Full Length Research Paper

Comparative analysis of degrees of emphasis in residential refurbishment experiences

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The purpose of this study was to explore the degrees of emphasis of consumers on various consumption factors during the process of residential refurbishment. This was accomplished through the verification of 601 samples by confirmatory factor analysis (CFA). The results showed that the overall fitness indicators for the degrees of emphasis of two types of consumer experience in residential refurbishment, one via a contractor and the other via a designer, as well as the reliability and validity indicators of various dimensions of the experience itself were all within a reasonable range. This indicates that the degrees of emphasis of the consumer experience as measured in this study are both reliable and accurate. The results of this study can serve as a reference for future researchers in this field and may also be useful for relevant industries in development of marketing strategies.

Key words: Residential refurbishment, experience, degree of emphasis, contractor, designer.

INTRODUCTION

Changes in life styles and the ever-increasing harshness of the environment have compelled people to attach greater importance to the level of comfort and security of their living environment, making residential refurbishment of residential housing a very important industry directly related to residential consumption. For industry operators, to better understand user appraisal of a refurbished residences is considered a very important reference factor. Data on relevant experiences provided by various countries indicates that the proportion of residential refurbishment spending relative to overall housing-supply activities is not low. There is a need to address the question of benefit in raising the quality of existing residences in order to revise the view that refurbishment and maintenance are considered obstacles that produce inefficiencies in residential resource management.

The core concept of consumer behavior is consumer experience under the guidance of the experience economy.

Using residential refurbishment as an example, although we already have pre-sale houses and existing refurbished houses, they may not be able to generate the experience of quality of living from post-residential refurbishment and the enjoyment of the level of comfort from them. This study hopes to explore a variety of cognitive consumer experiences in residential refurbishment in order to properly describe consumer experience in terms of the importance of the consumption behavior. Egbu (1999) argued that different professional services for housing refurbishment attract different attitudes and consumption intentions. According to past survey, households in Taiwan usually adopt either of two service types in residential refurbishment. The first service type is where householders entrust contractors who specialize in construction (referred to as contractors here). The other service type is that householders hire design firms to undertake both the design and construction part of residential refurbishment (referred to as designers here). Applying the concept of consumer experience to these two types of refurbishment services may lead to different experiential meanings and feelings towards services. Previous studies regarding residential refurbishment consumer experiences are scarce. The purpose of this

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study was to use the concept of consumer experience to create a scale of different service factors in the residential refurbishment consumer experience. Degrees of consumer emphasis of these different service factors were compared, and then analyzed.

LITERATURE REVIEW

Residential refurbishment

Topics within the scope of this study are mostly related to the interaction between humans and the environment that represent "user needs". For example, the selection and arrangement of building materials for residential refurbishment should also meet specific needs, especially in a situation where people are sensitive to the building materials. Past studies have hinted that users prefer to pay more attention to the aesthetic quality of space or the psychological impression of the visual environment.

Egbu (1999) believed that residential refurbishment is heterogeneous in nature. Okoroh et al. (1999) explained that a refurbishment project usually contains a high level of risk and uncertainty (Daoud, 1997; Lee and Gilleard, 2002). Because the characteristics of individual residential refurbishment are rather unique, it is difficult for a refurbishment service to be viewed as standard. Compared to newly constructed housing, the outcome of refurbishment of an old house is highly dependent on the ability and experience of the contractor. Holm (2000) indicated that residential refurbishment can be considered a service industry because it provides a customized product designed to meet consumer expectations. Juan et al. (2009) used the tools of quality expansion mechanism in fuzzy theory to build a contractor selection model for consumer residential refurbishment, enabling consumers to choose a better contractor for residential refurbishment based on research. A study by Parasuraman (1985) pointed out that there still exists a gap between the service quality models as they are applied to consumer perception versus supplier services. The reason for this gap is that if the information available to a consumer and a service provider is asymmetrical, then it will produce a gap in consumer perception regarding service quality. In the process of residential refurbishment, it is critical to know whether the information from the two sides is symmetrical and whether the consumers are able to experience the comfort of services provided. Thus, consumers have to be more cautious in selecting designers or contractors for residential refurbishment.

Consumer experience

Holbrook and Hirschman (1982) used the concept of experience to dissect the ideas of consumption and marketing. Three decades later, this concept of experience has become a major component in understanding consumer behavior. Pine II and Gilmore (1998) put forward the concept of "experience economy" creating a memorable and resonant experiential value. Many scholars had produced interest in researching the consumer experience (Carmon and Vosgerau, 2005; Holbrook, 2000; Long-Tolbert et al., 2006; Williams, 2006). Gentile et al. (2007) defined the concept of consumer experience as a form of evolutionary relationships between business and consumer. Consumer experience originates from a series of interacttions between consumer and products, businesses, or organizations, evoking a reaction.

Schmitt (1999), by analyzing consumer behavior from the perspective of consumer psychology, proposed the concept of experiential marketing. One of the core concepts of experiential marketing is to create a way for customers to undergo different forms of experience. These forms of experience are known as strategic experiential modules (SEMs), and comprise sense, feel, think, act, and relate as the five types of experiences. Sense (or sensory experience) appeals to the five senses - sight, hearing, smell, taste, and touch. As far as the residential refurbishment experience is concerned, once the interior is renovated, one gets a sense that the interior space feels very spacious, the colors on the walls feel very warm, as well as other sensory stimulations. Feel (or affective experience) appeals to consumer's feelings. For example, in terms of experience in residential refurbishment, the way a consumer experiences a well-known closet brand, even if the customer has never been to the display site, is by just thinking about the closet product or the brand, which is sufficient to generate a wealth of emotions inside the customer. Think (or intellectual experience) appeals to intellectual understanding; the goal is to use creativity to enable consumers to create awareness. For example, interior design companies will usually show a variety of home interior design models within their facilities as a way to introduce interior design related information while creating a sense of newness in the customer. Act (or behavioral experience) appeals to long-term bodily experience and interaction that change the lifestyle of consumers. For example, a consumer tours the showroom at a building's sales facility, or feels the impact of the beauty of sample furniture in the show room, leading to a decision to make a purchase. Relate (or relational experience) appeals to social and cultural significance and consumer interaction, resulting in a powerful experience. In terms of consumer experience of model homes at building showrooms, consumers may think that the model homes show good taste, as confirmed by peer reference groups.

Consumer experience can generate consumer value (Mathwick et al., 2001, 2002). Hirschman and Holbrook (1982) and Mano and Oliver (1993) advocated that
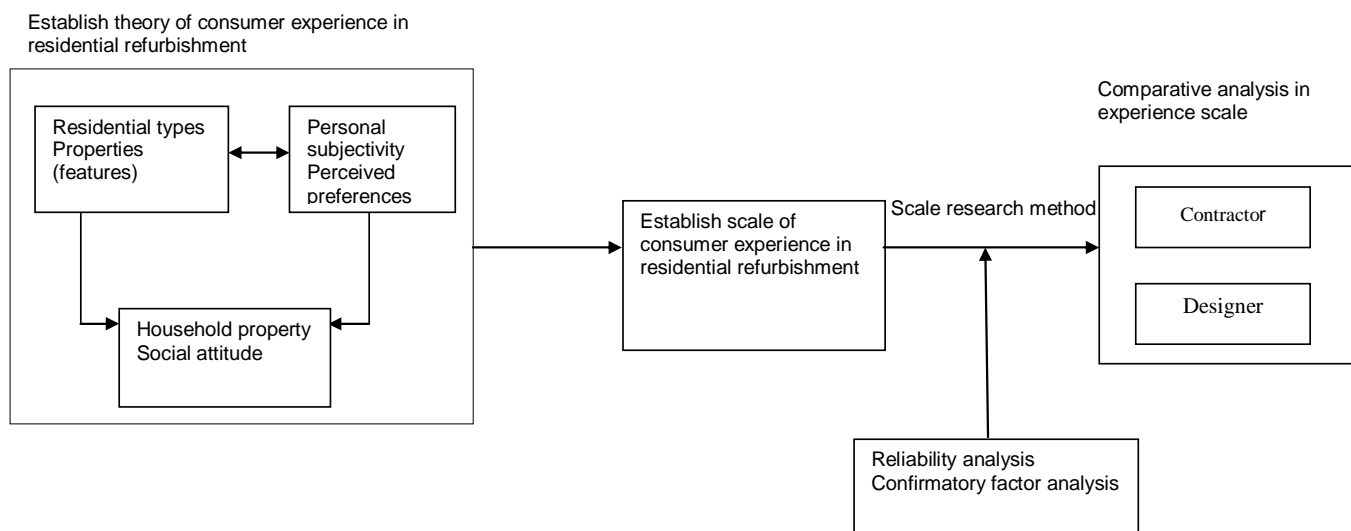
Establish theory of consumer experience in
residential refurbishment

Figure 1. Research framework.

consumer experience should be divided into practical value and pleasure value. Holbrook (1994) suggested that value experience should be divided into intrinsic value and extrinsic value. Taking these scholars' points of view, value experience can be divided into two parts - one is a self-generated awareness during a customer's residential refurbishment process, such as the feeling of joy, fun, attraction, and visual appeal; such a feeling comes from a sense of self during the assessment of things. The other is the result of real benefits obtained from accepted extrinsic refurbishment practices. Most consumers view residential refurbishment as second only to the purchase of a house in terms of cost. Lien et al. (2009a) showed in their research that the feeling of value experience in residential refurbishment has a very critical influence on the consumer since refurbishment costs are much higher than the cost of other goods and also account for a large portion of most people's income.

METHODS

Research framework

This study adopted the consumer experience framework as proposed by Lien et al. (2009a, b) using the qualitative research method to develop its own foundation for a measurement scale of the consumption experience in residential refurbishment. Then, reliability analysis and confirmatory factor analysis (CFA) were used to investigate, using the quantitative analysis method, the difference in terms of consumer choice for designers and contractors between two different types of degrees of emphasis measurement of the consumption experience in residential refurbishment. The research framework of this study is shown in Figure 1.

Research subjects and sampling method

This study used the proposition framework formulated by Lien et al.

(2009a, b) using qualitative research methods as the basis for the development of a consumer experience scale. A quantitative analysis method was used to carry out convenience sampling of households in the Taipei metropolitan area with refurbishment experience within the last three years. The study then conducted a formal questionnaire survey. According to Mueller (1997), a properly developed questionnaire survey requires at least 371 questionnaires. To improve the effectiveness of the sample, this study collected 719 samples, 601 of which were valid questionnaires (83.6 %).

Data analysis method

The data analysis methods used in this study were reliability analysis and CFA. They were designed to respectively verify consumers' selection of contractors and designers in terms of a consumer experience scale of reliability, structure validity, and discriminant validity, and to comparatively analyze the difference between the scales from the two selections.

RESULTS

Statistical analysis of degrees of emphasis in the consumption experience of residential refurbishment (designer)

Selection of estimation method

From the results of this study, we can find that the value of skewness ranged from -1.294 to -0.008, kurtosis value lay between -0.754 to 2.027. The results show that the observed difference in skewness and kurtosis variables is not large. Using an estimation method of normal distribution will not affect the soundness of the estimate. Therefore, this study adopted the maximum likelihood estimation as the estimation model.

Table 1. Designer degrees of emphasis-evaluation of competition model for overall fitness.

Overall fitness indicators	Null model	One-factor model	Uncorrelated factors model	Correlated factors model
Likelihood-ratio χ^2	2166.20	1320.92	646.88	439.96
Df	276	252	252	237
GFI		0.57	0.77	0.85
AGFI		0.49	0.73	0.81
SRMR		0.14	0.19	0.07
RMSEA		0.15	0.09	0.07
NNFI		0.38	0.77	0.88
CFI		0.43	0.79	0.89
PNFI		0.36	0.64	0.68
PGFI		0.48	0.65	0.67
Normed chi-square	7.85	5.24	2.57	1.86
Critical N		45	92	127

## Confirmatory factor analysis (CFA)

In the process of developing the scale, this study first used exploratory factor analysis to extract the relevant variables during the pre-test. Then, CFA was used for competitive model comparison to test for reliability, convergent validity, and discriminant validity. This was done to confirm the scale of reliability and validity. Models of competition included null model, one-factor model, uncorrelated factors model, correlated factors model, and hierarchical model. This study belongs to the correlated factors model.

The correlated factors model is a first-order correlative confirmatory factor (latent variables do correlate) model - an average model with CFA. This model can be described as a multi-factor model with CFA (Joreskog and Sorbom, 1992), which is also the most common type of CFA model. The latent variables in this model are correlated, and are used to verify whether the observed variables could be comprised of known latent variables (Doll et al., 1994, 1995). Although this model cannot clearly point to the existence of second-order factors because the indicator variables are derived from the measured variables, and among the variables there is the effect of inter-related interaction, therefore the first order correlated verification factors (latent variables are related) model cannot be ruled out as a possible model. We assume that the experience behavior of residential refurbishment has six factors that are correlated. If this model gains support, then it would mean that these factors are inter-related. Therefore, it implies that there exists the possibility of a hierarchical model.

In competition model verification, the overall fitness indicators for the competition model are presented in Table 1. When compared to the null model, the one-factor model and uncorrelated factors model did not show satisfactory improvement in terms of indicator fitness. For a one-factor model, the five indicators for absolute-fit did not reach the standard for an acceptable model. Two indicators for relative-fit also failed to meet the standard for an acceptable model. In addition, the indicators did not pass the threshold in normed chi-square and critical N tests. Therefore, the one-factor model was not an ideal fit. For the uncorrelated factors model, the five indicators of absolute fit also did not reach an acceptable model standard. The two indicators of relative fit also failed to meet the acceptable model standard. For efficient fitness indicators, PNFI and PGFI passed the threshold value. But normed chi-square and critical N did not pass the threshold. Although the performance of the uncorrelated factors model did better than the one-factor model, on the whole, most of the indicators did not pass the standard. Therefore, many factors still could not fit with the uncorrelated factor model. For the correlated factors model, the improvement of the fitness of its indicators was quite large. Other than rejection of the model by likelihood-ratio χ^2 indicator, which reached a level of significance, and AGFI = 0.81, which was slightly less than 0.9, all other indicators were able to accept the model. Therefore, the correlated factors model is the best model for constructing its importance level in terms of experience in residential refurbishment. A study by Babin (2008) pointed out that quality of paper evaluation by referees has no significant positive impact on the fitness of a model in terms of how well or how badly it fits. Although some of the fitness indicators in the correlated factors model were not up to standard, they were still within reasonable limits.

The related path and standardized parameter estimates of the correlated factors model are presented in Figure 2. Since the other two-factor models did not show convergence, and with data from the null model representing the implementation of data provided by the report form from the correlated factors model, therefore, the data from the model were not entered.

Figure 2. Designer degrees of emphasis-correlated factors model.
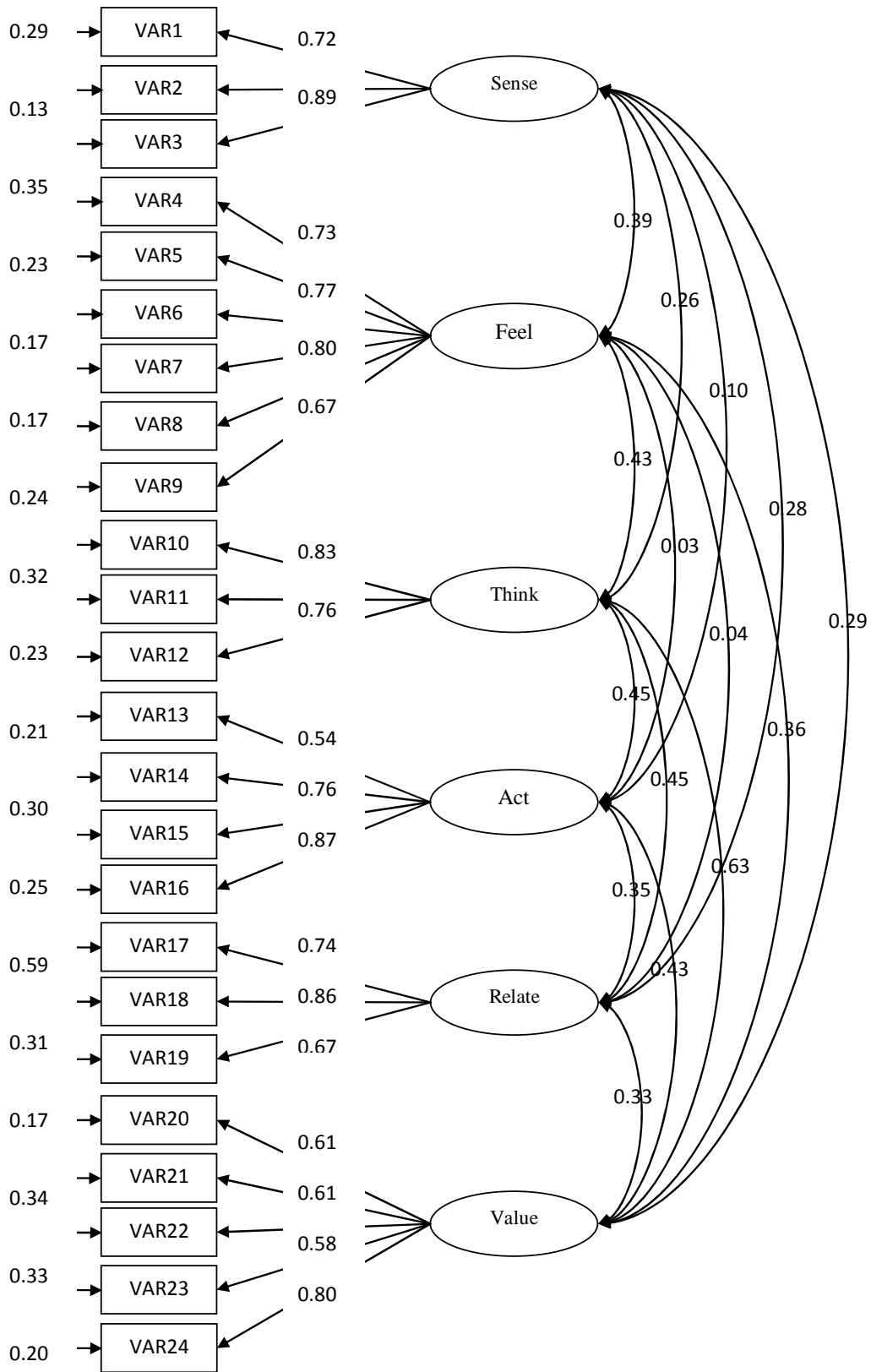
Chi-square = 439.96, Df = 237, p-value = 0.000, RMSEA = 0.07

Table 2. Designer degrees of emphasis-discriminant validity of experience behavior in residential refurbishment.

	Value	Relate	Act	Think	Sense	Feel
Value	1					
Relate	0.27 (***)	1				
Act	0.37 (***)	0.33 (***)	1			
Think	0.52 (***)	0.38 (***)	0.39 (***)	1		
Sense	0.25 (***)	0.25 (***)	0.09	0.23 (**)	1	
Feel	0.31 (***)	0.04	0.05	0.39 (***)	0.38 (***)	1

1. Significant levels are shown in parentheses; 2. * represents significance when α = 0.05;** represents significance when α = 0.01;*** represents significance when α = 0.001.

Reliability and validity

(A) Reliability

The results of this study show that the reliability of individual observed variables was between 0.29 and 0.78, which is consistent with the reliability requirement for a variable. The results show that all the observed variables are reliable. The structural reliability of the five latent variables ranged from 0.79 to 0.87, reaching 0.6 above standard (Fornell and Larcker, 1981). This indicates that the reliability of observed variables and latent variables in this scale is excellent.

(B) Validity

Convergent validity: The results of this study shows that the values of factor loadings (λ) of all the observed variables against individual latent variables ranged from 0.63 to 0.86, indicating that all observed variables were sufficient to reflect their latent variable structure. Therefore, this scale has excellent convergent validity. Discriminant validity: In a discriminant validity test, when the smallest correlation coefficient between any pair of items within various dimensions of a system is compared to the correlation coefficient between any dimensions of that system, if the smallest correlation coefficient from within the dimensions is greater than the correlation coefficient between the dimensions by more than half the value, then it is discriminately valid (Campbell and Fiske, 1959). The correlation coefficient is the simplest and most basic approach to test the level of validity. Using correlation coefficient to reflect the strength of validity is a very simple statistical technique. As long as the correlation coefficient reaches statistical significance, then it can be used to explain the intensity of the relationship between two variables. The results of discriminant validity are shown in Table 2. Table 2 shows that the correlation coefficients between various dimensions based on the degrees of emphasis of the consumer experience in residential refurbishment have mostly reached a level of

significance, indicating that this scale measurement has excellent discriminant validity.

Statistical analysis of degrees of emphasis for consumer experience in residential refurbishment (contractors)

Selection of estimation method

From the results of this study, we can find the skewness value is between -1.02 and 0.05, kurtosis value lies between -0.57 and 0.45. The results showed that difference of skewness and kurtosis values of the observed variables is not large, and the use of an estimation method with normal distribution has little effect on the soundness of the estimation. Therefore, this study adopted the maximum likelihood estimation as the estimation model.

Confirmatory factor analysis (CFA)

In competition model verification, the overall fitness indicators for the competition model are presented in Table 3. When compared to the null model, the one-factor model and uncorrelated factors model did not show satisfactory improvement in terms of indicator fitness. For the correlated factors model, the improvement of the fitness of its indicators was quite large. Other than rejection of the model by likelihood-ratio χ2 indicator, which had reached a level of significance, all other indicators were able to accept the model. Therefore, the correlated factors model is the best model for constructing its importance level in terms of experience in residential refurbishment. A study by Babin (2008) pointed out that quality of dissertation and thesis evaluation by referees has no significant positive impact on the fitness of a model in terms of how well or how badly it fits. Although some of the fitness indicators in the correlated factors model were not up to standard, they were still within reasonable limits. Since the other two-factor models did not show convergence, and with data from null model representing the implementation of data provided by the report form from the correlated factors model, therefore, the data from the model were not entered.

Reliability and validity

(A) Reliability

The results of this study showed that the reliability of individual observed variables was between 0.29 and 0.76, which is consistent with the reliability requirement for a variable. It showed that all the observed variables are reliable. The structural reliability of the five latent variables ranged from 0.77 to 0.86, reaching the 0.6 standard

Table 3. Contractor degrees of emphasis-evaluation of competition model for overall fitness.

Overall fitness indicators	Null model	One-factor model	Uncorrelated factors model	Correlated factors model
Likelihood-ratioχ^2	4060.60	2117.88	1102.98	581.75
Df	276	252	252	237
GFI		0.60	0.79	0.89
AGFI		0.52	0.75	0.86
SRMR		0.13	0.20	0.06
RMSEA		0.14	0.09	0.06
NNFI		0.46	0.75	0.89
CFI		0.51	0.78	0.91
PNFI		0.44	0.67	0.74
PGFI		0.50	0.66	0.70
Normed Chi-Square	14.71	8.40	4.38	2.45
Critical N		58	111	198

(Fornell and Larcker, 1981). This indicates that the reliability of observed variables and latent variables in this scale is excellent.

(B) Validity

Convergent validity: The results of this study showed that the values of factor loadings (λ) of all the observed variables against individual latent variables ranged from 0.56 to 0.83, indicating that all observed variables were sufficient to reflect their latent variable structure. Therefore, this scale has good convergent validity.

Discriminant validity: As long as the correlation coefficient reaches statistical significance, then it can be used to explain the intensity of the relationship between two variables. The results of discriminant validity are shown in Table 4. Table 4 shows that the correlation coefficient of various dimensions of degrees of emphasis has reached the level of significance for consumer experience in residential refurbishment, indicating that this scale measurement has excellent discriminant validity.

DISCUSSION

The results of this study show that our scale for degrees of emphasis of consumers when choosing designers and contractors, because of its skewness and kurtosis values, was within normal range, therefore, the use of an estimation method with normal distribution has little effect on the soundness of the estimate. Therefore, the two different types of consumer experience scales for degrees of emphasis in this study adopted the maximum likelihood estimation method as the estimation model. After determining the estimation method, we were able to

measure the different types of consumer experience scales for degrees of emphasis for their overall fitness. This study used the four models within the competition model, which are, the null model, one-factor model, uncorrelated factors model, and correlated factors model, to respectively measure the overall fitness level. The results from this study showed that for different types of scales for degrees of emphasis of consumer experience, in terms of correlated factors model, only the likelihood-ratio χ^2 indicator showed significant rejection of the model. All other indicators were able to accept the model. Therefore, this study found that the correlated factors model is the best model for construction of a scale of degrees of emphasis of consumer experience in residential refurbishment. In addition, when comparing and analyzing the scales for degrees of emphasis of consumer experience in residential refurbishment, we found that overall fitness indicators of contractors are better than designers. However, the overall fitness indicators between the two were within a reasonable range. Therefore, the scale of degrees of emphasis of consumer experience in residential refurbishment constructed in this study has an excellent level of fitness.

At the same time, in terms of reliability, the reliability of the various aspects of the two different types of the scale of degrees of emphasis of consumer experience in residential refurbishment reached the 0.6 standard (Fornell and Larcker, 1981). In terms of comparative analysis of the reliability of the various aspects of the two different types of the scale, it was found that the levels of reliability of the two were very close, reaching above the 0.6 standard (Fornell and Larcker, 1981). Therefore, the observed variables and the latent variables of the two different types of the scale of degrees of emphasis of consumer experience in residential refurbishment all possess considerable reliability and stability. In terms of validity, this study also explored the convergent validity and discriminant validity of the two different types of the

Table 4. Contractor degrees of emphasis – discriminant validity of degrees of emphasis in residential refurbishment.

	Value	Relate	Act	Think	Sense	Feel
Value	1					
Relate	0.32 (***)	1				
Act	0.48 (***)	0.42 (***)	1			
Think	0.51 (***)	0.40 (***)	0.53 (***)	1		
Sense	0.16 (**)	0.11 (*)	0.08	0.21 (***)	1	
Feel	0.36 (***)	0.12 (*)	0.19 (***)	0.32 (***)	0.47 (***)	1

1. Significant levels are shown in parentheses; 2. * Represents significance when $\alpha = 0.05$; ** represents significance when $\alpha = 0.01$; *** represents significance when $\alpha = 0.001$.

scale. In convergent validity, the results also showed that the observed variable of the two different types of the scale had a value of factor loading on individual latent variables between 0.56 and 0.86. Yet, the comparison of the factor loadings of the two variables showed little difference, they were both within the reasonable standard of factor loading range. The results of this study showed that the two different types of scales have excellent convergent validity.

In addition, in terms of discriminant validity, this study used the relationship between the correlation coefficients to analyze the strength of the response validity. The results of this study show that for the scale of degrees of emphasis of consumer experience in residential refurbishment used by consumers when choosing designers and contractors, the correlation coefficients of various dimensions of both scales reached significant levels. The comparative analysis of the correlation coefficient between the two showed no large difference. The results showed that the different types of importance scales of consumer experience in residential refurbishment had remarkably good discriminant validity.

Summarizing the afore-mentioned arguments, the two types of scales in this study possess excellent structural validity and discriminant validity. Therefore, the scale of degrees of emphasis of consumer experience in residential refurbishment for designers and contractors has excellent validity and accuracy.

Conclusion

This study is based on consumer experience as the core focus. With respect to consumer emphasis on different refurbishment methods of the residential refurbishment service industry, CFA was used to compare and analyze the difference in two scales of degrees of emphasis of consumers. In past interpretations of consumer behavior, methods used were too standardized and consistent, resulting in a failure to fully understand the variety of phenomena in consumer behavior. Therefore, the concept

of consumer experience must be used to explain consumer behavior. This study used results from the research of Lien et al. (2009a, b) on householder's residential refurbishment consumer experiences. We adopted sense, feel, think, relate and act as the five kinds of experiences as well as a new experience in addition to the five experiences proposed by Schmitt (1999). A consumer experience generated within the residential refurbishment service industry is a "value experience", from which we established two different scales of degrees of emphasis of consumers. Schmitt (1999) proposed that consumers, as defined by experiential marketing, should be both emotional and rational. Yet, previous studies basically viewed consumers as rational decision makers. This study considered both rational and emotional attitudes of consumers in order to widen the variety of factors used to explore the decision making process of consumers.

The results of this study show that the various aspects of reliability, convergent validity, and discriminant validity of the chosen scales are within a reasonable range. The two types of scale of consumer experience established in this study have both reliability and accuracy. Therefore, the results can be used as a reference for planning of future marketing strategies by researchers and also for related industries doing research on related subjects and consumers. Future researchers could also expand the scope of study to include research subjects and consumers of various regions or countries. Further comparative analysis can also be made on different occupations and income levels to see if there is any difference in degrees of emphasis in the consumer experience due to differences in living environment, occupation, and income.

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