

THE DETERMINANTS OF HOUSING SATISFACTION LEVEL: A STUDY ON RESIDENTIAL DEVELOPMENT PROJECT BY PENANG DEVELOPMENT CORPORATION (PDC)

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ABSTRACT

This study attempts to improve the understanding of the determinants of housing satisfaction among the residents of Penang Development Corporation (PDC)'s development projects. The population being studied involves residents of 21,123 housing units sold by PDC in various locations in Penang Island and Seberang Perai. The results of this study revealed that project type, price of house and length of residency has a significant influence on housing satisfaction.

INTRODUCTION

PDC is a semi-government body, established by the State Government of Penang on November 17, 1969 to initiate, plan, implement and promote socio-economic development projects for the benefit of the people. Its main activities include property development, development of industry, commerce, trade and tourism, development of industrial parks and undertaking the land reclamation work.

With evidence of strategic links between satisfaction and the overall firm performance (Anderson, Fornell & Lehmann, 1992; cited in Fournier & Glen Mick, 1999), it is now common to find mission statements designed around the satisfaction notion and incentive programs that target satisfaction as a goal. Hence, with its mission "to be a premier corporation in property development, investment, consultancy and tourism towards satisfying customer needs", PDC is no exception. The major customers of PDC are buyers of residential units, commercial unit, industrial land, housing land and privatization projects, and tenants of commercial and housing rental units. Residential unit buyers represent the bulk of the PDC customers and this group will be the focus in this research study.

The concept of housing satisfaction has been used as an ad hoc evaluative measure for judging the success of housing developments constructed by the public sector and by

private sector. According to Shapiro (1973), the overall success of a non-profit organization can be measured only in terms of the attainment of goals related to client satisfaction. As noted by Davis and Denton (1987; cited in Varady & Carrozza, 2000), customer satisfaction surveys can also play an important public relation role in that they can demonstrate that management cares about the residents' opinions and welfare thereby, it can enhance the PDC's image as the premier development agency for the State of Penang.

Related to that, this study was carried out to examine housing satisfaction among PDC's housing residents. Besides that, it also aims to contribute to the growing body of literature on housing satisfaction regardless of housing developers. Overall, this study examines whether background characteristics consist of housing characteristics, location and demographic characteristics are significant predictors of housing satisfaction.

This paper is organized into five sections. Section 1 gives the background of the study. Section 2 reviews the satisfaction model and theory and related empirical studies on housing satisfaction. Section 3 discusses the research methodology, section 4 is devoted to results of the study and section 5 discusses the findings, implications and recommendations.

LITERATURE REVIEW

Satisfaction Model and Theory

Satisfaction as a process of evaluation between what was received and what was expected is the most widely adopted description of customer satisfaction in the current literature (Parker & Mathews, 2001). This strand of theory appears to have origins in the discrepancy theory (Porter, 1961; cited in Parker & Mathews, 2001). Over the years, a number of authors have used some form of comparison to model satisfaction and early contributions include Contrast Theory, which states that consumers would exaggerate any contrast between expectation and product evaluation (Cardozo, 1965; Howard & Sheth, 1969: cited in Parker & Mathews, 2001).

The most well known descendent of the discrepancy theory is the expectancy-disconfirmation paradigm (Oliver, 1981), which states that, if performance exceeds expectations, customers will be positively disconfirmed (satisfied). On the other hand, if performance fails to meet expectations, customers will be negatively disconfirmed (dissatisfied). Customer expectations are formed on basis of buyers past buying experience, statements made by friends and associates as well as marketer and competitor information and promises (Kotler, et.al., 1996). Oliver (1989) proposed that expectations could be exceeded in two different ways:

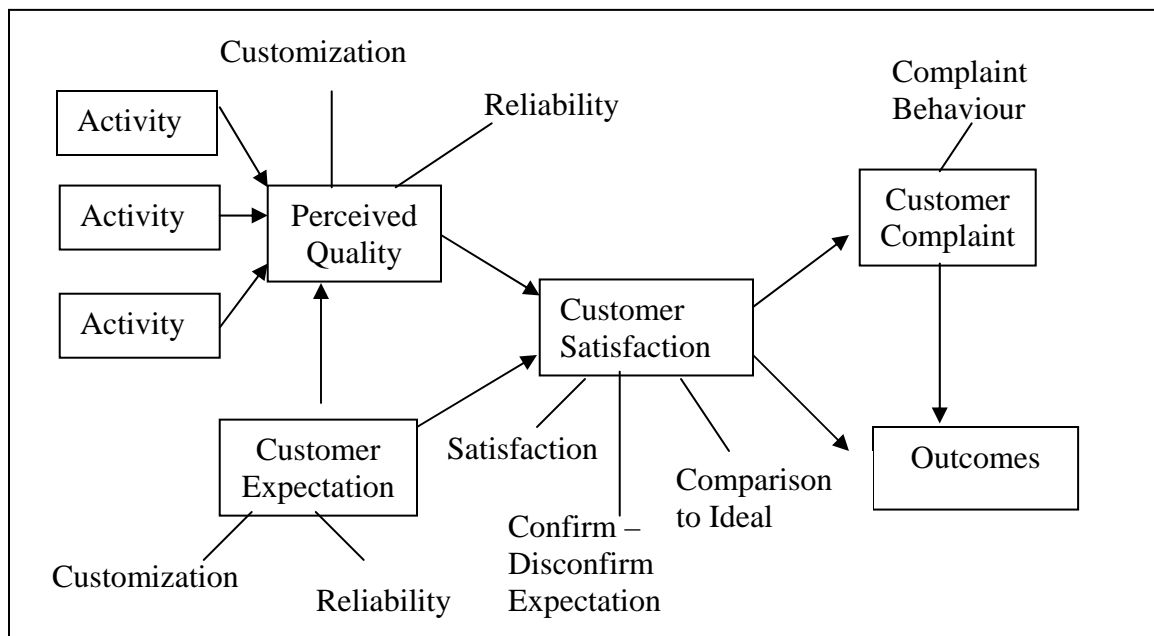
- (1) The level of performance is within a normal range (product was better than expected);
- (2) The level of performance is surprisingly positive (one would not expect that the product would have performed so well) and delight.

There is strong support for the disconfirmation paradigm as a measurement of satisfaction (see for example Bearden & Teel, 1983; La Barbera & Mazursky, 1983; Patterson, et.al, 1997; Tse & Wilton, 1988). However, Churchill and Surprenant (1982) have found some inconsistencies in the paradigm whereby neither disconfirmation nor expectations have any effect on consumer satisfaction with durable products. Satisfaction, according to Churchill and Surprenant (1982) is determined solely by the performance of the durable good.

Besides discrepancy theories, Equity Theory has also been applied to customer satisfaction (for example, Fisk & Young, 1985; Swan & Oliver, 1985; cited in Parker & Mathews, 2001). This theory holds that individuals compare their input/output ratios with those of others (Yi, 1990; cited in Parker & Mathews, 2001) and that the consumer will be satisfied if the net gain is perceived to be fair. More recently, according to Parker and Mathews (2001), renewed attention has been focused on the nature of satisfaction.

Due to the wide variance in the nature and meaning of satisfaction, many firms are using different reference points as a benchmark to compare their own customer satisfaction figures. To resolve this, a number of methodologically harmonized national customer satisfaction indices have been developed (Hackl & Westlund, 2000). For example the American Consumer Satisfaction Index (ACSI) and the European Customer Satisfaction Index (ECSI) represent the two major customer satisfaction indices for the United States and the European countries respectively.

Figure 1: ACSI Model for Government Agencies



Source: The American Consumer Satisfaction Index (ACSI). The ACSI Model for Most Government Agencies, <http://www.theacsi.org/government/govt-model.html>

Figure 1 presents the model used by ACSI to measure satisfaction with government agencies. In the ACSI model, customer expectations influence the evaluation of quality and forecast how well the product or service will perform. Perceived quality is the extent to which a product or service meets the customer expectation and this will have the greatest impact on customer satisfaction. Lastly, satisfaction has an inverse relationship to customer complaints, which is measured as the percentage of respondents who reported a problem with the measured product or service within a specified time frame.

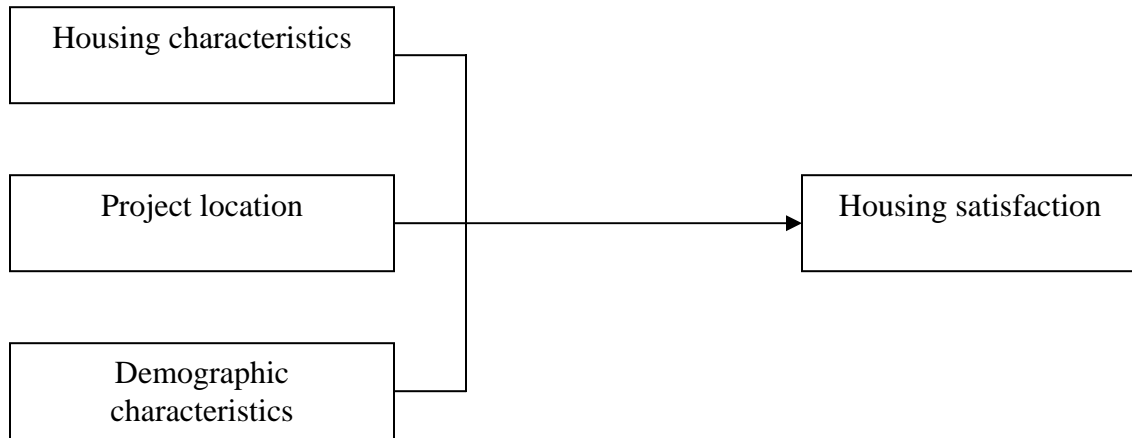
Housing Satisfaction

Housing satisfaction is defined by Galster (1987, p.93; cited in Varady & Preiser, 1998) as the “perceived gap between a respondent’s needs and aspiration and the reality of the current residential context”. McCray and Day (1977) refers to housing satisfaction as the degree of contentment experienced by an individual or a family member with regard to the current housing situation. Housing satisfaction is a complex attitude (Satsangi & Kearns, 1992). It encompasses satisfaction with the dwelling unit and satisfaction with the neighbourhood and the area (Onibokun, 1974). According to Ogu (2002) the concept of housing or residential satisfaction is often employed to evaluate residents’ perceptions of and feelings for their housing units and the environment. Lastly, the concept of housing satisfaction has been used as a key predictor of an individual’s perceptions of general “quality of life” (Campbell et al., 1976; cited in Djebarni & Al-Abed, 2000). Some scholars have argued that residents’ perception of their environment defines the quality of their lives (Andrews & Whitney, 1976; cited in Ogu, 2002).

There is considerable evidence in the literature that shows that housing satisfaction is influenced by a broad array of objective and subjectively perceived conditions (Theodori, 2001). Habitability of a house, according to Onibokun (1974), is influenced not only by the engineering elements, but also by social, behavioral, cultural, and other elements in the entire societal-environmental system. The house is only one link in a chain of factors that determine people’s relative satisfaction with their accommodation.

Overall, the concept of housing does not lie on the individual’s dwelling. It is a composite of the overall physical and social components that makeup the housing system (Francescato, et al., 1987). Further, housing satisfaction is influenced by the numerous components in the system and the background characteristics of the occupants. Factors that have been found related to housing satisfaction include: age (for example Varady & Preiser, 1998; Varady et al., 2001), marital status (Tan & Hamzah, 1979), number of children and family size (Miller & Crader, 1979; cited in Theodori, 2001), socioeconomic status - income, education, employment and welfare (Brown, 1993; Freeman, 1998; cited in Varady et al., 2001), length of residency (Brown, 1993; Marans & Rogers, 1975; cited in Theodori, 2001; Varady & Preiser, 1998), housing physical characteristics (Yeh, 1972), satisfaction with housing physical condition and management services (Varady & Carrozza, 2000), social participation and interaction (Mohd Zulfa, 2000; Varady & Preiser, 1998) and past living conditions as well as residential mobility and future intention to move (Morshidi, et al., 1999; Yeh, 1972).

Based on the research objective, the research model of this study is as follows:



Thus, the research hypotheses are:

- H1** *There is a significant relationship between Housing Characteristics and Housing Satisfaction.*
- H1a** *There is a significant relationship between Project Type and Housing Satisfaction.*
- H1b** *There is a positive relationship between Price of House and Housing Satisfaction*
- H1c** *There is a positive relationship between Built-up Area/Crowding and Housing Satisfaction*
- H1d** *There is a positive relationship between Length of Residency and Housing Satisfaction*
- H1e** *There is a significant relationship between Ownership Status and Housing Satisfaction*
- H2** *There is a significant relationship between House Location and Housing Satisfaction*
- H3** *There is a significant relationship between Demographic Characteristic and Housing Satisfaction*
- H3a** *There is a positive relationship between Age and Housing Satisfaction*
- H3b** *There is a positive relationship between Household Income and Housing Satisfaction*
- H3c** *There is a significant difference in Housing Satisfaction between male and female*

RESEARCH METHODOLOGY

The Unit of Analysis and Population

The unit of analysis in this study is the residents of PDC's housing projects. They include PDC's house buyers (owners) and tenants (renters). The population being studied involves the residents in 21,123 housing units sold by PDC in various locations in Penang Island and Seberang Perai.

Development of the Scale Items

Housing Characteristics

Prior research has shown that it is important to contextualise information on housing satisfaction by examining expected differences by development type, such as high-rise and landed (Popkin and Olson, 1995). PDC's housing development projects come in various characteristics such as in terms of type, size and price. These characteristics will be individually examined and analysed in relation to their contributions towards housing satisfaction.

Project Type

We expect the residents in landed property to be more satisfied with their house than those in high-rise because they generally have more space and privacy as compared to those in high-rise. Aspects of privacy have been used in Yeh (1972) and Ogu (2002) in their measures of housing satisfaction. For the purpose of our study, cluster type will be combined with landed type because of its structure, which is the same as landed.

Price of Housing Unit

We expect that residents of a higher cost project will be more satisfied with their home than those of the lower costs. Residents of the higher cost projects are presumed to get a better housing environment, both in terms of physical structure and social environment. According to Andrews and Whitney (1976; cited in Ogu, 2002), residents' perception of their environment defines the quality of their lives. Housing satisfaction in turn is a predictor of an individual's perceptions of general quality of life (Campbell et al., 1976; cited in Djebarni and Al-Abed, 2000). Thus, for the purpose of our study, we will differentiate the low and low-medium cost projects from the other classes of development (medium and high costs).

Table 1: Project Class and Price Range

Class	Price Range
Low Cost	RM25,000 and below
Low-Medium Cost	Between RM25,001 and RM50,000
Medium Cost	Between RM50,001 and RM100,000
Medium-high costs	Between RM100,001 and RM150,000
High cost	More than RM150,000

Built-Up Area & Number of People - Crowding

PDC's housing development comes in various sizes or built-up area. The built-up area is generally associated with the unit price (but does not necessarily determine the price of a unit). As presented earlier, size and crowding are both important aspects of satisfaction. Thus, we expect that there will be significant differences in housing satisfaction with regards to built-up area of the house and number of people in the household (crowding). For the purpose of our study, we will measure crowding as the square feet of floor space per person in the household. This method has also been used by Tan and Hamzah (1979) in their study of public housing satisfaction in Penang.

Length of Residency

Tenure or length of residency could affect satisfaction with a dwelling unit (Ogu, 2002). According to Varady and Preiser (1998), long-term residents (that is, those who lived at their locations for six years or more) will have stronger social ties to their area and this will make them more satisfied with their homes. Therefore, based on the guideline of Varady and Preiser (1998), we will group our residents into those who have lived in their dwelling for six years or more from those who have stayed for less than six years. With these criteria, we will examine their relationships with housing satisfaction.

Housing Ownership Status

It is also useful to note that majority of the residents of PDC's housing projects consist of the house owners who are the purchasers of the property. However, another group of the residents are tenants that is, the individuals renting the unit. For the purpose of this research, question of satisfaction will be addressed to both groups of people as all of them form part of the neighbourhood under study. According to Ogu (2002) the type of housing ownership could affect satisfaction with a dwelling unit. Given the same quality of house unit, owner-occupiers are more likely to be more satisfied than renters.

Project Location

PDC has carried out its housing projects in various locations. The areas of housing development include Bandar Bayan Baru, Sungai Nibong, Sungai Ara, Bukit Gedung, Mayang Pasir, Macallum Street Ghaut, Kedah Road, Sungai Pinang, Bukit Jambul, Batu Kawan, Bandar Seberang Jaya and Seberang Perai Tengah (S.P.T.). We expect that location will have impact on housing satisfaction, either directly or indirectly through neighbourhood attitude such as the social conditions, safety and amenities. For the purpose of our study, projects will be group into those in Penang Island and Seberang Perai.

Demographic Characteristics

These characteristics refer to the demographic variables of the residents such as age, household income and gender. Previous research has shown that demographic background does affect the level of housing satisfaction (see for example, Francescato, et.al., 1987; Morshidi, et.al., 1999; Tan & Hamzah, 1979; Varady & Carrozza, 2000; Varady & Preiser, 1998).

Age

Galster, 1987 (cited in Varady, et.al., 2001) found that the elderly are more likely to be satisfied with their homes than are younger households, even when other characteristics are held constant. This, according to Galster (1987), may be because the elderly have lower aspirations.

Household Income

With regards to socioeconomic status (income, education, employment and welfare), previous research offers two competing hypotheses about the impact on housing satisfaction (Varady, et.al., 2001). On the one hand, one might assume that those with higher income might have greater capacity to find a better home, in which case the status would be correlated with housing satisfaction (Freeman, 1998; cited in Varady, et.al., 2001). On the other hand, the more socially mobile householders might have higher standards and aspirations that might lead them to be more dissatisfied. In the proposed study, the first view will be expected, that is the higher the income the more satisfied would the resident be with his/her home.

Gender

Past researchers, such as Tan and Hamzah (1979), Varady and Carrozza (2000) and Varady and Preiser (1998) have included gender as one of the predictors of housing satisfaction. With the increasing purchasing power of women and their leading roles in making household's decision we would also include gender as one of our predictors of housing satisfaction.

Housing Satisfaction

To measure housing satisfaction, a likert scale (which has been used by Djebarni & Al-Abed, 2000; Mohd Zulfa, 2000; Ogu, 2002) ranging from 1 indicating "Very Dissatisfied" to 5 indicating "Very Satisfied" has been used in the survey.

Questionnaire Administration

Data was collected through a structured questionnaire, one for each housing unit. This method of distribution had also been used in Mohd. Isa, et.al., (1999), Mohd. Zulfa, (2000) and Yeh (1972). The sampling frame is the PDC's project summary report and project schedules, which contains the detailed information pertaining to the projects, number of units, location, development type, price, unit address and etc. The population was first stratified according to location and type of development in order to get the various sub-groups of the population.

The technique of sampling used in this study was basically convenience sampling but taking into account housing location and the different types of development. Besides its speed, costs and conveniences, convenience sampling has been chosen by the researcher in order to obtain enough respondents from each of the main development types, project locations and classes (price range) and other housing and demographic characteristics such as ownership status, length of residency, age, income group and etc. This will ensure that the various subgroups in the population are represented.

This study uses a self-administered questionnaire to gather the relevant data concerning housing satisfaction. Besides, it is also complemented with some informal interviews with a few residents in certain project locations. A total of 550 questionnaires was distributed to the residents of the various housing projects who either own or stay (rent) in PDC's houses.

ANALYSIS

Profile of the Respondents

Response Rate

Of the 550 questionnaires administered 223 were collected back. Nine questionnaires were found incomplete warranting their exclusion from the study. Hence only 214 usable questionnaires, representing a return rate of 38.9 percent.

Respondents by Location and Development Type

The following (Table 2) provides a summary profile of the respondents by the different locations and development types as produced by the cross tabulation between project type and house location. Analysis on project type was based on this classification.

Table 2: Respondents by Location and Project Types

House Location	Project Type				Total by Location
	High-rise	Cluster	Landed	Sub-Total for Cluster & Landed	
Penang Island					
MSG	33		1	1	34
BBB	32	8	18	26	58
Bukit Jambul	16		7	7	23
Sub-Total	81	8	26	34	115 (54%)
Seberang Perai					
BSJ	16	13	19	32	48
Pelangi	27			27	27
Batu Kawan			24	24	24
Sub-Total	43	13	43	56	99 (46%)
Total	124	21	69	90	214 (100%)

Respondents by Location & Price Range

Table 3 provides a summary profile of the respondents by the different locations and project class (price range) as produced by the cross tabulation between house location and price. A total of 116 (that is 54.2%) respondents are from the low and low-medium costs development while 98 respondents (45.8%) were from the higher classes of development.

Table 3: Respondents by Location and Price Range

Project Class	House Location						Total
	Penang Island			Seberang Perai			
	MSG	BBB	Bukit Jambul	BSJ	Pelangi (S.P.T.)	Batu Kawan	
Low & Low Medium Costs	3	37		25	27	24	116 (54.2%)
Medium, Medium High & High Costs	31	21	23	23			98 (45.8%)
Total	34	58	23	48	27	24	214

Respondents by Type of High-Rise and Number of Storeys

Table 4 provides a summary profile of the respondents in high-rise projects by the different types that is, slab block, point block and U-shaped block, as well as the number of storeys of the high-rise buildings.

Table 4: Respondents by Type of High-rise and Number of Storeys

	Type of High-rise			Total
	Slab Block	Point Block	U-Shaped	
Number of Storeys	4	1	2	3
	5	27	41	77
	9		12	12
	11	3	8	11
	17	1		1
	21	14		15
	22			5
Total	46	63	15	124

Respondents by Type of Landed Property

Table 5 provides a summary profile of the respondents in landed properties by the different types that is, single-storey terrace, double-storey terrace and semi-detached houses.

Table 5: Respondents of Landed Properties by Types

Landed Type	No. of Respondents	Percentage
Single-Storey Terrace	30	45.5
Double-Storey Terrace	27	40.9
Semi-Detached	9	13.6
Total	66	100.0

Respondents Demographic & Housing Characteristics

The following table provides a summary profile of the respondents. Table 6 is the general frequency table for the demographic characteristics, consisting of age, race, gender, household income, job classification, marital status and number of children. In addition, some of the housing characteristics such as number of households and people living in the house, housing ownership status, length of residency and built-up area are also combined in this table.

Table 6: Summarized Demographic/Housing Characteristic Frequencies

Demographic Items	Frequency	Percentage (%)
Gender: Male Female	141 73	65.9 34.1
Age: Below 25 25 - 30 31 - 40 41 - 60 Above 60	26 31 62 86 9	12.1 14.5 29.0 40.2 4.2
Ethnicity: Malay Chinese Indian Others	109 53 45 7	50.9 24.8 21.0 3.3
Marital Status: Single Married Divorced	43 166 5	20.1 77.6 2.3
Household Monthly Income: Less than RM500 RM500 - RM1000 RM1001 - RM2000 RM2001 - RM3000 RM3001 - RM4000 More than RM4000	4 31 95 40 19 25	1.9 14.5 44.4 18.7 8.9 11.7
Job Classification: Labourers/General Workers Clerical Staff/Technical Support Executive Management & Professionals Others	44 76 25 33 36	20.6 35.5 11.7 15.4 16.8
No. Of Children: 0 1 2 3 4 5 6 7	45 29 54 46 23 15 1 1	21.0 13.6 25.2 21.5 10.7 7.0 .5 .5

**Table 6: Summarized Demographic/Housing Characteristic Frequencies
(Continued)**

Demographic Items	Frequency	Percentage (%)
No. of Households Living in the House:		
1	137	64.0
2	56	26.2
3	10	4.7
4	2	.9
5	2	.9
6	2	.9
7	2	.9
8	2	.9
10	1	.5
No Of People Living in the House:		
1	18	8.4
2	6	2.8
3	24	11.2
4	54	25.2
5	48	22.4
6	33	15.4
7	19	8.9
8	9	4.2
9	2	.9
10	1	.5
Ownership Status: Owner	168	78.5
Renter	46	21.5
Length of Residency:		
Less than 6 years	124	57.9
6 years or more	90	42.1
Built up area		
Less than 500 sq. ft.	9	4.2
501- 600 sq. ft	41	19.2
601- 700 sq. ft	82	38.3
701- 800 sq. ft	18	8.4
801- 1,000 sq. ft	11	5.1
1,001 - 1,501 sq. ft.	31	14.5
1,501 - 2,000 sq. ft	11	5.1
More than 2,000 sq. ft	11	5.1

Descriptive Statistics of Housing Satisfaction

Table 7: Overall Housing Satisfaction

Housing Satisfaction	Frequency	Percentage (%)
Very Dissatisfied	7	3.3
Somewhat Dissatisfied	26	12.1
Neither Dissatisfied Nor Satisfied	59	27.6
Somewhat Satisfied	102	47.7
Very Satisfied	20	9.3
Total	214	100.0

Table 7 shows overall housing satisfaction. It indicates that out of 214 respondents, 122 respondents (57%) were satisfied with their housing and only 33 respondents (15%) were not satisfied. The remaining 28% that is 59 respondents were neither dissatisfied nor satisfied. Out of 122 satisfied respondents, 20 respondents or 16% were very satisfied with their housing. On the other hand, out of the 33 respondents who were not satisfied, only 7 respondents (21%) were very dissatisfied with their housing.

Regression Analysis

Multiple regression analyses were conducted to predict the relationships between the independent variables and the dependent variable. This section examines the relationships between the independent variables and the dependent variable based on the hypotheses formulated. The significance of the relationships will be analyzed and the predictive power of the model will also be examined. Table 8 indicates the relationships between Length of Residency, Project Type, Price of House, Household Income, House Location, Age, Built-up Area (Crowding), Ownership Status and Gender and the dependent variable, Housing Satisfaction. The F-value of 2.15 is significant at $p < 0.05$, indicating that there is at least one significant predictor in the model. R^2 of .087 indicates that only about 8.7% of the variations in the dependent variable can be explained by the independent variables jointly.

Table 8: Relationship Between Independent Variables and Dependent Variable

Independent Variables	Beta Coefficients
Length of Residency	.14*
Project Type	.19*
Price of House	.18*
Household Income	-.04
House Location	-.03
Age	-.02
Ownership Status	.04
Gender	.08
Built-up Area/Crowding	-.03

* Significant at $p < .05$

Of the 9 variables tested, only 3 variables, Project Type, Price of House and Length of Residency were found to have a significant relationship with the dependent variable and all at the 5% level. Thus Hypotheses H1a, H1b and H1d are supported. The directions of the relationship between the independent variables and the dependent variable are all positive. We could therefore confirm that:

- 1) There is a direct positive relationship between Project Type and Housing Satisfaction that is, landed property residents are more satisfied than high-rise property residents (*hypohthesis H1a*);
- 2) There is a direct positive relationship between House Price and Housing Satisfaction that is, the medium and high costs projects' residents are more satisfied than those of the low and low-medium cost residents (*hypohthesis H1b*); and
- 3) There is a direct positive relationship between Length of Residency and Housing Satisfaction that is, residents who have stayed for 6 years or more are more satisfied with their housing as compared to those who has stayed for less than 6 years (*hypohthesis H1d*).

On the other hand, the results of H1c, H1e, H2, H3a, H3b and H3c were not significant, thereby not supported. Project Type with beta coefficient of .19 seems to have the most important influence on housing satisfaction followed by Price of House (Beta = .18) and Length of Residency (Beta = .14).

FINDINGS, IMPLICATIONS AND RECOMMENDATION

Prior research (for example, Varady & Preiser, 1998) have shown that age is one of the most important predictors of housing satisfaction; yet in this study, we found that age had no effect on satisfaction. Galster, (1987; cited in Varady, et.al., 2001) noted that elderly are more likely to be satisfied than are younger households because the elderly have lower aspirations. Varady, et.al., (2001) in their study of relocation of public housing's voucher receipients found that age was inversely related to housing satisfaction because according to the researchers, satisfaction levels were likely to have been suppressed by the difficulties associated with moving to a new and unfamiliar environment. Their results were in line with that of Morshidi, et.al. (1999) who found that those between 30 to 40 years old had the highest intentions of getting new houses whereas the older residents had the lowest probability of moving. In our study age was not an important factor in determining housing satisfaction probably because most of our respondents in the cut-off 40 years old and above fall in the range of working age, between 40 to 60 (40.2% of the total respondents). Only 4.2% of the respondents were above 60 years old, who were at the retirement age. Had the study included more respondents in this age category, different results might be obtained.

Our results found that gender did not influence housing satisfaction. There was no significant difference in satisfaction between male and female. The findings had been in line with that of Tan and Hamzah (1979) and Varady and Carrozza (2000) who found that housing satisfaction was not related to gender.

As discussed earlier, previous research offers two competing hypotheses (Varady et.al., 2001) with regards to socioeconomic status of households and the first view has been adopted by us, that is the higher the income the more satisfied would the residents be with their housing because they might have the greater capacity to find a better home. However, this hypothesis has not been supported by our results, which showed that household income did not influence housing satisfaction. Our findings indicate that the more socially mobile the households are the higher would be their standards and aspirations. Thus, they are no difference with those from the lower income groups who have lower aspiration and expectation. Both are therefore having the same level of satisfaction.

This finding is also in line with Equity Theory, which holds that individuals compare their input/output ratios with those of others (Yi, 1990; cited in Parker & Mathews, 2001) and that the consumer will be satisfied if the net gain is perceived to be fair.

In our study, we have grouped the respondents into those in Penang Island and those in the Mainland (Seberang Perai) to see whether or not there is significant difference in housing satisfaction between residents in the two locations. However, our results indicated that location does not influence housing satisfaction. There is no significant difference found in satisfaction between residents in Penang Island and those in Seberang Perai. Our findings revealed that, it is not the location that influences housing satisfaction, but other factors such as neighbourhood environment - social condition, safety and so on. These findings also indicate that there is no difference in levels of expectation and aspirations of the Penangites and the Mainland people on factors influencing housing satisfaction.

Prior research has found that type of housing ownership could affect satisfaction with a dwelling unit (Ogu, 2002). Given the same quality of house unit, owner-occupiers were found to be more satisfied with their housing than renters. However, the results of our study did not support this hypothesis. There were no difference found in housing satisfaction between those who stayed in their own house and those who were renting the units. This finding revealed that there is no difference in expectation of residents on factors affecting housing satisfaction, be it owners or renters. Both groups have the same level of perception and aspiration on their housing and neighbourhood environment.

Size or built-up area of a house and crowding (the square feet of floor space per person in the household) are both found to be the important aspects of housing satisfaction. Thus, we expected that there would be significant differences in housing satisfaction with regards to crowding. However, our results have not supported this hypothesis, indicating that housing satisfaction does not depend on built-up area of a house and the number of people in the household but other factors such as project type, house price and so on. Our findings have been in line with that of Tan and Hamzah (1979) that studied public housing satisfaction in Penang.

Implications and Recommendations

The socio-economic survey (Tan & Hamzah, 1979) covering the schemes of low-cost public housing in Penang: Rifle Range Flats, Kampung Melayu Flats, Kampung Selut, People's Court, Noordin Street Ghaut and Taman Free School revealed that 23% of the respondents were very satisfied with their housing, while 70% were somewhat satisfied. Whereas Phase II (UDA) Tanjong Tokong development project (Mohd. Isa, et.al.,1990) has recorded 8.2% of very satisfied respondents and 66.6% of somewhat satisfied. In another study, conducted for residents of Taman Perumahan Permin Jaya, Cendering, Kuala Terengganu, Mohd Zulfa (2000) has found that 6% of the respondents were very satisfied while 79% were somewhat satisfied. Whereas, our findings revealed that 9.3% of the respondents were very satisfied and 47.7% were somewhat satisfied.

Although the percentage of satisfied respondents in PDC is relatively lower than that of the above studies, it is interesting to note that the overall level of satisfaction of PDC's housing customers has been above the minimum level for favourable response (mean satisfaction stood at 3.48). Comparison of the percentages gathered in the previous studies is not very appropriate as the studies have been conducted in different timing; for example, the study in Tan and Hamzah was carried out way back in the 1970s. Whereas satisfaction is a relative concept that changes over time according to contextual circumstances such as stage of technological development, the socioeconomic status of the occupier and the previous residential experience (Bates and Murdie, 1998; cited in Varady & Carrozza, 2000; Moughalu, 1987; cited in Ogu, 2001). New experiences and increased levels of awareness may lead to new levels of expectation, which will alter degrees of satisfaction. According to Birks and Southan (1992) "treating satisfaction as a static, singular dependent variable, any compares the extent to which individual expectations were fulfilled, may be misleading by focusing on just one outcome of the continuous process of satisfaction formation and reformulation". Thus, it would be more useful if this type of study could be carried out on timely basis. Longitudinal study for example, could be conducted in order to see the performance of PDC over time.

With regards to the general satisfaction of PDC's housing customers, although the overall level of satisfaction was found to be above average, there are still rooms for improvements. For example, in terms of housing physical structure of landed property, it would be worthwhile to look into those items which received high percentages of unfavourable response, such as housing designs, size of kitchen and bathroom and etc. The same applies to high-rise type of projects that recorded high proportion of unfavourable responses in terms of availability and size of drying area. Further, with regards to residents' perception on neighbourhood, factors such as those representing amenities have been a very crucial determinant of housing satisfaction. As noted in our findings, amenities exerted the highest influence on housing satisfaction, after neighbourhood social interaction. Greatest implication would be on the part of planning especially for future development projects that would be undertaken by PDC. Factors such as access roads, transportation and so on would be a very important factor that requires close attention.

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