TRIP ATTRACTION ANALYSES ON ENTERTAINMENT AND SHOPPING CENTRES IN BALI (CASE STUDY : BEACHWALK SHOPPING CENTRE, MALL BALI GALERIA, PLAZA RENON, LEVEL 21 MALL)

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Abstract: *Trip attraction model is required to analyse trip characteristics to/from a certain land use so that they are well planned in the future. This study aims to model trip attractions, and to predict the number of existing and for the next 5 years (in 2023) of trips to shopping and entertainment centres. The study results show that the trip attraction models to shopping and entertainment centres are* $Y_1 = 283.369 + 0.001\ X_1$ *with* $R^2 = 0.772$ *and* $Y_2 = 366.823 + 2.958\ X_5$ *with* $R^2 = 0.974$ *during peak hours on weekdays. For one day on weekdays,* $Y_3 = 198.98 + 0.422\ X_3$ *with* $R^2 = 0.910$ *and* $Y_4 = 1178.738 + 102.354\ X_5$ *with* $R^2 = 0.963$*. During peak hours on weekends,* $Y_5 = 116.98 + 0.01\ X_1$ *with* $R^2 = 0.920$ *and* $Y_6 = 159.738 + 0.001\ X_1$ *with* $R^2 = 0.920$*. For one day during weekend,* $Y_7 = 18927.554 - 0.555\ X_3$ *with* $R^2 = 0.929$ *and* $Y_8 = 764.654 + 85.538\ X_5$ *with* $R^2 = 0.972$*. The study estimates the average trip attractions to shopping and entertainment centres for the next 5 years during peak hours on weekdays are 319 pcu/hour and 451 passengers/hour. For one day trips are predicted as of 8,656 pcu/day and 4,076 passengers/day. Similarly, during peak hours on weekend trips are predicted as of 472 pcu/hour and 116 passengers/hour, for one day are 803 pcu/day with 3,185 passengers/day.*

Keywords: *entertainment and shopping centres, linear regression, trip atrraction*

ANALISIS TARIKAN PERJALANAN PADA PUSAT-PUSAT PERBELANJAAN DAN HIBURAN (STUDI KASUS: BEACHWALK SHOPPING CENTRE, MALL BALI GALERIA, PLAZA RENON, LEVEL 21 Mall Bali)

Abstrak: Model tarikan perjalanan diperlukan untuk analisis karakteristik perjalanan dari dan menuju suatu guna lahan agar menjadi lebih baik perencanaan kedepannya. Penelitian ini bertujuan untuk memodelkan tarikan perjalanan, dan memprediksi besar tarikan perjalanan menuju pusat perbelanjaan dan hiburan yang terjadi pada saat ini dan untuk 5 tahun mendatang (tahun 2023). Hasil analisis model tarikan perjalanan menuju pusat perbelanjaan dan hiburan yaitu, $Y_1 = 283{,}369 + 0{,}001\ X_1$ dengan $R^2 = 0{,}772$ dan $Y_2 = 366{,}823 + 2{,}958\ X_5$ dengan $R^2 = 0{,}974$ pada jam puncak di hari kerja. Untuk satu hari pada hari kerja, $Y_3 = 198{,}98 + 0{,}422\ X_3$ dengan $R^2 = 0{,}910$ dan $Y_4 = 1178{,}738 + 102{,}354\ X_5$ dengan $R^2 = 0{,}963$. Untuk jam puncak di akhir pekan yaitu, $Y_5 = 116{,}98 + 0{,}01\ X_1$ dengan $R^2 = 0{,}920$ dan $Y_6 = 159{,}738 + 0{,}001\ X_1$ dengan $R^2 = 0{,}920$. Untuk satu hari pada akhir pekan yaitu, $Y_7 = 18927{,}554 - 0{,}555\ X_3$ dengan $R^2 = 0{,}929$ dan $Y_8 = 764{,}654 + 85{,}538\ X_5$ dengan $R^2 = 0{,}972$. Hasil prediksi rata-rata tarikan perjalanan menuju pusat perbelanjaan dan hiburan pada 5 tahun pada hari kerja untuk jam puncak adalah 319 smp/jam dengan jumlah penumpang adalah 451 orang/jam, untuk sehari adalah 8.656 smp/hari dengan jumlah penumpang adalah 4.076 orang/hari. Untuk prediksi tarikan perjalanan pada akhir pekan jam puncak adalah 472 smp/jam dengan jumlah penumpang adalah 116 orang/jam, untuk sehari adalah 803 smp/hari dengan jumlah penumpang adalah 3.185 orang/hari.

Kata kunci: pusat perbelanjaan dan hiburan, regresi linier, tarikan perjalanan

INTRODUCTION

Analisis Shopping and entertainment centre is a land use that can beautify the city or local environment. In addition, it also serves as a place for shopping activities as well as a place to gather or recreation as a refresher after carrying out daily routine activities. Meanwhile, the pattern of people trips in the SARBAGITA area is influenced by the level of land use development. The trip patterns will cause problems if they are not planned properly. One that influences the trip pattern is the trip attractions. The trip patterns towards shopping centres are one of the trip patterns that often changes due to land use changes of the shopping centres. The large trip attractions according to observations occurred in the shopping centres.

Shopping centres located in SARBAGITA area that considerably having high number of trip attractions are Beachwalk Shopping Centre, Mall Bali Galeria, Plaza Renon, and Level 21 Mall Bali. Trip attractions to the shopping centres cause a huge impact on the surrounding road traffic. This cannot be denied because the centralised economic activities in shopping centres will certainly attract trips towards the area. The traffic impact can be the increases in traffic volume, the degree of saturation and in traffic conflicts that may occur in the vicinity of the shopping centres (Departemen PU, 1997; Khisty and Lall, 2005).

Meanwhile, a past study on trip attaction was conducted by Yastawan (2017) for shopping centres located in Badung regency. The study found that the significant variables for one day during weekday and weekend were the number of employees with values of R^2 = 0.987 and R^2 = 0.972 respectively. In addition, another previous study conducted by Suthanaya (2010) resulted in the most significant variable for one day on weekdays is the total area of shopping centres with a value of R^2 = 0.959 while the most significant variable for one day on weekend is the parking area with a value of R^2 = 0.990.

There has been an absence of a trip attraction model to the shopping centres at Beachwalk Shopping Centre, Mall Bali Galeria, Plaza Renon, and Level 21 Mall Bali. This study therefore, aims to construct the trip attraction model to these shopping and entertainment centres. A trip attraction analyses are required to find out the estimated number of the existing and future trips (for the next 5 years) to and from these shopping and entertainment centres as well as the influencing trip attractor variables.

The objectives to be achieved in this paper are:

1. To construct trip attraction models of entertainment and shopping centres.
2. To analyse the influencing trip attractos variables to entertainment and shopping centres
3. To analyse the existing trip attractions to entertainment and shopping centres and for the next 5 years.

METHODS

Linear Regression

Linear regression analysis is a statistical method to determine on how a dependent variable is related to one or more independent variable(s). A general equation for multiple linear regression analysis is as follows (Husaini, 1995; Tamin, 2000) :

$$Y = A + B_1X_1 + B_2X_2 + \ldots + B_n X_n \quad (1)$$

where:

Y : dependent variables

$X_1, X_2, \ldots, X_n$: independent variables

A : constant

$B_1, B_2, \ldots, B_n$: coeficient of regression

Meanwhile, the determination coefficient (R^2) is a measure commonly used to determine wheter a regression model was fitted to the data or appropriately employed to represent a liner relationship based on observation data.

$$R^2 = \frac{Jkreg}{Jktotal} \quad (2)$$

where :

Jkreg : $B1\sum x1 + B2\sum x2y + \ldots + Bn\sum xny$

Jktotal : $\sum y^2 = \sum Y^2 - \frac{(\sum Y)2}{n}$

In general, a dependent variable Y may be occurred due to independent variables X_1, X_2, X_3, …, X_n, so that the relationship between variable of Y and variable of X can be determined with a regression method of Y towards X.

$$\sum Yi = B_0n + B_1\sum X_1i + B_2\sum X_2i \quad (3)$$
$$\sum Yi\,X_1i = B_0\sum X_1i + B_1\sum X_1^2i + B_1\sum X_1i\,X_2i$$
$$\sum Yi\,X_2i = B_0\sum X_2i + B_2\sum X_2^2i + B_2\sum X_1i\,X_2i$$

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Based on three equations above, measures of B_0, B_1, and B_2 are computed so that the regression of Y and X can be constructed.

$$B_1 = \frac{(\sum x2^2)(\sum x1\ y)-(\sum x1x2)(\sum x2y)}{(\sum x1^2)(\sum x2^2)-(\sum x1x2)} \quad (4)$$

$$B_2 = \frac{(\sum x1^2)(\sum x2\ y)-(\sum x1x2)(\sum x1y)}{(\sum x1^2)(\sum x2^2)-(\sum x1x2)}$$

$$B_0 = \bar{Y} - \alpha_1\overline{X_1} - \alpha_2\overline{X_2}$$

In order to predict the population growth for the next years, the formula below is used as follows:

$$Pt = Po\ (1+r)^n \quad (5)$$

where :

P_t : number of estimated population – at planned year (people)

P_o : number of existing population – at base year (people)

r : population growth rate per year (%)

n : the differences between base year and planned year

Data Collection and Analysis

Meanwhile, the determination coefficient (R^2) is a measure commonly used to determine wheter a regression model was fitted to the data or appropriately employed to represent a liner relationship based on observation data. Primary and secondary data were collected for this study. Primary data are obtained from mode of transport and trip attraction surveys on the entertainment and shopping centres.

Surveyors were located the main entry and exit gates counting the number of both motor vehicles and passengers to and from the centres.Meanwhile, total area, floor space area, parking area, number of employees and number of supporting facilities were secondary data and each collected from the centres. Subsequently both primary and secondary data were recapitulated. Statistical methods were used for data analysis. This includes correlation analysis, multiple regression analysis, calibration and validation of trip attraction model and trip attraction estimation for the next 5 years. Finally, the conclusions and suggestion were drawn for this study

RESULTS AND DISCUSSION

The Use of the Mode of Transportation

The use of transportation modes is defined as either motorised or non motorised transport used by visitors in making trips to and from entertainment and shopping centres. The data shows that modes used for one day on weekdays were motorcycles by 49% (7,171 vehicles/day) and light vehicles by 51% (7,543 vehicles/day). Similarly, modes used for one day on weekend were motorcycles by 44% (8,053 vehicles/day) and light vehicles by 56% (9,832 vehicles/day). The use of all modes can be seen in Tables 1 and 2.

The Characteristics of Facilities of Entertainmet and Shopping Centres

The characteristics of entertainment and shopping centre facilities are the value, size, or number of facilities owned by each centre as shownble 3.

Table 1. The Use of the whole modes on weekdays

No.	Entertainment & shopping centre	Motorcycle	Light Vehicle	Heavy Vehicle	Unmotorised transport
1	Beachwalk Shopping Centre	641	1,530	0	1
2	Plaza Renon	1,424	1,183	0	1
3	Mall Bali Galeria	3,472	2,717	42	14
4	Level 21 Mall Bali	1,634	2,113	0	0

Table 2. The use of the whole modes on weekend

No.	Entertainment & shopping centre	Motorcycle	Light Vehicle	Heavy Vehicle	Unmotorised transport
1	Beachwalk Shopping Centre	967	2,253	1	0
2	Plaza Renon	1,937	1,528	0	3
3	Mall Bali Galeria	3,510	4,306	55	34
4	Level 21 Mall Bali	1,639	1,745	0	0

Table 3. The characteristics of entertainmet and shopping centres

No.	Entertainment & shopping centre	X_1 (m^2)	X_2 (m^2)	X_3 (m^2)	X_4 (m^2)	X_5 (m^2)
1	Beachwalk Shopping Centre	27,274	66,153	19,385	1,275	25
2	Mall Bali Galeria	71,415	43,991	32,052	1,914	30
3	Plaza Renon	4,371	14,114	6,160	457	17
4	Level 21 Mal Bali	12,511	17,725	7,861	864	21

Table 4. R^2 values for trip attraction model

Independent variables	R values	Description
Total area (X_1)	0.879	High
Floor space area (X_2)	0.065	Very Low
Parking area (X_3)	0.763	Sufficient
Number of employee (X_4)	0.810	High
Number of supporting facilities (X_5)	0.781	Sufficient

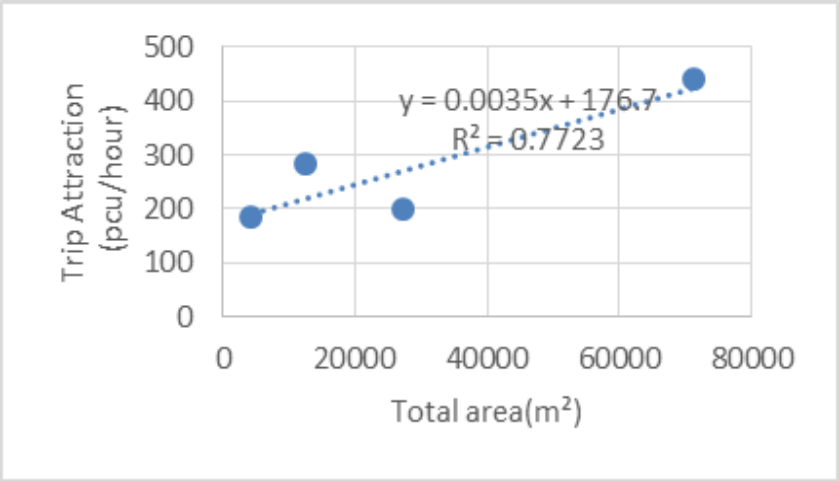

Figure 1. Correlation between independent and dependent variables for vehicle attraction

Trip Attraction Model - Correlation between Dependent and Independent Variables

The correlation between independent and dependent variable during peak hours was obtained from the multiple linear regression models results of trip attraction and the characteristics of shopping centre facilities. The interpretation of the coefficient determination (R^2) of trip attraction can be seen in Table 4.

Based on the results obtained for the dependent variable, the number of vehicle making trips to the shopping centres considering only the floor space area has a very low correlation. This is because the value of R is in the range of 0.01-0.20. In addition, the parking area and the number of supporting facilities have sufficient correlation because the value of R is in the range of 0.61-0.80, while for the total area and the number of employees have high correlation because the value of R is in the range of values from 0.81 to 0.99.

Figure 1 shows that the correlation between the independent variable of total land area of (X_1) and the most significant dependent variable resulted of R^2 = 0.722 and R = 0.879.

Table 5. R^2 values for people's trip attraction

Independent variables	R values	Description
Total area (X_1)	0.763	Sufficient
Floor space area (X_2)	0.290	Low
Parking area (X_3)	0.611	Sufficient
Number of employee (X_4)	0.667	Sufficient
Number of supporting facilities (X_5)	0.618	Sufficient

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Figure 2 demonstrated that the correlation analysis between the independent variables of total land area (X_1) and the dependent variable resulted of R^2 = 0.578 and R = 0.763.

Correlation among Independent Variables

The correlation between independent variables during peak hours is obtained from multiple linear regression analysis of trip attraction data and the characteristics of shopping centre facilities For the results of the correlation between independent variables can be seen in Table 6.

Based on the results, the independent variables, number of employees (X_4) is strongly correlated with number of supporting facilities (X_5) resulted of R = 0.998 and R^2 = 0.996. Meanwhile, the lowest correlation is between number of employees (X_4) and floor space area (X_2) resulted of R = 0.530 and R^2 = 0.281.

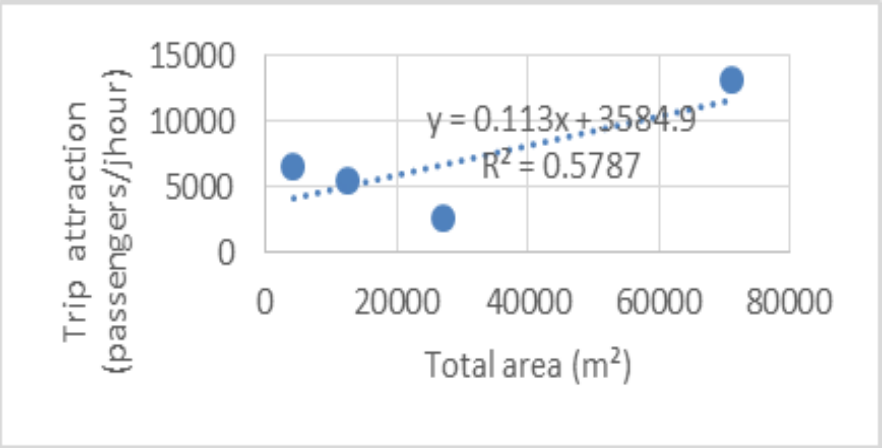

Figure 2. Correlation between independent and dependent variables for passenger attraction

Table 6. The correlation of independent variables correlation for vehicle attraction

		Y1	X1	X2	X3	X4	X5
Pearson Correlation	Y1	1.00	.879	.065	.763	.810	.781
	X1	.879	1.00	.358	.978	.968	.951
	X2	.065	.358	1.00	.539	.530	.573
	X3	.763	.978	.539	1.00	.977	.970
	X4	.810	.968	.530	.977	1.00	.998
	X5	.781	.951	.573	.970	.998	1.00

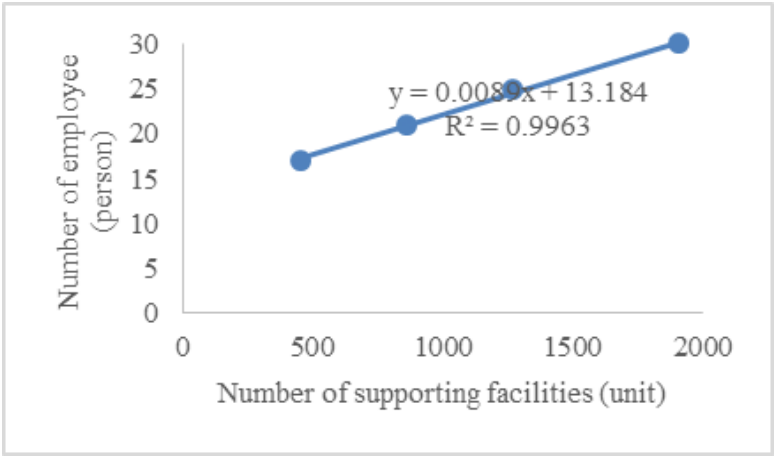

Figure 3. Correlation among independent variables

Calibration of Trip Attraction Models

The F and the t tests are used to calibrate trip attraction model in this study. The F test is conducted by comparing between the results of the calculated F and F of statistical table. If the results obtained from calculated F were higher than F of statistical table then the model equation can be implemented. In addition, the t test is carried out by comparing the results between the value of calculated t and t of statistical table. If the results obtained from calculated t are higher than t of statistical table then the regression coefficient can be considered to be significant.

For the number of passenger vehicles, the calculated F value is 94.144 (Table 8) while the F value of the table for numerator degree of freedom $v_1 = 1$ and the denominator degree of freedom $v_2 = 2$ with a significance level of 5%, $F_{1;\,2;\,0.05}$ value is obtained equal to 18.51. So the ratio between calculated F and F table is 94.144> 18.51. The calculated F value is greater than F of statistical table so the model equation can be used. Table 9 shows the calculated t is 4.599 while the t of statistical table with a significance level of 5% ($\alpha = 0.05$) is 4.303. So the ratio between the calculated t and t of statistical table is 4.599 > 4.303, then the model can be considered to be significant.

Trip Attraction Model for Weekdays

Trip attraction model to entertainment and shopping centres for vehicles during weekdays is obtained from multiple linear regression methods. The software of SPSS is used and the correlation analysis is shown on Table 9 (Jubilee Enterprise, 2018).

The trip attraction model for weekdays therefore, can be written as follows:

$Y_1 = 283.369 + 0.001X_1 \quad R^2 = 0.772$

$Y_2 = 366.823 + 2.988\ X_5 \quad R^2 = 0.974$

$Y_3 = 198.98 + 0.422\ X_3 \quad R^2 = 0.913$

$Y_4 = 1178.738 + 102.354\ X_5 \quad R^2 = 0.963$

where:

Y_1 = trip attraction for peak hours on weekdays (pcu / hour)

Y_2 = passenger attraction for peak hours on weekdays (person/hour)

Y_3 = daily trip attraction for workdays (pcu/day)

Y_4 = passenger attraction per day for weekdays (people/day)

X_1 = total land area (m²)

X_3 = parking area (m²)

X_5 = number of supporting facilities (units)

In the equation obtained, it can be interpreted that every addition of 1 m² of total area, the occurred trip attraction will increase by 283.369 vehicles/hour. The R^2 value of 0.772 indicates that 77.2% of the attraction to the shopping and entertainment centre during peak hours is influenced by the total area (X_1) while the remaining of 22.8% is affected by other causes.

From the obtained equation obtained, it can be interpreted that every addition of 1 m² of total area, the occurred trip attraction will increase by 116,980 vehicles/hour. The R^2 value of 0.920 shows that 92% of the attraction to shopping and entertainment shopping centres during peak hours is influenced by the total land area (X_1) while the remaining 8% is influenced by other causes.

Table 7. Determination coefficient R^2 (Model Summary)

Model	R	R^2	Adjusted R^2	Standard Error of the Estimate
1	0.878	0.772	0.657	68.779

Table 8. Analysis of variance (ANOVA)

Model	Sum of Squares	df	Mean Square	F	Sig
Regression	31964.002	1	31964.002	26.757	.001[b]
Residual	9461.026	2	4730.513		
Total	41425.027	3			

Table 9. Constant, coefficient and t values

Model	Unstandardised coefficicents		Standardised coefficient	t	Sig.
	B	Standard errors	Beta		
1 (constant)	283.369	82.119	31964.002	15.728	.005
X_1	.001	.006	.878	4.599	.004

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Trip Attraction Model for Weekend

The model of trip attraction to entertainment and shopping centres for vehicles on weekend is obtained from multiple linear regression methods. The software of SPSS is used and the correlation analysis is shown on Table 12.

Trip attraction model during weekend can be written as follows:

$Y_5 = 116.980 + 0.01\ X_1 \quad R^2 = 0.920$

$Y_6 = 159.738 + 0.001\ X_1 \quad R^2 = 0.920$

$Y_7 = 18927.254 - 0.555\ X_3 \quad R^2 = 0.929$

$Y_8 = 764.654 + 85.538\ X_5 \quad R^2 = 0.972$

where :

Y_5= trip attraction for peak hours on weekend (pcu / hour)

Y_6= passenger attraction for peak hours on weekend (person/hour)

Y_7= daily trip attraction for weekend (pcu/day)

Y_8= passenger attraction per day for weekend (people/day)

X_1= total land area (m²)

X_3= parking area (m²)

X_5= number of supporting facilities (units)

Validation of Trip Attraction Model

The trip attraction model validation is conducted by comparing the results of the survey and the data analysis. The validation results of trip attraction model to the shopping centre can be seen in Table 13. As for the results of the validation of the number of passenger vehicles model to the shopping centre can be seen in Table 14.

Table 13 shows that the highest and lowest differences between the survey results and the analysis of vehicle trip attraction during peak hours on weekend were of 4.9% and of 3.9% respectively.

Table 10. Determination coefficient R² (Model Summary)

Model	R	R^2	Adjusted R^2	Standard Error of the Estimate
1	.959[a]	.920	.502	114.889

Table 11. Analysis of variance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	53125.446	1	53125.446	34.025	.004
	Residual	26399.181	2	13199.591		
	Total	79524.628	3			

Table 12. Constant, coefficient regression and calculated t values

Model		Unstandardized coefficients		Standardized coefficients	t	Sig.
		B	Standard Error	Beta		
1	(Constant)	116.980	137.174		4.498	.005
	X_1	.012	.009	.817	6.006	.004

Table 13. Validation of passenger vehicles attraction model

Model	Survey results	Analysis results	Differences	Validation
Y_1	298.4	310.643	3.9 %	3.9%<5%
Y_3	6518.6	6850.52	4.8 %	4.8%<5%
Y_5	288.6	303.655	4.9 %	4.9%<5%
Y_7	9734.2	10211.679	4.6 %	4.6%<5%

Table 14. Validation of number of vehicle passenger model

Model	Survey results	Analysis results	Differences	Validation
Y_2	432	440.773	1.9 %	1.9%<5%
Y_4	3910	3737.588	4.6 %	4.6%<5%
Y_6	149	155.868	4.4 %	4.4%<5%
Y_8	2504	2581.259	2.9 %	2.9%<5%

Table 14 shows that the highest and lowest differences between the survey and analysis results of number of passenger vehicles for one day on weekend are of 4.6% and during peak hours on weekdays are of 1.9% respectively.

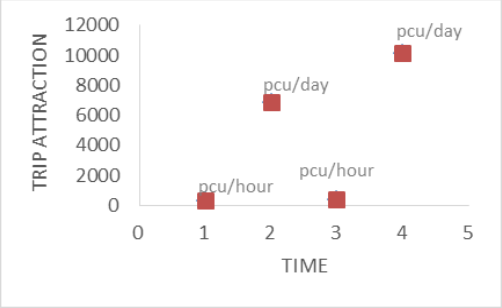

Figure 4. Validation of vehicle attraction model

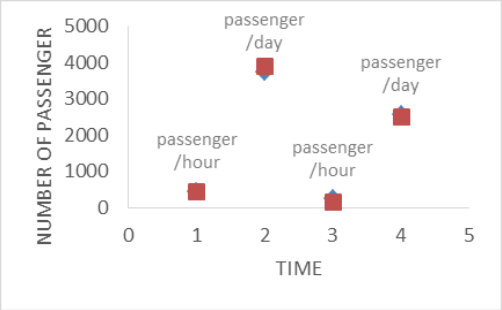

Figure 5. Validation of trip attraction model

Trip Attraction Predictions for the Next 5 Years

The results obtained from the trip attraction survey and subsequently analysed using the software of SPSS 22 will be used to predict the trip attraction for the next 5 years. Trip attraction to shopping and entertainment centres is estimated using the developed trip attraction model. In order to calculate the growth rate, the number of population of the Badung Regency and Denpasar City were used for this study (Badan Pusat Statistik Kabupaten Badung 2016; Badan Pusat Statistik Kota Denpasar, 2016). These areas are located within short distances from the shopping centres and are considered to have high number of potential visitors to the shopping centres.

Table 15. Population growth factor

Area	Number of population (people)		r (%)
	2012	2017	
Badung regency	828900	1000268	3.83
Denpasar city	575000	721367	4.64
Average			4.235

Based on the calculation of population growth, the value of r is obtained as of 4.235%. In this study, the growth of the total area of the shopping centre, floor space area, parking area, number of employees, and the number of supporting facilities is considered to be relevant to population growth as the increase in population will be followed with the increase of shopping centre facilities.

Table 16. Estimated vehicle trip attraction

Estimated vehicle trip attraction				
Time	**r (%)**	**Y 2018**	**Unit**	**Y 2023**
Peak hours on weekdays	4.235	298.4	pcu/hour	319
One day on weekdays	4.235	6518.6	pcu/hour	8656
Peak hours on weekend	4.235	288.6	pcu/hour	472
One day on weekend	4.235	9734.2	pcu/hour	-803

Table 17. Estimated passenger trip attraction

Estimated number of passenger vehicles				
Time	**r (%)**	**Y 2018**	**Unit**	**Y 2023**
Peak hours on weekdays	4.235	432	pcu/hour	451
One day on weekdays	4.235	3910	pcu/hour	4076
Peak hours on weekend	4.235	149	pcu/hour	116
One day on weekend	4.235	2504	pcu/hour	3185

CONCLUSIONS AND SUGGESTIONS

1. For modes of transport used for weekdays were dominated by motorcycles (49%), light vehicles (51%). Meanwhile for weekend modes of transport were dominated by motorcycles (56%) and light vehicles (44%).
2. For trip attraction models to to the entertainment and shopping and centres are as follows:
   a. On the weekdays

   $Y_1 = 283.369 + 0.001X_1, R^2 = 0.772$
   $Y_2 = 366.823 + 2.988\ X_5, R^2 = 0.974$
   $Y_3 = 198.98 + 0.422\ X_3, R^2 = 0.913$
   $Y_4 = 1178.738 + 102.354\ X_5, R^2 = 0.963$

   b. On the weekend

   $Y_5 = 116.980 + 0.01\ X_1, R^2 = 0.920$
   $Y_6 = 159.738 + 0.001\ X_1, R^2 = 0.920$
   $Y_7 = 18927.254 - 0.555\ X_3\ R^2 = 0.929$
   $Y_8 = 764.654 + 85.538\ X_5, R^2 = 0.972$
3. The estimated trip attraction to shopping and entertainment centres for the next 5 years is conducted for the weekdays and weekend. The estimated trip attractions during peak hours for weekdays are 319 pcu/hour and 451 passengers/hour while for one day are 8,656 pcu/day and 4,076

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passengers/day. In addition, the estimated trip attractions during peak hours on weekend are 472 pcu/hour and 116 passengers/hour while for one day is 803 pcu/day and 3,185 passengers/day.

In order to increase the accuracy of a trip attraction model development several approaches are suggested. These include the inclusion of more entertainment and shopping centres, the use of alternative method than regression models (for instance, category analyses) and the inclusion of opening hours for each centre on time framework of the study.

REFERENCES

Badan Pusat Statistik Kabupaten Badung. 2016. *Jumlah Penduduk Kabupaten Badung Berdasarkan Jenis Kelamin Tahun 2016*. Badan Pusat Statistik. Badung.

Badan Pusat Statistik Kota Denpasar. 2016. *Jumlah Penduduk Kota Denpasar Berdasarkan Jenis Kelamin Tahun 2016*. Badan Pusat Statistik. Denpasar.

Departemen PU. 1997. *Manual Kapasitas Jalan Indonesia (MKJI)*. Departemen Pekerjaan Umum Ditjen Bina Marga. Jakarta.

Jubilee Enterprise. 2018. *SPSS Komplet untuk Mahasiswa*. PT Elex Media Komputindo, Yogyakarta.

Husaini, U. 1995. *Pengantar Statistika*. Andi Offset. Jakarta.

Khisty, C. J dan Lall, B.K. 2005. *Dasar-Dasar Rekayasa Transportasi Jilid 1*. Erlangga, Jakarta.

Suthanaya, P.A. 2010. Pemodelan Tarikan Perjalanan Menuju Pusat Perbelanjaan di Kabupaten Badung Provinsi Bali. *Jurnal Ilmiah Teknik Sipil*, *14*. 2, p.103-112.

Tamin, O.Z. 2000. *Perencanaan dan Pemodelan Transportasi*. ITB, Bandung.

Yastawan. I. 2017. *Analisis Model Tarikan Perjalanan Untuk Pusat Perbelanjaan di Kabupaten Badung*. (Tugas Akhir yang tidak dipublikasikan), Program Studi Teknik Sipil Fakultas Teknik Universitas Udayana, Jimbaran.