The Impact of Land Use and Transportation Linkage Improvement Towards Intention to Remain in Current Business Activities among Tamu Traders along West Coast Sabah

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Abstract
This study was conducted to examine whether Land Use and Transportation Linkage have effect on the intention to remain in current business activities among Tamu traders along west coast of Sabah. The study examined the direct relationship of two land use indicators (accessibility and efficiency of infrastructure) and two transport linkage indicators (traffic condition and mobility) to Tamu traders' intention. LUTI model formed the conceptual structure of this study and were used extensively in this research. The collection of quantitative data was obtained through the manual distribution of questionnaires to the respondents at Tamu site in the three separate districts in the West-Coast of Sabah. The collected data were then analysed using SPSS and SmartPLS 3.0 software. The result of this study indicated that Land Use and Transportation Linkage have significant relationship towards intention to remain in current business activities among Tamu traders along west coast of Sabah.
Purpose: to examine the direct relationship of two land use indicators (accessibility and efficiency of infrastructure) and two transport linkage indicators (traffic condition and mobility) to Tamu traders' intention.
Design/methodology/approach: LUTI model formed the conceptual structure of this study and were used extensively in this research. The collection of quantitative data was through questionnaires to respondents in the West-Coast of Sabah.
Findings: Land Use and Transportation Linkage have significant relationship towards intention to remain in current business activities.
Research limitations/implications: useful for government, local authorities, scholars, road users, Tamu traders and business owners to understand the relationship between the purpose and the four independent variables.
Practical implications: The strategic urban and rural planning by local authorities in the effort to raise the number of Tamu traders' involvement in Tamu activities.
Originality/value: Research

Keywords: accessibility, efficiency of infrastructure, Sabah transport linkage, traffic condition, mobility

Introduction

Malaysia has encouraged entrepreneurship development because developing business ventures may contribute to job creation, economic development, poverty reduction and other economic and social advantages (Adib, 2014). Sabah's traditional market; TAMU which means 'meeting' serves as one of the main platforms for entrepreneurial development for native people in Sabah (Foo et al., 2018). According to the department of statistics Malaysia, agricultural produce in Sabah contributes 7.5% to the GDP of the state. Agriculture is the second largest contributor to the state's GDP with an average contribution of 24% annually at present (Neil, 2019).

The West Coast of Sabah occupies a total of 7,588 Sq. km land; stretching from north to Kota Belud, south to Kimanis and interior to Ranau region. This division covers few main towns such as the State Capital; Kota Kinabalu it also consists of Ranau, Kota Belud, Tuaran, Penampang, Putatan and Papar district. Within this division, Tamus are held at various locations per different allocated days. Tamu is an open-air market and considered as Sabah's traditional market with a long history since its first operation. Tamu traders sell various agricultural and fresh products. Some of the products are rare, exotic and sold in small numbers. This local market is not open daily but only on appointed days in different locations. This Sabah local market is not just famous among Sabahan or Malaysian, but tourists from different countries also spend their time visiting and experiencing the Tamu.

Tamu activities and the specific trading locations are associated to urban and rural planning by local authority such as the Council District and City Hall. Local authority is responsible in providing proper and strategic trading locations as well as upgrading the Tamu for traders and visitors simultaneously. In the case of Sabah state, Tamu traders need to transport goods to be sold from different places to where the Tamu market is being held. Usually the agricultural and fresh products are brought in from different districts altogether. Therefore, this study examined the direct relationship of two land use indicators (accessibility and efficiency of infrastructure) and two transport linkage indicators (traffic condition and mobility) to Tamu traders' intention. LUTI model formed the conceptual structure of this study and were used extensively in this research.

Literature Review

The Theory of Land use and transportation integration (LUTI)

The integration of land use and transportation is necessary in urban planning and management (Wang et al., 2019) thus should be well-planned rather than developed spontaneously because land is a scarce resource. As indicated by Kii, Moeckel and Thill (2019), the development trends of LUTI models can be traced from the aggregate to the disaggregate level and from static to dynamic and also, global LUTI models may be capable of comparing different impact on the various factors of urban formation to selected cities around the globe resulting in socioeconomic and geographical developments. This model, as stated by empirical researches, helps on the development of socioeconomic because the integration of land use; which accounts for geographical condition, and the transportation; a system which incorporates the factor closely related to land, has come to a significant fruition.

Intention to Remain in Current Business Activities

The word 'Intention' was defined differently by researchers and academicians through various articles and literatures. According to Han and Kim (2010), intention can be defined as an indication of the willingness to perform a certain behaviour and it is an immediate determinant of an individual's behaviour. Intention is perceived to comprehend motivational and driving factors that leads to a behaviour, thus intention implies the performance of a person to fulfil a

behaviour. However, intention may change from time to time. As time interval escalates, the correlation between intention and action taken by an individual drop and reduces.

Intention in terms of conducting business activity could be further defined as the determination and motivation to continue engaging in the business that was started with a purpose and expected to thrive in it (Vaghely and Julien 2010). Based on the empirical literatures on intention, the dependant variable of this research could be defined as the action to remain by the Tamu traders in the started trading business at Tamu as a result of behaviour which is influenced by several motivational factors. The driving factors that are studied to indicate the willingness of Tamu traders to remain in their current business at the Tamu are multi-dimensional, which are land use and transportation linkage.

Mobility

Litman (2003) defined mobility as the movement of people or goods and gave out the assumption that increase in speed benefits society to ensure people can move and goods could be transported in ways that are safe and economically efficient (Luis, 2008). Pendulum, professional, personal and touristic movements are the most common types of mobility involving commuting between locations to work or other locations voluntarily or linked to professionalism (Rodrigue and Slack, 2020). Wang, Han and Vries (2019 also pointed out that transport infrastructure and associated mobility service should match land use and development in order to achieve urban sustainability. When transportation infrastructure is developed over a land, mobility also increases. Thus, when infrastructure used for transportation and infrastructure in land-use is developed or improved over an area in a district, specifically near Tamu area, mobility to and from Tamu locations of Tamu traders and visitors will also amplify.

Traffic Condition

Traffic is the movement of people and goods from one location to another, in which the movement occurs along a physical pathway and evolves according to the change in needs and decision of people to participate in activities or transport goods (Hoobs & Jovanis, 2018). Special events such as Tamu causes nonrecurring congestion which results in delays, inconvenience, economic losses to drivers and variation in traffic flow. The special events demand fluctuations in traffic flow which causes surges that overwhelm the system and is radically different from 'typical' patterns.

The external effects of traffic congestion are broadly categorized as environmental, health, economic and social. According to (Agyapong & Ojo, 2018), traffic congestion at market centres occur as a result of conflict of space by users such as drivers, traders, shoppers and pedestrians because roads into/out of market areas attract a large volume of both human and vehicular traffic to traverse the common congestion area. Market centres as critical congestion areas have poor traffic management systems caused by poor road networks, pedestrian obstruction, narrow traffic lanes and load and picking of passengers along the road (Agyapong & Ojo, 2018).

Infrastructure Performance

Land use activities including Tamu business at a location generate demands for transport and its improvements from travelers consisting of Tamu traders and Tamu visitors. Physical infrastructure facilitates movement of people and goods; enables rapid communications and generally supports our economy and quality of life. According to Li, Liu and Peng (2018), road infrastructure stimulates the market openness and primarily impacting local economy. Lakshmanan (2011), pointed out that road infrastructure can generate payoffs for local development; for example, development of infrastructure in Tamu areas can boost Tamu

traders' economy and the urban/rural development as well. Li, Liu and Peng (2018), stated that greater transportation activity and the construction of infrastructure stimulates economic growth, support business activities and underpins regional development.

The impacts of infrastructure can be categorized into direct, indirect and secondary in which the direct relationship is those related to improved services and accessibility (Polzin, 1999). According to National Infrastructure Commission (2018), infrastructure performance is grouped into three broad categories; effectiveness, reliability and cost. Nevertheless, despite the importance of infrastructure, there is lack of infrastructure performance measures. According to John (2013), infrastructure performance provides visibility into the performance and health of the entire infrastructure. The performance of infrastructure is measured in the context of stakeholders whom uses the infrastructure and are affected by it, besides also meeting the varied location/situation specific social objectives.

Accessibility

According to (Makrí & Folkesson, 2000), accessibility are closely connected with land use and transport models for example LUTI models. The ease with which any land-use activity can be reached from a location using a transport system is the definition of accessibility that the distribution of infrastructure opens opportunities for spatial interactions which can be measured as accessibility. More land modification and utilization results in accessibility of Tamu traders to reach the Tamu locations. Wang et.al (2019) pointed out that accessibility is defined as the ease with which a place in an area can be reached by individuals at a location through mobility service of a transportation systems.

Accessibility was operationally defined in variety of meanings in previous studies; the potential opportunities for interaction, the freedom of individuals to decide whether to participate in an activity and the benefit provided by a land use and transportation system (Ucbasaran et al. 2009). In this study accessibility measures are seen as an indicator for the impact of land use and transportation linkage improvement on the intention to remain in current business activities, in which, it was thought to give Tamu traders the opportunity to participate in Tamu activities from different locations. According to Ding et.al (2017), higher accessibility causes people to likely travel longer distance because better accessibility expands spatial distance of travelers' activities.

The interaction of land use and transportation linkage towards intention to remain in current business among Tamu traders

Land could be modified at various intensities and in many ways, some are used for infrastructure, residential area, agricultural and industrial uses. The Malaysian Food and Agriculture Organization (FAO) defines the land use as 'the human activities that are directly related to land, making use of its resources' thus perceives a manipulation on the land to meet the purpose concerning the population. Tamu locations make use of a certain area of land for the trading activities associated with rural and urban economic development. According to Eboli, Forciniti and Mazulla (2012), a change in land use system could cause a change in travel patterns and triggers change in the transportation system. Locations with best comprehensive accessibility for driving, cycling and walking to be used for commercial uses (Wang et al., 2019).

Through empirical studies, it is found that the sustainability of the business activities of Tamu traders is influenced by better land use and transportation linkage; for examples a strategic location for trading that includes sufficient parking space that attracts more visitors and not cause traffic congestion. Besides that, land use is associated with transport characteristics and

urban development is a mutual adaptation process between land use and transportation systems (Wang et al., 2019).

The independent factors that are used in this study to indicate the degree of willingness of Tamu traders to remain in their current business at the Tamu are land use and transportation linkage. According to Pontius and Schneider (2001) and Pontius et al. (2001), land use is defined as the degree of human activities directly related to land and making use of its resources or having an impact for example the location of Tamu trading in the west coast division of Sabah. Sabah is a state that is rich land and natural resources, in which almost one over seven of the land around Sabah is suitable for agriculture development (Sabah State Government). Meanwhile, the definition of transportation linkage that is used in this study is the definition by Rodrigue and Slack, (2020) which characterizes it by interaction between land road and transportation system in physical land.

Methodology

This study adopts a quantitative approach which seeks to make a quantification based on the collected data. Thus, make a conclusion on the evidence to the relationship between the land use and transportation system linkage improvement towards the intention to remain in current business activity among Tamu traders. In order to gain data and collect information, sample survey by using questionnaires was used as the research technique (Zikmund, 1997). The quantitative method of distributing questionnaires to the targeted sample was carried out as questionnaire is this research's research instrument to solve the issues in this research and to also achieve the objective of study.

This study was carried out to test out the proposed hypotheses based on the variables used as in this study's framework. Primary data was collected from the self-administered questionnaires. The questionnaire was developed through adopting items from previous studies and a series of statistical analysis was conducted in order to determine the relationship between the variables used in this research. Individual's administrated questionnaire was provided to respondents and information was collected from it. Researcher got the primary data on the variables of interest with regards to the main purpose of the study from the research instrument; questionnaire. The sampling method used for this study is non-probability purposive sampling because it is cost-effective, easy to administer and can be performed quickly. The unit of analysis for this research consisted of Tamu traders who run business activities at Tamu along the west coast area of Sabah.
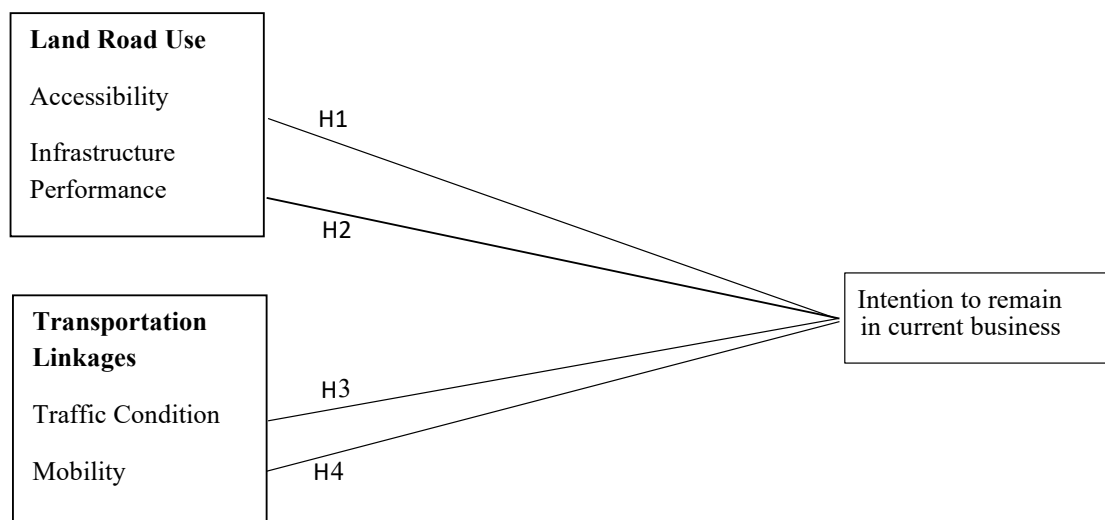

Figure 1: Research Framework

Research hypothesis:

H1: There is a positive relationship of Accessibility towards intention to remain in current business activities among Tamu traders.

H2: There is a positive relationship of Infrastructure Performance towards intention to remain in current business activities among Tamu traders.

H3: There is a significant relationship between Traffic Condition and intention to remain in current business activities among Tamu traders.

H4: There is a significant relationship between Mobility and intention to remain in current business activities among Tamu traders.

Findings

Profile of Respondents

Table 1 shows the demographic profile of respondents. A total of 123 participants were included in the final sample. The analysis of the respondent's information reveals that the female were 71 respondents (57.7%) and male respondents were 52 respondents (42.3%). Besides that, the most number of respondents are of age 46 and above (36.6%) followed by those of age 36 to 40 years old (34.1%), 26 to 35 years old (16.3%) and the least number of respondents are from age group of 15 to 25 years old with a frequency of 16 respondents (13%).

Descriptive Analysis

The mean and standard deviation values for all the studied variables are presented in Table 2 under Descriptive Analysis. All variables; infrastructure performance, accessibility, mobility, traffic condition, and intention to remain in current business are measured using the five-likert scale. The result shows that the mean value for infrastructure performance, accessibility, mobility, traffic condition, and intention to remain in current business 3.155 to 3.789. The standard deviation of the variables ranges from 0.539 up to 1.181. The mean for infrastructure performance, accessibility, mobility, traffic condition, intention to remain in current business and distance are 3.476, 3.218, 3.736, 3.155, and 3.789 respectively.

Table 1: Profile of Respondents

Demographic Variable	Categories	Frequency	Percent
Gender	Female	71	57.7
	Male	52	42.3
Age	15-25	16	13.0
	26-35	20	16.3
	36-45	42	34.1
	46 and above	45	36.6
Ethnic	Malay	8	6.5
	Chinese	27	22.0
	Bumiputera Sabah	82	66.7
	Bumiputera Sarawak	1	0.8
	Others	5	4.1
Marital Status	Single	30	24.4
	Married	86	69.9
	Divorced	7	5.7
Year	Less than 1 year	4	3.3
	1-2 years	15	12.2
	3-5 years	38	30.9
	6-10 years	66	53.7

Table 2: Measurement Descriptive Analysis

Variables/Dimension	Mean	Std. Deviation
Infrastructure Performance	3.476	0.699
Accessibility	3.218	0.645
Mobility	3.736	0.539
Traffic Condition	3.155	0.865
Intention to Remain In Current Business Activities	3.789	0.584

Measurement Model Evaluation

Table 3 Convergent Validity was confirmed and accepted by comparing with the threshold value for CR (> 0.7), AVE (> 0.5) and loading values equal to and greater than 0.5 which contributes to AVE scores greater than 0.5 (Byrne, 2016). The indicator loadings, CR and AVE of the reflective construct are shown in Table 3 all loadings which exceeded the suggested value of 0.5 were retained. Items AC2, AC4, INT5, MO3, TC1 and TC3 with low loadings were subsequently deleted. Moreover, all five constructs meet the minimum cut-off values for CR and AVE, where all CR are greater than 0.7 and all AVEs are greater than 0.5 after the proses of deletion of low factor loadings (Hair et al., 2017).

Table 3: Measurement Model – Convergent Validity

Construct	Item	Loadings	Composite Reliability (CR)	Average Variance Extracted (AVE)
Accessibility	AC1	0.971	0.769	0.639
	AC2	0.578		
Infrastructure Performance	IF1	0.813	0.807	0.533
	IF2	0.811		
	IF3	0.835		
	IF4	0.338		
Intention to remain in current business	INT1	0.583	0.816	0.534
	INT2	0.604		
	INT3	0.827		
	INT4	0.866		
Mobility	MO1	0.702	0.757	0.518
	MO2	0.869		
	MO4	0.553		
Traffic Condition	TC2	0.677	0.806	0.681
	TC4	0.951		

According to Ramayah (2014), discriminant validity is defined as the degree to which items differentiate among the constructs by examining the correlations between measures of potentially overlapping constructs. Table 4 indicates that all the constructs exhibit sufficient and satisfactory discriminant validity (Fornell and Larcker, 1981), where the square root of AVE (diagonal) is larger than the correlations (off-diagonal) for all reflective constructs.

Table 4: Measurement Model – Discriminant Validity

	Accessibility	Infrastructure Performance	Intention to remain in current business	Mobility	Traffic Condition
Accessibility	0.799				
Infrastructure Performance	0.267	0.73			
Intention to remain in current business	0.418	0.238	0.731		
Mobility	0.24	0.218	0.44	0.72	
Traffic Condition	0.063	-0.172	0.244	0.241	0.825

Structural Model Evaluation

In structural model analysis, this stage involves the assessment of defining the relationship between latent construct and other constructs in which the value of path coefficients (β) are obtained from the correlation of structural model. With this, hypotheses of this study were tested. The hypotheses testing was tested using the bootstrapping procedure to give approximate value of t-value for significance testing of structural path (Wong, 2013).

In Table 5, all variables are found to have t-value ≥ 1.645, thus significant at 0.05 level of significance. Specifically, the predictors of Accessibility (β=0.304, p<0.05), Infrastructure Performance (β=0.12, p<0.05), Mobility (β=0.298, p<0.05), and Traffic Condition (β=0.178, p<0.05) are positively related on Intention to Remain in Current Business Activities, which explains 33.0% of variances in Intention. Thus, H1, H2, H3 and H4 are supported. The R^2 value of 0.330 describes a moderate level of predictive accuracy according to Chin (1998).

Table 5: Structural Model Result

Hypothesis	Relationship	Std. Beta	Std. Error	t-value	P Values	Decision
H1	Accessibility -> Intention to remain in current business	0.304	0.08	3.79*	0	*Supported*
H2	Infrastructure Performance -> Intention to remain in current business	0.12	0.079	1.517	0.13	*Not Supported*
H3	Mobility -> Intention to remain in current business	0.298	0.099	3*	0.003	*Supported*
H4	Traffic Condition -> Intention to remain in current business	0.178	0.088	2.015*	0.044	*Supported*

Discussion and Conclusion

From the above result, this indicated that accessibility (H1) influences the intention of Tamu traders to remain in their business activities at Tamu and infrastructure performance (H2) does not influence the Tamu traders' intention to remain in their business at Tamu. It concludes that if the Tamu traders' accessibility to the Tamu locations is strong, they are able to travel to and from the Tamu easier and they able to connect with more Tamu visitors. In addition, when the accessibility of the Tamu traders to the Tamu locations are good, it eases their movement to and from the Tamu, plus, increases the potential of interaction of traders with a greater number of Tamu visitors (Wang et al., 2018). This also may due to the condition of the traders which most are involved with Tamu business more than 10 years and they can accept the infrastructure condition but they more concern on the accessibility because most of them are married and age above 36 years old. They have commitment towards their family and need to help their family income.

The transportation linkage to have a significant relationship towards intention to remain in current business among Tamu traders because both indicators of transportation linkage; traffic condition and mobility, are significant in the hypothesized relationship (H3 and H4). According to past researches, traffic congestion in the city is a consequence of a poor management from local authorities. However, a hectic traffic condition near the Tamu points indicate that the economy of the Tamu is growing (Kiunsi, 2013). From the results of this study, many traders agree that Tamu activities cause traffic congestion as result of several other traffic condition such as reduction in width of road lane. However, they also deem the condition to be a healthy indicator to their business activity at Tamu. This is because the traffic condition occurs as a result of conflict of space by users such as drivers, traders, shoppers and pedestrians because roads into/out of market areas attract a large volume of both human and vehicular traffic (Agyapong & Ojo, 2018). Hence, Tamu traders have the intention to remain in their business at Tamu.

In conclusion, this study would be useful for government, local authorities, scholars, road users, Tamu traders and business owners to understand the relationship between the purpose and the four independent variables. Better urban and rural planning and transport could be developed by understanding the predictors which help to estimate the cultural market's expansion. Further, this study will contribute in helping Sabah government to promote 'a local-cultural business activity' and boost local economic growth in tourism industry alongside business growth of small local traders. The findings will also contribute to strategic urban and rural planning by local authorities in the effort to raise the number of Tamu traders' involvement in Tamu activities by providing more trading spaces which are in a larger space area and strategic location. With the enhancement made, it may increase entry of domestic and international visitors who wishes to observe and experience the 'cultural experience'.

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