Pauh Putra KWSP Shuttle schedule was redesigned without changing the number of trips. For the myBAS route T10, selected time of bus was designed to extend their route to Wang Ulu which is the 6.45AM bus, 10.45AM bus and 2.45PM bus that depart from Changlun. So the estimated time for these three buses to reach at Wang Ulu are 8.45AM, 12.45AM and 4.45AM which has an asterisk symbol in the integrated bus schedule C.

Conclusion

For the UniMAP bus evaluation, the evaluation is based on the satisfaction of respondents toward UniMAP bus schedules, routes and condition of the operating

buses. Most of the respondents evaluate the UniMAP bus service as normal bus services only. Only very less respondents evaluate UniMAP as a very good bus service. This might cause by the number of buses, punctuality of bus and the condition of buses. From the result, 88.41% of respondents experienced the bus is constantly full and no seat available when they are using UniMAP bus service. This is proving that the number of bus is insufficient in UniMAP bus service now. Furthermore, 73.91% of respondents experienced that there is no bus available at the time that stated in schedule. The punctuality is very important in a public transportation service. Thus, UniMAP still got space to improve to be a better bus service for students in UniMAP before involved in the integrated public bus service in Perlis. The respondents from UniMAP also evaluate the public bus as normal bus service only. This is because that few residential college is not inside the coverage of myBAS service, for example the Tun Abdullah Ahmad Badawi Residential College and Tan Sri Aishah Ghani Residential College. The Pauh Putra Main Campus is also not inside coverage of myBAS service when this survey is conducting, until 1 February 2017, with the proposal of UniMAP to SPAD, the myBAS service had redesign the route T10 and Pauh Putra Main Campus is inside the coverage. For the Perlis publics, their evaluation about myBAS is also just a normal bus service. There are few factors that affect this result. The 1st factor is the percentage of perlis citizen who have their own transport. From result, there are more than half of the respondents have their own transport. They are more prefer to use their own transport to travel to another place other than taking bus. The 2nd factor is the poor connection or transfer of existing myBAS service. More than 50% of respondents had answer that there is no bus service where they are or where they want to go and poor connection or transfer for the reason why they do not use myBAS regularly.

For the integration of myBAS service and UniMAP bus service, I found out the potential is big and the outcome is beneficial. There are lot of students using the KTM service in Perlis but they don't have bus service to fetch them KTM station and most of them force to take taxi. If there is an integrated bus service that connect residential college to most of the area in Perlis, students can have more mobility and save more money on transportation. While for the Perlis publics, there is a result showing that there is 1 of the 10 Perlis citizen quit a job or lost a job because it was hard for them to go to work, and this can be reduced or even be solved by providing a integrated public bus service. Furthermore, most of the respondent from Perlis public agree to see UniMAP bus service integrate with myBAS service and claimed that they will make more trips if they had access to an integrated public bus service. From results, the areas that lack of bus service now are Bintong Wang Ulu, Pauh and Arau Jejawi. So the integrated bus schedule and routes in the Chapter 4 basically pay more attention on these 3 areas and try to put inside the coverage of designed integrated bus service. While for the funding problem, almost 75% of respondents from Perlis public agree to give community support to the integrated public bus service.

Acknowledgements

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