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The relationship of housing defects, occupants' satisfaction and loyalty behavior in build-then-sell houses

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Abstract

The factors behind housing defects always lead to the occupants' dissatisfaction while satisfaction is the main-key towards the customers' loyalty behavior. The relationship of defect - occupants' satisfaction - loyalty behavior in the Build-then-sell houses however is yet to be explored. Thus, the aim of this study is to identify the relationship between the three mentioned variables. Data were collected from the occupants who have stayed in the Build-Then-Sell houses for three years; a period whereby housing defect (patent defect) would normally occur. Housing defect was measured using three severity levels; low, medium and high and was cross-tabulated with the dichotomous question of satisfied and dissatisfied occupants. Subsequently, occupants' satisfaction was cross-tabulated with their loyalty behavior. The Pearson chi-square result shows a significant correlation between housing defects and occupants' satisfaction. Meanwhile, for the occupants' satisfaction and loyalty behavior, there is no significant correlation between the variables. The cross-tabulation for occupants' satisfaction – loyalty behavior reveals that the large portions of satisfied as well as dissatisfied occupants tend to project loyal behavior towards Build-Then-Sell houses. The result implies that defect is a factor which relates to occupants' satisfaction but the occupants' satisfaction is not a factor that relates to occupants' loyalty behavior.

1. Introduction

The impact of defects is tremendous to the occupants, whether they are owners or tenants of the house. This statement is supported by a number of health studies which have found that the dilapidated and deteriorated house will affect the mental and health of the occupants (Bashir, 2002; O'Neil, 2000). Defects as suggested by Olubodun (2000) are reported, according to the complaints lodged by users. Olubodun (2000) suggests that components are judged to have failed if sufficient complaints are received from occupants that concern their house conditions. For example, the complaints about the quality of Malaysian houses, ranging from the asbestos ceiling that is not properly placed, the water PCC vented with one layer instead of two layers, to the roof rafters which are noticeably of various sizes and not made from hardwood are considered the occurrence of defects in the houses (Sufian and Ab. Rahman, 2008). These mentioned defects, other than causing illness and psychological problems to the occupants; also tend to raise the feeling of dissatisfaction among the occupants (Olubodun, 2000).

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In addition, satisfaction as defined by Mohit et al. (2010) is the feeling of contentment that buyers receive when houses that they purchase fulfil their needs or desire. While dissatisfaction is the feeling emerged when the performance is low than the standard (karma, 2004). Defects can be said as one of the imperfection in the newly-built house and will lead to the house-buyers' dissatisfaction. As noted by Hyun, et al. (2008) study, the quality measurement in the house structure is in terms of the number of defects that occur. The higher level of defect is assumed to be suggestive of low quality houses and will cause dissatisfaction to the occupants (Ng, et al., 2011; Karna, 2004; Sommerville and McCosh, 2006). As an addition, Sommerville (2007) study also notes that there have been an increasing number of house buyers who are unhappy with their new houses as the levels of defects also increase. Aforementioned statement shows the relation between the defects and satisfaction.

Moreover, the satisfactions among the user of the product always become the target of the trader as this "satisfaction" will trigger the loyalty behavior that is word-of-mouth advertising and the repurchase intention towards the product (Hallowell, 1996). Previous studies have shown the close connection between customers' satisfaction and loyalty behavior. Loyalty behavior as noted by Hallowell (1996) is the continuous relationship between the user and particular trade and the word-of-mouth advertising that serves as the recommendation of the product (house) from the customer to their relatives or friends. The loyalty behavior is important in encouraging the recommendation and repurchase intention from the customer. Several studies have linked the customers' satisfaction to the loyalty behavior for example in Hallowell (1996), Song and Yang (2006) and Zamzuri et al. (2008) study. Hallowell (1996) has conducted an empirical study to proof the relationship between customer satisfaction, loyalty and profitability on retail-bank customers. The result reveals the positive relationship with the three variables. Zamzuri et al. (2008) study the customer satisfaction and repurchase intention in electronic commerce. Their study has explained theoretically the customer satisfaction that is related to the repurchase intention. Song and Yan (2006) carry out an empirical study of satisfaction index for the low-priced housing in Beijing. They have found that customers' satisfaction and customers' complaints have the same influence to the customer loyalty. Most of the studies have the inclination to use "customer" as the research sample which only focus on the buyers.

In Malaysia, one of the reasons to launch a new housing delivery system or the Build-then-sell (BTS) system is to address the problems of defects in the conventional forward sale (FS) system. The BTS housing delivery system is a selling of the completed house with the CCC (Certificate of Completion and Compliance) being issued (Yusof et al., 2010). As such, house buyers have a chance to investigate or evaluate the conditions of the house before deciding to buy. Because of this circumstance, developers who develop BTS houses are argued to be more cautious when building the houses to which Mohd Fauzi et al. (2011) reason to result in low defects level in BTS houses as compared to FS houses, where the houses are sold before completion. Some BTS proponents even claim that lower defects will lead to the occupants' satisfaction (Ng et al., 2011; Sommerville, 2007; Sommerville and McCosh, 2006; and Karna, 2004). On another note, Barlow and Ozaki (2003), Song and Yan (2006), Zamzuri et al. (2008) and Ozaki (2010) find that there is a correlation between satisfaction and loyalty behavior. Generalizing the finding with the case of low defects level in BTS houses, there is a possibility that the occupants of BTS houses will be more satisfied and will mirror loyalty behavior such as recommending the BTS to others and repurchasing BTS house if they have an opportunity to do so.

Not many studies however attempt to relate defects level, occupants' satisfaction and loyalty behavior together. Most studies concentrate on occupants' satisfaction in relation to the housing defects (Ng, et al., 2011; Torbica and Stroh, 2001; Djebani and Al-Abed, 2000; and Liu, 1999). Ng, et al. (2011) study occupants' satisfaction based on the defects' occurrences before and after the implementation of the ISO9000 while Trobica and Stroh (2001) focus on occupants' satisfaction in the design, house and service in order to examine the builders' performance. Djebani and Al-Abed (2000) examine the effectiveness of three housing schemes by the housing quality and occupants' satisfaction and Liu (1999) measures the influence of physical and social levels to the occupants' satisfaction.

In order to fill the gap, this study aims to identify the relationship between defects - occupants' satisfaction and occupants' satisfaction - loyalty behavior towards BTS houses that is the act of recommending BTS houses to others and repurchasing houses built according to the BTS system. Identifying the relationship between housing defects –

occupants' satisfaction – loyalty behavior in BTS houses is vital in order to confirm whether the new system would lead towards buyers' satisfaction and loyalty behavior that in turn may bring on the high recommendation and repurchase intention from the occupants.

Based on the aim of this study, a few objectives are set to be achieved at the end of this study. The objectives are as below:

1) To identify the portion of satisfied and dissatisfied occupants in BTS houses.
2) To investigate the relationship between occupants' satisfaction and the housing defects in the BTS houses
3) To identify the portion of loyal occupants in BTS houses; who intend to recommend to others and repurchase from the same system
4) To examine the relationship between occupants' satisfaction and occupants' loyalty behavior

The contribution of this paper lies with the new knowledge it attempts to seek, that is identifying the relationship of the three variables in the BTS system; defects, occupants' satisfaction and loyalty behavior that have not been focused on in the previous studies. As such, the present study extends our knowledge on housing defect factors by Chong and Low (2006), Sommerville (2007) and Sommerville and McCosh (2006) and integrate them with customer satisfaction and loyalty behavior theory put forward by Barlow and Ozaki (2003), Song and Yan (2006), Zamzuri et al. (2008) and Ozaki (2010).

The correlation of these three variables is vital in order to prove whether the implementation of the BTS system that produces less defects (Mohd Fauzi et al., 2011) will lead towards occupants' satisfaction and influence loyalty behavior of the occupants in BTS houses. In the practical contribution, the finding of this study might provide evidence and encourage developers to implement the new system whereby the implementation of the new system will influence the loyalty behavior among occupants. The findings will pave a way to the authorities on their strategic housing policy, aiming to provide quality houses with higher level of customer satisfaction.

This paper starts by identifying the issues which lead to this study, followed by the objectives sought to be achieved. Subsequently, the review about what others have done on satisfaction in relation to defects and loyalty behavior will be elaborated. After that, the method employed in this study will be provided followed by the elaboration of the finding obtained from this study. At the end, this paper will conclude the overall finding and discuss the limitation of this study.

2. Defects and Satisfaction

The level of defects will impact occupants' satisfaction (Ng, et al., 2011). Generally, satisfaction can be defined as the level of buyers' enjoyment in their purchasing (Zamzuri, et al., 2008). According to Song and Yan, (2006) satisfaction is a comprehensive evaluation based on experiences relating to a certain product or service. Mohit et al. (2010) narrows the scope to the occupants' satisfaction which is defined as the feeling of contentment that buyers experience when the purchased house achieve their needs or desire. If the occupants get what they expect and they do not complain about the house condition, this means that they are satisfied (Salleh, 2008). In addition, Karna (2004) also Torbica and Stroh (2001) suggest that the feeling of satisfaction will arise when the purchased house is up to the standard. Satisfied customers, as identified in Zavadskas, et al. (2009) is seen when no complaint has been received with respect to the house's condition. On the other hand, dissatisfaction shows the difference of the actual and buyers' requirement for their residential attributes (Baum and Hassan, 1999) and occurs when product performance does not meet buyers' expectations (Mahayudin, 2010).

Auchterlouny (2009), Adriaanse (2007) and Barlow and Ozaki (2003) believe that satisfaction has a relation with a good housing condition. In Hyun, et al. (2008), they note that the indicator of a good housing condition is in terms of defects' occurrences. More defects occurring in occupants' houses will lead to dissatisfaction (Ng, et al., 2011). As noted by Pheng and Wee (2001), a house that has been purchased is not perfect with the presence of defects.

Regarding the defects and satisfaction issue, in the U.S, U.K and Dutch, the survey about housing defects and occupants' satisfaction is done periodically. The survey has become a tool in measuring the housing conditions in those countries (Mohit et al., 2010). In the U.S, the Department of Housing and Urban Development (HUD) has conducted the Customer Satisfaction Survey (CSS) yearly to the household (Mast, 2009). The satisfaction survey measures the quality of the houses in terms of workmanship and design, as well as service given by the builder (Ozaki, 2010). Meanwhile in the UK, they have a Housing Forum Survey (HFS) to measure the occupants' satisfaction with the housing quality (Auchterlounie, 2009). In 2001, the results in HFS showed that only 43% occupants were satisfied with their houses (Ozaki, 2010). The HFS also found that from 2001 to 2003, more than 80% of the occupants had already reported occurrences of defects in their new homes (Auchterlounie, 2009). Slightly different from the U.S and U.K, in Dutch the Housing Demand Survey (HDS) has been carried out every 4 years since 1964 (Adriaanse, 2007). In the survey, occupants are asked to evaluate their current house, living situation, contact with neighbouring residents and the appearance of the neighborhood (ibid). Three surveys mentioned previously have shown that there is a relation between housing defects and occupants' satisfaction with their dwellings.

In Malaysia, there is yet to be an annual survey to measure the occupants' satisfaction with the housing conditions. In this case however, there are a number of studies done by scholars to assess the occupants' satisfaction with the housing conditions such as the ones written by Salleh (2008) and Mohit, et al. (2010). Salleh (2008) studies about the factors that influence occupants' satisfaction in their dwelling unit, housing services, neighbourhood and environment. The study of Mohit, et al. (2010) is not so much different from Salleh (2008) study but with one added factor that is the public facilities. Both studies however measure the quality of housing and neighbourhood. Generally, the results in both studies show that occupants are moderately satisfied with the housing condition. In previously mentioned studies however, they do not relate the defects with the housing delivery system.

3. Satisfaction and Loyalty Behavior

Loyalty can be defined as the intention of buyers to repurchase (Hallowell, 1996). In Song and Yan (2006) study, they define loyalty as repeated purchases by the buyers of the same brand or corporation that results from the buyers' satisfaction and buyers' (good) experience. While in Zamzuri, et al. (2008), the loyalty is the buyers' readiness to pay more for the product they intend to purchase. Loyalty behavior will lead to the recommendation (word-of-mouth advertising). Furthermore, it is proven that customer loyalty gives good effect to the marketing and can bring on long-term business profits (Lin, et al., 2009; Chien, et al., 2003). The result in Hallowell (1996) has supported that loyalty is predictor to satisfaction. Being different from other industries; housing industry is not a repeated business. This has made the measurement of customer loyalty difficult as people seldom buy more than one house (Song and Yan, 2006). Moreover, once the buyers have purchased the house, it can last for decades (Eley, 2004). Despite that, there is still small number of purchasers who are inclined to repurchase the house as an investment.

Because of a weak relationship between repurchasing and satisfaction in the housing industry, loyalty is also evidenced by positive recommendation. Song and Yan (2006) in their study state that developers' profit does not come from the repeated purchase by buyers because of the high value of the house and the long usage or stay in the house. The loyal customers however may recommend to others if they are satisfied with the house (Song and Yan, 2006; Ozaki, 2010). For example in the U.S, the builder has found that 60% of their sales come from word-of-mouth referrals (Barlow and Ozaki, 2003). This statement is proven by the Fornell as cited in Song and Yan (2006) which proves that loyal house buyers will generate 5.5 new potential house buyers to the builder. Ozaki (2010) further reveals that word-of-mouth recommendations can result in the increase of sale. On the other hand, in the UK's annual house satisfaction survey, it reveals that less than half of the occupants are willing to recommend their house builders to others, signifying their dissatisfaction with their houses (Barlow and Ozaki, 2003).

4. Research Method

The subjects of interest in this study are housing defects, occupants' satisfaction and loyalty behavior. To obtain the data, a quantitative data collection technique tangible in a personally administered questionnaire was employed. Closed-ended questions were used to achieve the objectives of this study. This is the best way to collect data as the data can be collected within a short period of time and the constancy and clarity of the data can be ensured (Djebarni and Al-Abed, 1998). The technique of a personally administrated questionnaire allows respondents to ask questions to the researcher to clarify any doubts or misunderstanding about the questionnaire. The respondents of this study are the occupants of the BTS houses. The occupants are chosen as respondents because they are the users and their experience staying in the house will form a perception towards satisfaction and loyalty behavior. A satisfied occupant will influence positive loyalty behavior which subsequently leads to an increase of demand and higher value of this type of houses. Anyone who lives in a BTS house can be a respondent in spite of the fact that he or she must not be a minor. Therefore, the age range of the respondents is decidedly, 18 years and above. The occupants were briefed about the purpose of the study to gain their trust which was important, before the occupants agreed to respond to the survey.

The respondents have been requested to fill in the questionnaire that contained the defects scale, occupants' satisfaction and loyalty behavior questions. The severity of fifteen building elements namely the roof; external and internal doors; windows; external and internal floor; ceiling; stairs; external and internal wall; sanitary equipment; electricity service; water service; plumbing facilities and drainage were evaluated by respondents in five defects scale proposed by Pedro (2008) in his study which are; 1= minor, 2= slight, 3= medium, 4= severe and 5= critical. The explanation for this severity level is as stated in table 1.

Table 1. Explanation for each defect score

Defects Score	Explanation
Minor Defects	No defects or defects without noteworthy
Slight Defects	Defects that affect the aesthetic value
Medium Defects	Defects that affect the aesthetic value and use or comfort
Severe Defects	Defects that affect the use or comfort and endanger health or safety and may cause minor accidents
Critical Defects	Defects that endanger health or safety and may cause major accidents

Source: Pedro (2008, p.329)

The satisfaction and loyalty behaviour questions were asked in the dichotomous form that is "yes" or "no". It is to make a brief identification of the percentage of satisfied and dissatisfied, as well as loyal customers or otherwise. The questions asked to the occupants are "Are you satisfied with the house?", "If you have the opportunity to buy a new house, will you buy a BTS house again?" and "will you recommend a BTS house to your relatives or friends?" A conceptual framework which describes this study is presented in Figure 1.
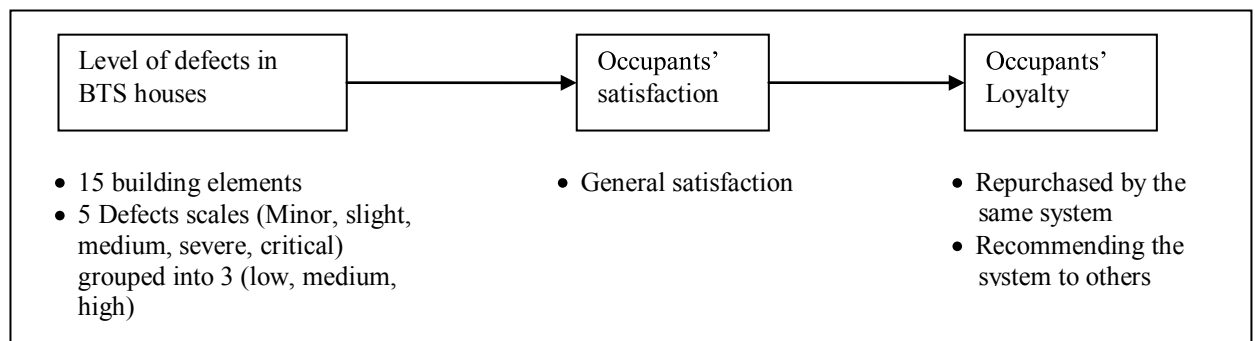

Figure 1. Conceptual Framework for housing defects – Occupants' satisfaction – Occupants Loyalty Relationship

The BTS projects that are considered in this study are only the projects that have been accommodated within 3 years, considering the norm whereby patent defects will normally appear within that time (Mohamad Zainordin, 2006; Mann, n.d). The list of BTS projects was obtained from the media such as newspapers, banners and brochures. The researcher has to rely solely on the media because there is no list of developers who apply the BTS system from the authorities who handle housing development; local authority, state government or the Ministry of housing and local government. There are nine housing projects that have been identified as built according to the BTS housing delivery system. However, out of nine projects, only six of them were included in this study. To ensure the anonymity of housing developers and housing projects, the projects were named as Harmony Country Homes (Kedah), Thousand Happiness Park (Johor), Crystal Garden 2 (Selangor), Princess City Park (Selangor), Green Residence (Selangor), Luxury Garden (Selangor). Due to the lack of sample, this study employed a hundred percent (100%) sampling. This type of sampling was appropriate to be used on the small population.

The data were then analyzed using a frequency test and cross-tabulation test from the descriptive statistics. The frequency test is employed to achieve the first and third objectives that is; to identify the portion of satisfied and dissatisfied occupants in BTS houses and to identify the portion of loyal occupants in this particular type of houses; who intend to recommend to others and repurchase from the same system. The cross-tabulation test is used to achieve the second and forth objectives that is to identify the relationship on the two categorical variables; defects' level and satisfaction; satisfaction and loyalty behavior. The cross-tabulation test is deemed appropriate to identify the significance of the relationship between these two categorical variables.

5. Result & Discussion

5.1. House Defects and Occupants' Satisfaction Relationship

The number of BTS houses identified during the field work was 439 houses. Nevertheless, 119 houses have to be excluded from the study because the houses were either under renovation or still unoccupied. This left the population for the study to be only 320 houses. Because the number is relatively small, a hundred percent (100%) sampling method was employed and all houses were surveyed. The 151 responses received from the occupants have constituted the response rate, which is read as 47.2%. The unavailable respondents were either not at home while the survey was being conducted or simply because they refused to answer the questionnaire. The response rate of 47.2% is adequate for this study as supported by Oladapo (2006) who states that the response rate of 30% is good enough in construction. Table 2 shows the respondents distribution in each residential area.

Table 2. Respondents' distribution in each residential area

Residential	Total Population	Frequency of respondents	Percentage of response (%)
Harmony Country Homes	17	10	58.8
Thousand Happiness Park	12	5	41.7
Crystal Garden 2	64	38	59.4
Princess City Park	81	38	46.9
Green Residence	140	57	40.7
Luxury Garden	6	3	50.0
Total	320	151	47.2

To start the statistical analysis, firstly the frequency test from the descriptive analysis was employed to examine whether the occupants in BTS house are satisfied or dissatisfied with their house quality. Considering the missing numbers of answers in the satisfaction question, the results in table 3 show that the majority of respondents (71.5%) are satisfied with their BTS houses. Only 27.2% of them are dissatisfied. This result demonstrates the high rate of satisfied occupants with their BTS house condition. However, we cannot claim the high rate of satisfied occupants is correlated to the defects level or the quality of the houses.

Table 3. Frequency of occupants' satisfaction

Description	Yes		No	
	Freq	%	Freq	%
Occupants' satisfaction	108	71.5	41	27.2

Freq = Frequency of rate   %=Percentage

The next test conducted was a Pearson chi-square test to examine whether there is a relationship between occupants' satisfaction and the total defects score. Before the test was conducted, the total defects score from the fifteen building elements that is originally found in the five point scale, had been collapsed into a three ordinal scale by using the percentile in the SPSS software. The three ordinal scales that is: low, medium and high were cross-tabulated with the satisfied and dissatisfied occupants. The results in table 3 (a) reveal that there is a significant relationship between the two variables (Chi-square value = 42.064, df = 2, p < .001). Table 3 (b) shows that a significantly larger proportion of satisfied occupants (51.9%) were from the low defects' houses compared with only 17.0% coming from highly defective houses. Whereas from 38 dissatisfied occupants, a large portion of them (71.1%) were from the houses that have high level of defects.

Table 3 (a). Chi-Square Tests for total defects score and occupants' satisfaction

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	42.064[a]	2	.000
Likelihood Ratio	44.656	2	.000
Linear-by-Linear Association	40.157	1	.000
N of Valid cases	144		

Table 3 (b). Cross-tabulation of total defects score by occupants' satisfaction

			Occupants' satisfaction		
			No	Yes	Total
Total defects score	Low	Count	2	55	57
		% within occupants' satisfaction	5.3%	51.9%	39.6%
	Medium	Count	9	33	42
		% within occupants' satisfaction	23.7%	31.1%	29.2%
	High	Count	27	18	45
		% within occupants' satisfaction	71.1%	17.0%	31.3%
Total		Count	38	106	144
		% within occupants' satisfaction	100%	100%	100%

Similar with the previous studies, the results in the present study also highlight the relationship between defects and occupants' satisfaction level. The Pearson chi-square test results show the relationship between housing defects and occupants' satisfaction in BTS houses. The results have supported the study by Auchterlouny (2009), Adrianne (2007) and Ozaki (2010) who believe that there is a relationship between satisfaction and housing condition. While the result for cross-tabulation indicates that the respondents are satisfied if the houses' level of defects is low and are dissatisfied with houses with high level of defects. This result is in harmony with the finding of Ng, et al. (2011) that

the occurrence of defects will lead to occupants' dissatisfaction and distract from occupants' satisfaction (Ng, et al., 2011; Trobica and Stroh, 2001; Djebani and Al-Abed, 2000; Liu, 1999).

5.2 Occupants' Satisfaction and Loyalty Behavior Relationship

Similar with the above process; the first test conducted was the frequency test to identify the portion of occupants' who intend to recommend and repurchase. The results obtained are exhibited in table 4. It can be seen from table 4 that the high rate of respondents (84.8%) would choose to buy a BTS house again if they have the opportunity. The survey also reveals that a large number of the respondents (86.8%) will recommend the BTS houses to their relatives or friends. The high level of intention to repurchase and recommend to other however, cannot be viewed as a sign of satisfaction as noted in Song and Yan (2006), Paris and Kangari (2005) and Zamzuri, et al. (2008) study.

Table 4. Frequency result for Occupants' loyalty behavior

Description	Yes		No	
	Frequency	%	Frequency	%
Repurchase	128	84.8	23	15.2
Recommendation	131	86.8	19	12.6

Freq = Frequency of rate   %=Percentage

Hence, to identify the correlation between the two constructs, the next stage to undergo was conducting the Pearson chi-square and cross-tabulation tests to examine whether the high rate of intention to repurchase and recommend BTS house to others have a relationship with the occupants' satisfaction towards the house quality. A Pearson chi-square test was conducted to examine the relationship while the agreement between occupants' satisfaction and loyalty behavior was measured by the cross-tabulation test. The result in table 4 (a) did not indicate any significant relationship (chi square value = 1.01, df = 1, p = .224) between occupants' satisfaction with the house quality and intention to repurchase. The cross-tabulation test in table 4 (b) draws our attention to the fact that a large portion of satisfied occupants (87.0%) reported that they would repurchase the BTS house if they have the opportunity. This percentage however is not so much different with dissatisfied occupants as from 41 dissatisfied occupants, 80.5% of them also choose to repurchase the BTS house again if they have the opportunity. The results in the present study do not support Hallowell (1996) who has noted that the reluctant-to-repurchase behavior is a predictor to dissatisfaction; while in the present study dissatisfied occupants also intend to repurchase the BTS houses. It might be due to the nature of BTS houses that is less risky, whereby the houses are only sold after completion and the opportunity is given to the buyer to inspect the house before they make the decision to buy, which altogether motivate them to repurchase the house from the same system although the house quality fails to live up to their expectations.

Table 4 (a). Chi square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.013[a]	1	.314		
Continuity Correction[b]	.559	1	.455		
Likelihood Ratio	.967	1	.325		
Fisher's Exact test				.313	.224
Linear-by-Linear Association	1.006	1	.316		
N of Valid cases	149				

Table 4 (b). Cross-tabulation of the intention to repurchase by occupants' satisfaction

			Occupants' satisfaction		
			No	Yes	Total
Repurchase intention	No	Count	8	14	22
		% within Occupants' satisfaction	19.5%	13.0%	14.8%
	Yes	Count	33	94	127
		% within Occupants' satisfaction	80.5%	87.0%	85.2%
Total		Count	41	108	149
		% within Occupants' satisfaction	100%	100%	100%

The Pearson chi-square test was also done to examine whether there was a relationship between the occupants' intention to recommend to others with the occupants' satisfaction with the house quality. The result from table 5 (a) does not reveal any significant relationship (chi-square value = 2.94, df = 1, p = .079) between occupants' satisfaction and intention to recommend the BTS house to others. The result in the cross-tabulation test from table 5 (b) shows that from 108 occupants who are satisfied with the house quality, a large number of them (90.7%) claim that they would recommend the BTS houses to others. This percentage does not deviate so much from that of the dissatisfied occupants, where 80.5% of them do not mind recommending the house to others although they are dissatisfied with the house quality.

Table 5 (a). Chi square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	2.941[a]	1	.086		
Continuity Correction[b]	2.055	1	.152		
Likelihood Ratio	2.714	1	.099		
Fisher's Exact test				.097	.079
Linear-by-Linear Association	2.922	1	.087		
N of Valid cases	149				

Table 5 (b). Cross-tabulation of the intention to recommend by occupants' satisfaction

			Occupants' satisfaction		
			No	Yes	Total
Recommend intention	No	Count	8	10	18
		% within Occupants' satisfaction	19.5%	9.3%	12.1%
	Yes	Count	33	98	131
		% within Occupants' satisfaction	80.5%	90.7%	87.9%
Total		Count	41	108	149
		% within Occupants' satisfaction	100%	100%	100%

The result from the Pearson chi-square test for correlating the occupants' satisfaction and occupants' loyalty behavior did not indicate any relationship between the variables. The result implies that there might be other factors that influence loyalty behavior in the Build-then-sell housing delivery system.

The authors are in the opinion that the feelings of security and satisfaction when the occupants obtain the house have encouraged them to recommend the BTS house to others and repurchase the house again if opportunity arises. Although they have been dissatisfied with the house quality, the house is already readily available when the purchasing process is complete. They do not have to wait for the house to be completed simultaneously with them having to pay for their current accommodation as practiced in the FS system. However, further studies may be necessary to confirm the argument, as well as the fact that we need to delve into other factors that influence loyalty behavior among the occupants in BTS houses.

6. Conclusion

The analysis has revealed the relationship between occupants' satisfaction and housing defects. Satisfaction lies within the occupants when the house defects are less and dissatisfaction when the houses are fully-laden with defects. These findings advocate the previous findings established by Auchterlouny (2009), Adrianne (2007) and Ozaki (2003) that the occupants' satisfaction level has a relationship with their house conditions. The result for loyalty behavior however does not indicate any relationship with occupants' satisfaction. In the nutshell, the result implies that the defects level in BTS houses will lead to occupants' satisfaction but the occupants' satisfaction towards their house quality will not influence the occupants to recommend and repurchase the BTS house. In measuring the relationship between occupants' satisfaction and their loyalty behavior, the study has discovered two important findings that are; 1) the satisfaction in terms of the quality is not the only factor that encourages the occupants to have a loyalty behavior towards the system and 2) although the respondents are dissatisfied with the house, they still intend to recommend the BTS house to others and will repurchase the BTS house again if they have the opportunity.

The first finding indicates that there is a need for a further study to measure the other factors that have a significant relationship with the loyalty behaviors. The other factors that influence the intention of recommending and repurchasing from the same system need to be identified so that the implementation of BTS houses can be a success to the housing industry.

From the second finding, it seems to suggest that the occupants have demonstrated high value towards the BTS houses. They will recommend and repurchase the BTS house although they are not satisfied with the house quality. This implies that the selling of houses might arise with the implementation of BTS houses, due to the high recommendation and repurchase intention of the current users of BTS houses. Hence, there is a need for a change in the Malaysian housing delivery system from the conventional FS to the new BTS system. Although there are developers who have implemented the BTS system in their housing projects, the small scale of the projects limits the purchasers to enjoy purchasing the BTS houses. As a suggestion, the BTS houses should be implemented widely in Malaysia with a bigger scale of house unit because there is a positive loyalty behavior towards the BTS houses shown by satisfied as well as dissatisfied occupants.

The finding of this study is important in determining the satisfaction among occupants in BTS houses as well as their loyalty behavior. The determination of relationship among the three variables; defects and satisfaction; satisfaction and loyalty behavior are also important to be measured in order to identify if the factors of defects will influence occupants' satisfaction, consequently encouraging them to recommend BTS houses to others or repurchase the BTS house. Therefore, the finding obtained will add more value to the implementation of the BTS housing delivery system. This study is also significant in contributing to the new knowledge, as this study has given empirical proof of the correlation between defects and occupants' satisfaction particularly with regards to the BTS houses.

This study is not deprived of some limitations. Firstly, the researcher was unable to access the data on developers who implement the BTS system as there is no data provided by the local authority, state government as well as the Ministry of Housing and Local Government (MHLG). Therefore, the population of the study has been solely based on the reports from the media such as newspapers, brochures and banners. The exact population of the BTS houses

remains unknown. However, as the hundred percent (100%) sampling is employed, the sample gathered is considered to be adequate in representing the whole population of BTS houses. Secondly, in relation to the level of defects, the result needs to be handled very carefully because it remains a fact that the occupants are not experts. Their knowledge and experiences of the technical aspects of the house are limited and perhaps their accounts of defects are only limited to mostly, defects that are visible. Thus, for future study, the technical aspects of defects from the expert should also be considered and they are not only seen from the perception of the house-buyers.

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