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The role of emotion in a housing purchase: An empirical analysis of the anatomy of satisfaction from off-plan apartment purchases in France

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Abstract

This paper examines empirically the role of an emotion of owning a new build apartment, derived from its representation through mental imaging ('visualization') from marketing techniques, in influencing off-plan purchases in France, and how its effect on satisfaction evaluations of the apartment purchased affects buyer ratings of developer performance. Through structural equation modelling we show that psychological measures of perceptions influence buying decisions via satisfaction of the apartment purchased. Buyer evaluations are cognitively dominated by the assessment of utilitarian benefits but emotion plays a significant role among homebuyers as well as investors. Our analysis also sheds light on how buyer satisfaction could potentially augment the reputation of a developer to achieve off-plan sales targets.

Key words: satisfaction, emotion, homebuyers and investors, apartment purchase, off-plan, developer performance, structural equation modelling

Introduction

Anyone who has purchased a house will remember the excitement, emotion and pride experienced in conjunction with assessments about the quality of the physical dwelling and neighbourhood, and its expected financial performance. Qualitative studies report that prestige, pride and emotional attachment are important (Christie et al, 2008; Munro and Smith, 2008; Levy et al, 2008; Jorgenson, 2016). Yet the standard economic analysis and many behavioural theories typically ignore the role of emotions (Watkins and McMaster, 2011).

A house buyer considers the mixture of utilitarian and hedonic benefits derived from its attributes, which are respectively cognitively and affectively evaluated. Our paper investigates empirically the relative importance of the cognitive and affective assessments made, conceptualized as multiple dimensions of perceived values, on buyer satisfaction evaluations and their rating of developer performance. The evaluations in our sample reflect buying decisions as they are recorded post-purchase but pre-consumption. As new builds are sold off-plan rather than already built, potential buyers are unable to experience the sensations yielded by their attributes. Instead, they rely on perceptions formed from the mental imaging of the marketing material and discussions with sales agents. We focus on emotions induced from being able to conceive what it would be like to reside in and own the dwelling. Developers rely on 'visualization' of the apartments via various marketing techniques, customisation opportunities and product immersion, to influence consumer emotions, feelings and attitudes (Chowdhury et al., 2008; Bleize and Antheunis, 2017).

The ability to persuade individuals to make purchases before a dwelling has been built is a strategic issue for developers and housebuilders, especially in France as they have to achieve target off-plan sale reservations before lenders will release the finance to commence construction. Polls show that French housebuilders regularly suffer from poor customer evaluations. Understanding how buyers evaluate purchases and rate their performance can help developers address this problem, enhance their reputation and in turn, facilitate off-plan selling.

Our sample is representative of the new apartment market, obtained from the responses to a questionnaire sent to actual buyers of mid-range new build apartments from a national developer in France. We employ a structural equation model (SEM) to confirm construct validity of our latent variables representing perceived values, apartment satisfaction and developer performance, and to model the causal relationships specified in the marketing and economic psychology literature. We find that buyer satisfaction is driven by both cognitive and affective assessments, but their evaluations are pre-dominantly cognitively determined by utilitarian benefit considerations. We also find that an affective assessment from emotion is influential to homebuyers and investors, and that satisfaction with the apartment purchased is influential when rating a developer's performance. While there no moderation effects among buyer types in explaining apartment satisfaction, investors consider apartment satisfaction to be less and the quality of the relationship and customer services to be more important than homebuyers when rating developer performance.

The next section reviews the literature, highlighting the pertinent issues. Section three outlines the methodology, the study context, the theoretical model, data and the estimation strategy. Then the measurement and structural models results are discussed and limitations are drawn.

Literature review

For many years the neoclassical economic housing model, embracing the concept of utility maximisation by rational agents (Dougherty and Van Order, 1982), and its variants incorporating 'trading frictions' (Wheaton, 1990; Ortalo-Magné and Rady, 2006), spatial equilibrium within cities (Alonso, 1964; Mills, 1967) and between cities (Rosen, 1979; Roback, 1982) have been widely used to explain housing market processes. Housing choices over a range of options are evaluated by considering the relative benefits and costs of the attributes of physical dwelling and its location, which in turn, depend upon individual socio-economic characteristics such as age, income, marital status and children. Decisions are unemotional and rational, cognitively driven by meeting individual objectives with the financial resources available.

A number of researchers argue that the models developed in the behavioural literature relaxing the assumption of rational cognition provide better explanations of observed

outcomes than neoclassical models (Akerlof and Shiller, 2009). The common emphasis of behavioural theories is on limitations in cognitive processing (Kahnemann and Tversky, 1979; Thaler, 1985). Watkins and McMaster (2011) provide a critique of the theoretical and operational challenges of adapting behavioural studies to examine the housing market. They point out the inherent assumptions of “methodological individualism” and “instrumentalism” (page 284) and the subsequent implications these have in an analysis: cognition being prioritized over emotion; cognition and emotion being deemed to be opposing forces; and the little attention given to social referencing. The authors argue that the institutional economic approach is likely to be more appropriate, emphasizing possible positive associations between emotion and cognition and the importance of experiential knowledge in decision making. Ackert et al. (2003) argue that emotion can guide and enhance the ability of individuals to make rational investment decisions.

Watkins and McMaster (2011) are however more sympathetic to adopting an integrated behavioural and institutional economic approach as outlined by Marsh and Gibb (2011), where satisficing and social reference grouping are important tenets of individual decision making involving a complex transaction in an uncertain environment. They go further and advocate the development of an inter-disciplinary agenda to provide additional and alternative insights in housing research.

The cultural economy literature explicitly recognises that markets encompass passions as well as rationality (Blunt and Dowling, 2006; Amin and Thrift, 2004). Two strands are evident in examining the role of emotions in understanding purchasing behaviour: the first relates to house price bubble formation; and the second a home as an emotional space. Christie et al. (2008) and Munro and Smith (2008) consider the influence of emotions arising from the consequences of the impact of the actions of others on an individual’s decision and how this causes a further stimulus to activity in local housing markets and subsequent house-price inflation. They also present evidence on the type of emotion not considered by behavioural theories, an emotional attachment to a dwelling purchased (Munro and Smith, 2008; Christie et al, 2008). Levy et al. (2008) and Jorgensen (2016) provide evidence supporting emotional attachment but additionally emphasize an emotion derived from homeownership status. Levy et al. (2008) further highlight that house purchase decisions involve

multiple views. The evidence presented in these studies is qualitative and the analysis restricted to homebuyers. House purchases are also made by investors who tend to express different motivations compared to homebuyers. Similarly to Britain, the private rented sector in France is highly fragmented and dominated by individuals operating as landlords holding small portfolios. Surveys in Britain and Franceⁱ reveal that private landlords are primarily motivated by long-term financial returns, risk, retirement (building a nest egg) and inheritance considerations. Further evidence that investors are less likely to be driven by emotional attachment can be found in Bracke (2012) and in Bosvieux and Vorms (2011), who both conclude that private landlords in the UK and France respectively are focused on achieving target yields. One of our contributions is to consider the relevance of emotional influences on investors as well as homebuyers.

The methodology developed in the marketing and economic psychology literatures to explain consumer satisfaction through perceived values provides an appropriate framework for examining the relative importance of emotions in determining housing purchases. Different conceptualizations of satisfaction exist (Anderson et. al, 1994) but the focus here is on analysing transaction-specific satisfaction, as dwellings are heterogeneous, purchased infrequently and repeated purchases from the same seller rarely occur (Barlow and Ozaki, 2003). In particular, satisfaction evaluations after a purchase but prior to consumption reveal information underlying the purchasing decision and the experience of the transaction process (Oliver, 1980, 1981).

Satisfaction measures how well consumers perceive a purchased product to have met their specific requirements (Zeithaml, 1988). Perceived values represent an assessment of the trade-off between benefits obtained and costs incurred to acquire the product evaluated from each individual's particular perspective (according to their and product characteristics), and capture expected utility maximization or satisficing. Tam (2004) and Lovelock (2001) point out that they include non-monetary costs such as time, physical and psychic efforts. Sweeney and Soutar (2001) highlight that perceptions about quality, financial, social and emotional values are especially relevant for explaining satisfaction evaluations of durable goods purchases. These different aspects of owning and consuming a product drive buyer attitudes and behaviour. The analysis can be extended further as satisfaction is influential in buyers'

evaluation of a seller's overall performance and reputation/"behavioural intentions" (Chen, 2008; Fornell, 1992).

Utilitarian benefits from a dwelling are derived from functional consumption via instrumental attributes, for example a location enabling a good commute. Hedonic benefits are obtained from affective attributes such as a scenic view. Sweeney and Soutar (2001) argue that utilitarian and hedonic benefits can be represented by adopting their dimensions of perceived values. Utilitarian benefits are evaluated cognitively while hedonic benefits are more affectively assessed (Klein and Melnyk, 2014).

The final relevant literature strand for our investigation considers the problems of measuring satisfaction, developer performance and perceived values, and modelling causal relationships between them. They are difficult to measure directly but may be extracted from several indicators as a latent construct (Johnson and Fornell, 1991; Sweeney and Soutar, 2001). Having several indicators is preferable to a single indicator as the problem of measurement error can then be addressed. Kline (2011) provides guidance on addressing issues relating to establishing construct validity from the indicators, modelling causal relationships between latent constructs, accounting for measurement error and permitting possible correlation among our latent constructs. Vandenberg and Lance (2000) consider measurement issues relating to group heterogeneity, which could be an issue in this analysis as house purchases are made by homebuyers and investors – two groups with different motivations for purchasing.

Methodology

Study Context

The majority of households in France aspire to homeownership (Bosvieux and Vorms, 2011). Owner occupation is the largest housing tenure, comprising approximately 58% of the total dwelling stock, followed by private renting at 24%, 16% public renting and 2% other types (Enquête logement, 2013). The private rental stock is highly fragmented, almost entirely owned (95%) by individuals holding on average a portfolio

comprising of two dwellings. Two-thirds of private landlords own a single dwelling and 90% own less than four dwellings (Bosvieux and Vorms, 2011).

Over the last decade, housing transactions in France averaged about 800,000 dwellings per annum, with new dwellings comprising about 12% of total transactions. New apartments represent 90% of all sales in new dwellings (Ministry of Housing, 2017). Consequently, this market is very important for the French house building industry. Developers have to secure a target level of deposits, usually 50% of the units in a development, for finance to be released to commence construction. They rely on pricing and marketing strategies, branding and reputation to facilitate trust to overcome the intangible aspects of an off-plan purchase.

Completing an off-plan purchase is lengthy. Buyers are obliged to meet a progressive payment schedule related to the building work outstanding. At each stage they have to understand their financial obligations and address any unforeseen changes to building configurations and specifications. Developers attempt to establish a relationship with the buyer through periodic contact to set expectations and manage this process (Torbica and Stroh, 2001). Unlike housebuilders, developers often engage in 'place-making activities'. Buyers have to trust that the developer is able to complete the scheme and deliver, as described in its marketing, the specification and quality of build of an apartment in an improved neighbourhood.

The type of emotion we consider refers to potential buyers envisaging owning and living in or renting out the apartment on sale. Pham (1998) reports that individuals frequently imagine how they would experience a product from mental images created by stimuli. Since the apartments are sold off-plan, the developer relies on outline plans, diagrams, technology (virtual visits), site visits, show homes and customization ('immersion') opportunities to entice purchases to be made. These tools enable the affective attributes of an apartment to be 'visualized' by potential buyers. The ability to generate mental simulation from elaboration about the product and 'immersion opportunities' presented to potential buyers suggest that emotional attachment from 'visualization' could be influential in an apartment purchase (Escalas, 2004).

Understanding purchasing decisions by examining how buyers' evaluate satisfaction and rate a developer's performance can help developers improve their brand, image, price acceptability and reputation. Poor reputation is a strategic issue as it affects their ability to quickly secure sufficient deposits to commence construction, their ability to rely on networks to source land (Adams et al., 2012) and materials, and hire labour and contractors.

The theoretical and empirical model: The antecedents of satisfaction and developer performance

We employ a theoretical and empirical framework in which multiple dimensions of perceived values explain consumer satisfaction (Sweeney and Soutar, 2001), and in turn, behavioural intentions and seller reputation (Cronin et al., 2000). The latter in our application represents a buyer's rating of developer performance since repeat purchases from the same developer are rare (Barlow and Ozaki, 2003).

We estimate a structural equation model (SEM) as it provides a unified method to establish the validity of using a series of questions (items/reflective indicators) to create latent constructs and model the theoretical relationship between them, while explicitly accounting for measurement error and the expected correlation among the latent constructs. Assessing construct validity additionally reveals whether other measurement problems such as cognitive dissonanceⁱⁱ (Shultz and Lepper, 1996) leading to reverse causality are issues. The measurement analysis also ensures that form and measurement invariance conditions are met for making valid comparisons of latent constructs among buyer groups with different motivations (moderation effects).

The theory postulates that all perceived values explain product (apartment) satisfaction rather than retailer (developer) performance (Sweeny and Soutar, 2001). Apartment satisfaction alongside perceptions in trust and quality of customer services and client relationship explain developer performance. Each perceived value denotes an assessment of the relative benefits and costs by a buyer, reflecting the individual's and the apartment's characteristics as well as considerations of any input from family members. Financial and quality perceived values represent the assessed utilitarian

benefits derived from an apartment's physical and location attributes, which are cognitively evaluated. Evaluations of hedonic benefits are undertaken affectively and represented by social and emotion perceived values. Perceived social value depicts considerations of prestige (social status/social referencing) conferred from owning an apartment among their peers, friends and family, and perceived emotion value an attachment to an off-plan apartment formed from 'visualization' after reviewing the marketing material. Since perceived values contain information about the willingness to buy, the way in which buyers evaluate pre-consumption and post-purchase satisfaction reflect the cognitive and affective considerations undertaken during the purchase. If a purchase is solely cognitively driven (rational or behavioural), it is equivalent to perceived social and perceived emotion values having no significant effects on satisfaction evaluations.

A potential issue concerns pre-purchase expectations (Johnson and Fornell, 1991; Johnson et al., 1996). The strength of pre-purchase expectations about the product performance determines whether it should be included as a separate term in the model and the direction of its effect on satisfaction evaluations. Its exclusion from the model is not an issue when pre-purchase expectations are relatively weak, which might be the case as housing is heterogeneous, purchased infrequently and involves a complex transaction. On the other hand, pre-purchase expectations could be strong as housing is consumed daily. Similarly to many existing studies (Tam, 2004; Nahmens and Ikuma, 2009), a direct measure is not available because the questionnaires were answered after a sale. The literature does not point to a particular paradigm for a house purchase. We use buyer's age as a proxy since past experiences of transactions are major determinants of pre-purchase expectations which in most cases is related to age (Johnson and Fornell, 1991).

A client's perceived quality of the relationship with a seller (Huntly, 2006), and trust, the perceptions of competence and integrity of the vendor, can explain behavioural intentions (Keh and Xie, 2009; Van Tonder et al., 2017). Torbica and Stroh (2001) report that the expected and the actual level of the quality of services provided by the developer contribute to overall customer satisfaction. We created two dummy indicators as controls. Prior Reputation represents a buyer's perception of the developer's reputation prior to the transaction as a broad proxy for trust. We use

information reported by respondents that they either had received a recommendation or thought that the developer had a good image or was honest or sincere. A second dummy, Client Contact, was created from a buyer's own assessment of the frequency of contact with the developer for capturing the perception of the quality of the relationship and customer services. We also include responses to a question on tax motivation as a control as tax reductions are potential alternative motive considerations for homeowners and landlords in France.

Moderation effects may arise among homebuyers and investors due to different purchasing motivations. They are not a direct result from dwelling and individual heterogeneity since these are fully incorporated into perceived values, satisfaction and developer performance. We expect the assessment of utilitarian benefits to dominate decision making, and hedonic benefits to be unimportant considerations for investors as they should be cognitively driven to achieve a required financial return. Homebuyers are likely to be more emotional, as an apartment's affective attributes helps them to "visualize" an attachment. We further expect that perceived social value to be more influential for homebuyers. There is no existing research to indicate significant differences among buyer types in rating developer performance from product satisfaction, trust or the quality of the relationship.

Data

Our data is obtained from an online questionnaire targeted to 2,436 clients of a large French developer, who has a significant role in a number of regional development projects and provides property advisory services. The apartments purchased are mid-range. 195 questionnaires were fully completed by buyers (117 homebuyers and 78 investors) who bought a new apartment off-plan within the last two years in various locations in France, a response rate equivalent to 8%. Comparisons with statistics reported by various organisations (figures, sources) indicate that our sample is broadly representative of the market. The average age of the main buyer is 45 years old (44 years, Notaries of France, 2006), the average apartment price paid is €230,000 (€226,804, French Federation of Developers (FPI), 2013), the average number of rooms is 2.8 (2.9, Enquête logement, 2013) and 40% of purchases are made by investors (40%, FPI). The questionnaire contains additional socio-demographic and

dwelling characteristics information which were used during testing the robustness of our empirical results but not reported because the effects as predicted by the theory underlying the construction of latent values are insignificant.

Our sample is a reasonable size and comparable to existing studies in marketing analysing data containing explicit multidimensional measures of psychological factors derived from actual transactions (150 observations for Nahmens and Ikuma, 2009; 167 for Jamal and Naser, 2002; 209 for Tam, 2004), as opposed to studies based on experiments or self-reported unidimensional measures (Gale, 1994). The questions and their role in our analysis can be viewed in Table 1.

[Insert Table 1: Variables here]

The questions were asked at the post-purchase and pre-consumption stage - buyers had 'consumed ownership of the dwelling' but had not yet 'consumed the housing services yielded by it'. All reflective indicators for our latent constructs adopt a scale where higher values denote higher levels of satisfaction, developer performance and perceived values. In Table 1, QS1 and QS2 specifically refer to satisfaction evaluations about a particular apartment and its ability to meet buyer requirements (Fornell et al., 1996; Homburg et al., 2006). QS3, QS4 and QS5 require a response after the consideration of replies to QS1 and QS2. They provide information about their relationship with the developer and measure the implied potential loyalty and behavioural intentions (Cronin et al., 2000), which we refer to as developer performance.

QP1 to QP11 are questions measuring perceived values, adapted from Sweeney and Soutar (2001) for an apartment purchase. QP1 to QP3 represent the utility derived from the apartment's net income generating potential/net savings from paying rent, and QP4 to QP6 the utility derived from the perceived quality of the apartment relative to its price. Both represent utilitarian benefits derived primarily from the instrumental attributes of the dwelling. Hedonic benefits are represented by social and emotion perceived values. QP7 to QP9 contain information about the utility derived through the enhancement of social self-concept (how buyers think others view them) from the ownership of the apartment. QP10 to QP11 represent the utility derived from buyers

'visualizing' either themselves or others enjoying living in the apartment they own. Sweeney and Soutar (2001) argue that these dimensions should be allowed to be correlated.

Results

The SEM results are derived from a quasi-Maximum Likelihood Estimator with robust standard errors computed by the Sandwich variance estimator. We also computed standard errors using the Satorra–Bentler variance estimator to derive additional diagnostic tests which are robust to non-normality. A fuller discussion and accompanying set of results can be found in the on-line appendix.

Measurement Model

Overall, the measurement model forming the latent constructs (the estimated variances and covariances) provides a good fit to the data (sample variances and covariances). The standardized factor loadings are reasonably large and significant, except for items QP8 and QP9 measuring perceived social value, which are 0.72 and 0.66 respectively. There is significant measurement error in the questions deriving the latent constructs which indicates that they should be explicitly addressed when modelling any causal relationships.

Assessing construct validity

Construct validity requires convergent and discriminant validity. Convergent validity establishes that the items designed to capture information for a particular latent variable are successful in measuring it. We examined the fraction of variance of an item explained by the latent variable, R^2 (c.f. column 5 in table 1). For example, the fraction of the variance of the item QS1 explained by the latent variable apartment satisfaction is 0.77. The only potential issue concerns two out of the three indicators for the latent construct perceived social value having a relatively low R^2 - QP8 and QP9 are respectively 0.52 and 0.44. The R^2 s' associated with all the other items are above 0.5. Whilst the three indicators for perceived social value together fulfil the

minimum statistical criteria, they could still present a problem in establishing a causal effect in the SEM.

Discriminant validity confirms that items which are not designed to represent a latent variable are unrelated to its measurement. We found that all the Average Variance Extracted are larger than 0.50 and larger than the pair-wise squared correlation coefficients among the latent constructs, meeting the criteria specified by Fornell and Larcker (1981). Thus, each latent variable is able to account for more variance in the reflective indicators which are designed to measure it than that attributable to measurement error or other latent constructs respectively. We conclude that our items measuring the latent constructs are valid.

Assessing group invariance in measurement between homebuyers and investors

We examined the possibility that investors and homebuyers differ in psychological assessments by testing for group invariance. The main findings are:

- the same form model (criteria) is applicable to homebuyers and investors as all the factor loadings are significant ($\chi^2(20) = 5420.06$);
- there are no significant differences among homebuyers and investors in their interpretation of the questions asked, as valid equality restrictions may be imposed on the values of factor loadings ($\chi^2(16) = 14.85$);
- and there may be significant differences in the mean values of the latent constructs among investors and homebuyers due to the rejection of equality restrictions on intercepts ($\chi^2(16) = 39.53$).

Utilitarian motives turn out to be equally important to both homebuyers and investors as there are no significant differences in latent mean values for perceived financial and quality values. However, there is a significant difference for perceived emotional value: investors recorded an average score about a third (-0.36, p-value 0.016) lower than homebuyers, implying that homebuyers consider their purchase to be more affective than investors. No differences are apparent in the latent mean for apartment

satisfaction, but at the 10% significance level, investors seem to rate developer performance more highly than homebuyers (0.25, p-value 0.085). These findings suggest a consideration of moderation effects among buyer types could yield additional insights.

Structural equation model results

Group invariant models (No Moderation Effects)

Table 2 displays the results for three SEMs: SEM A is based on the durable goods model in Sweeney and Soutar (2001); SEM B includes controls for pre-purchase expectations and extrinsic motivation (tax incentives); and SEM C differentiates between homebuyers and investors. Together, they help to assess the robustness of our estimates.

The standardized estimates are reported alongside the unstandardized p-values. We consulted modification indices after the estimation of each model for guidance on possible further improvement. The system of equations are stable for all reported models (stability index values are zero). All models permit correlations among the exogenous latent variables (e.g. perceived financial and quality values), between them and the observed exogenous variables (e.g. perceived values and age), and among the observed exogenous variables (e.g. frequent contact and reputation).

[Insert Table 2 SEM Results about here]

As in Sweeney and Soutar (2001) cognitive and affective assessments of utilitarian and hedonic benefits of an apartment determine purchase satisfaction, as emotions along with quality and financial perceptions are influential in apartment satisfaction evaluations. These results are robust to the inclusion of various control variables. It supports the qualitative evidence presented by Christie et al. (2008), Munro and Smith (2008) and Jorgensen (2016) concerning this type of emotion. There is less support for perceived social value being influential.

All perceived value measures are positively correlated to each other to a moderate degree, implying that associations between emotion and cognition can reinforce each other in decision making (Sweeney and Soutar, 2001; Watkins and McMaster, 2011).

The model diagnostics are reported at the bottom of Table 2. Various statistical indicators such as Standardized Root Mean Square Residual (SRMSR – below 0.08), the Satorra-Bentler adjusted Comparative Fit index and Tucker-Lewis index (above 0.90), and the Root Mean Square Error (RMSEA – below 0.08), all lie within the bounds indicating that these models are at the very least a good to reasonable fit to the data. The adjusted R²s reveal that apartment satisfaction is explained better than developer performance.

Group invariant models: SEM A

Perceived quality (0.477) has the largest influence on apartment satisfaction followed by perceived financial value (0.332), a result repeated across all models. Emotion is less influential (0.156) but plays a significant role. The only insignificant perception is social value. Our questionnaire is designed explicitly to establish a path from perceived values to apartment satisfaction, and a path from apartment satisfaction to developer performance. When rating developer performance, the most important determinant is the satisfaction of the purchased apartment - the standardized direct causal effect is 0.752. In line with Torbica and Stroh (2001), frequent contact (0.156) and prior reputation (0.133), acting as proxies for perceived quality of customer services and trust respectively are influential too.

Group invariant models: Controlling for pre-purchase expectations and tax motivation SEM B

SEM B includes buyer's age as a proxy for pre-purchase expectations in the apartment satisfaction equation, relaxing the implicit assumption in SEM A that it is rational or weak, and a tax motivation variable in the developer performance equation, to assess the extent buyers are incentivised by the opportunity to reduce their tax liabilities. The latter is excluded from the apartment satisfaction equation as it was found to be insignificant in earlier estimations. Its impact (0.250) is almost similar to frequent contact (0.190). Prior reputation becomes insignificant.

Age is significant in determining apartment satisfaction (0.166). Its influence on rating developer performance is mediated by apartment satisfaction. The model fit improves with the inclusion of these two variables (SRMSR = 0.040; RMSEA = 0.062). Perceived social value becomes significant at the 10% level, and it is noticeable that this perception is significantly negatively moderately correlated with age (-0.214, p-value 0.007) - perceived social value tends to be lower when buyers are older – and that age is not correlated with the other perception values across the range of the models reported. We return to both points later.

Group invariant models: Differentiating among buying motivations SEM C

SEM C contains an investor dummy variable to distinguish between homebuyers and investors. While there is no apparent difference among buyers in determining apartment satisfaction, investors seem to give higher ratings for developer performance (0.137, p-value 0.052). However, there is a possible collinearity problem as investor and tax reduction motivations are highly correlated. Their inclusion leads to perceived social value becoming insignificant.

Group models: Homebuyer and investor motivations

The group invariance tests conducted on latent measurements along with the significance of the investor dummies in SEM C suggest possible moderation effects among buyer types, especially in evaluating developer performance. We undertook tests on all models reported in Table 2 but choose to report the results in Figure 1 for a model based on SEM C to focus the discussion on addressing the issues highlighted previously. Equal parameter (group invariant) restrictions are valid for all variables in the apartment satisfaction equation except for perceived financial value ($\chi^2(1) = 2.818$, p-value 0.093) at the 10% significance level. In evaluating developer performance, equal parameter restrictions are clearly rejected for apartment satisfaction ($\chi^2(1) = 4.563$, p-value 0.032) and frequent contact ($\chi^2(1) = 4.958$, p-value 0.026).

The standardized estimates inside and outside the square brackets in Figure 1 refer to investors and homebuyers respectively. The standardized estimates may differ even when equality restrictions are imposed as they additionally reflect the ratio of

variation in values of the predictor and response variables. Variables represented by rectangles are not latent variables. Possible correlations among the perceived values, between perceived values and the observed exogenous variables, and correlation among the observed exogenous variables are permitted without any group invariant restrictions imposed. The correlations between perceived values and the observed control variables and correlation among the observed control variables are not displayed in the diagram to avoid clutter.

[Insert Figure 1: SEM Group Variant Structural Model Results about here]

The SRMSRs reveal that this model fit is reasonable for investors (0.068) and good for homebuyers (0.048). We would like to point out that: (i) the correlations among the perceived values are significant and positive to a moderate degree (figure 1) and are invariant between homebuyers and investors (not reported); (ii) perceived social value is significantly negatively correlated with age for homebuyers only (not reported); and (iii) the other perception measures are uncorrelated with age (not reported). Finding (i) is consistent with multi-dimensional perceived values representing hedonic and utilitarian attitudes being separate but related evaluations: the Sweeney and Soutar (2001) argument that a favourable emotional response is likely to be given alongside a favourable quality response; and also, the institutional economic approach recognising that emotions can be positively associated with cognition (Watkins and McMaster, 2011). We discuss the implications of (ii) and (iii) later as both potentially explain why perceived social value is insignificant.

[Group model: Apartment satisfaction](#)

Among perceptions, the standardized estimates for perceived quality is the highest for homebuyers (0.494 [0.308]). There is a moderating effect on perceived financial value (0.267 [0.417]) revealing it to be a more important consideration for investors. Perceived emotion value is influential. Utilitarian benefits are relatively more important which indicate that evaluations are predominately cognitive. Buyers are expected to make a cognitively dominated decision as housing is a major purchase. As moderation effects are absent for perceived emotions, its role in evaluating satisfaction for homebuyers and investors assumes the same importance (0.216 [0.157]).

Could investors be considering the hedonic features of an apartment from the perspective of potential tenants? Our measurement analysis found that the mean of the latent variable depicting emotion is significantly lower for investors than homebuyers, implying that investors either choose apartments with less affect-rich characteristics or are less appreciative of the affect-rich attributes than homebuyers. Furthermore, the quality of the apartments purchased differed, as homebuyers paid significantly more per square metre (€4,105 per square metre) than investors (€3,800 per square metre) even though they only purchased slightly larger apartments (62 compared with 55 square metres) and expressed similar ratings for liking the neighbourhood. Although our results are not conclusive, it does suggest that investors primarily experience this emotion for themselves rather than as a consideration of the attractiveness of the apartment to a potential tenant.

Group model: Developer performance

Moderation effects are present for apartment satisfaction and frequent contact when rating developer performance. Homebuyers emphasize apartment satisfaction more (0.745 [0.592]) than investors while investors regard frequent contact to be more important than homebuyers (0.112 [0.354]). Prior reputation is no longer influential. There is no moderation effect on tax motivation. Highly tax motivated buyers' give higher ratings to developer performance (0.209 [0.238]). Our explanation is that buyers are grateful for the developer in helping them exploit any tax reduction opportunities under a process linked to the attribution theory (Sparkman and Locander, 1980). Large developers in France often have a system in place to enable its customers to optimize available financial incentives by referring them to a specific agent.

Issue raised: Perceived Social Value

Homebuyers should feel an elevation in their social self-concept (Levy et al., 2008; Jorgenson, 2016). Earlier, we reported it to be the weakest of our perception measure. Another possible explanation is that social value is culturally embedded (Soares et al., 2007) and is not a declared antecedent of satisfaction in France. Our final explanation concerns homebuyer homogeneity. Repeat purchasers (RPs) and first-time buyers (FTBs) respond differently to economic and non-economic factors (Ortalo-Magné and Rady, 2005; Andrew and Meen, 2003). FTBs are likely to feel a greater rise in social

self-concept. FTBs in our sample are younger than RPs, which might explain why age is significantly negatively correlated with perceived social value only for homebuyers. Sample size considerations meant that we could not differentiate further when testing for group invariance. An examination of the summary statistics reported in table (1), informally backs our assertion. The average age of FTBs and RPs are 38 and 49 years respectively. The mean values of perceived social value items (QP7, QP8 and QP9) are higher for FTBs and their relative dispersions (excepting QP9) lower compared to RPs and investors. FTBs report higher scores of items measuring apartment satisfaction and developer performance than RPs but are not as highly driven to reduce their tax liability. This might also explain why the inclusion of variables representing age and tax motivation help to reduce the standard errors of perceived social value.

Conclusion

Qualitative studies report that the emotions are important in determining a housing purchase and buyer satisfaction, but quantitative studies testing this proposition remain rare. This study employed an interdisciplinary approach to examine the role of emotions, adapting a well-established methodology from the economic psychology and marketing literatures. A survey of actual buyers provided the required information to enable us to construct latent measures of four dimensions of perceived values, satisfaction and developer performance to test the proposition that an emotional attachment from 'visualisation' is significantly influential in explaining off-plan apartment purchases in France. As our measures are obtained after a purchase but prior to consumption, they reveal information about the considerations made during purchasing. The derived measures of satisfaction, developer performance and three out of the four perceptions of value turn out to be reliably captured. While the measurement of perceived social value is weaker, the relevant statistical criteria indicate that it is still acceptable to be used in modelling.

Our main contributions are quantitatively validating the following propositions discussed in the literature:

- (i) Consumers' feelings and pleasure derived from interactions between the buyer and the representation of a product are significant in determining purchases, in addition to their perceptions of price and quality (Mathwick et al., 2001; Smith and Colgate, 2007). Our results highlight the relative importance of emotion from 'visualization' as an important affective consideration alongside cognitive reasoning in off-plan housing purchases and buyer satisfaction evaluations;
- (ii) Investing individuals make emotional evaluations in purchasing decisions;
- (iii) Affective and cognitive assessments of utilitarian and hedonic benefits of a dwelling are not contradictory but complementary (Sweeney and Soutar, 2001; Watkins and McMaster, 2011).

Buyers attach greater weight to perceptions of quality and financial value. Homebuyers place more importance on quality and investors on financial value. Emotion is significant but less influential, which suggests that it probably acts to sway the decision to make a purchase. Although there is no significant difference in the weight attached to emotions in explaining satisfaction evaluations between homebuyers and investors, the higher latent mean value reveals that homebuyers express a much higher emotional attachment to the apartment purchased, suggesting that they have a greater appreciation of or seek out dwellings with more affect-rich characteristics.

- (iv) Investors attach greater importance to perceptions about the developer's quality of customer services and the ability to manage client relationships during construction, and less importance to the perceptions about the apartment purchased compared to homebuyers.

Our empirical study has several limitations. Firstly, SEMs applied to estimating cross-sectional data cannot test the direction of causality. As in other empirical studies facing the same problem, such as Cronin et al. (2000), our results are intended to support the causal relationship between perceived values, satisfaction and developer performance identified in the literature. Secondly, SEM relies on the stability of variances and covariances generated by the items used in measurement, which is a

possible concern due to our sample size. We applied estimators using robust standard errors, diagnostic statistics appropriate for small samples and confirmed construct validity. Thirdly, the sample size prevented comprehensive testing for moderation effects, in particular homebuyer heterogeneity. Further investigation into modelling moderation effects among FTBs and RPs and investors should be undertaken. Fourthly, we made inferences for the market from an analysis of customers of a single developer. The determinants of buying decisions, customer satisfaction and rating of developer performance may vary across developers or differ across apartment submarkets (low cost versus luxury markets). Fifthly, our analysis employed age as a proxy control for pre-purchase expectations. An attempt to explicitly measure pre-purchase expectations may shed further light on how buyers evaluate purchases. More thought is required in modelling developer performance as apartment satisfaction is not the only criteria used by buyers in ratings. Psychometric measures of the developer-buyer relationship and trust, could be measured and modelled to validate the extent to which they explain behavioural intentions.

Insights into how developers are rated by buyers would enable them to improve their reputation and off-plan selling, especially in a connected world in which reputation and ratings are easily accessible to potential buyers. There is scope to investigate how developers can improve the emotional value derived from a property representation through new marketing techniques, as recent studies report that virtual technologies (Lang and Sittler, 2013) enhance significantly the level of imagery processing (Schlosser, 2003) in forming favorable product evaluations. It would be informative to examine whether investors' emotional attachment reflects a decision that is not rational or aids in making a rational investment (Ackert et al., 2003). Finally, our understanding would benefit from similar investigations in other countries with different cultural attitudes to homeownership and investing, and development markets.

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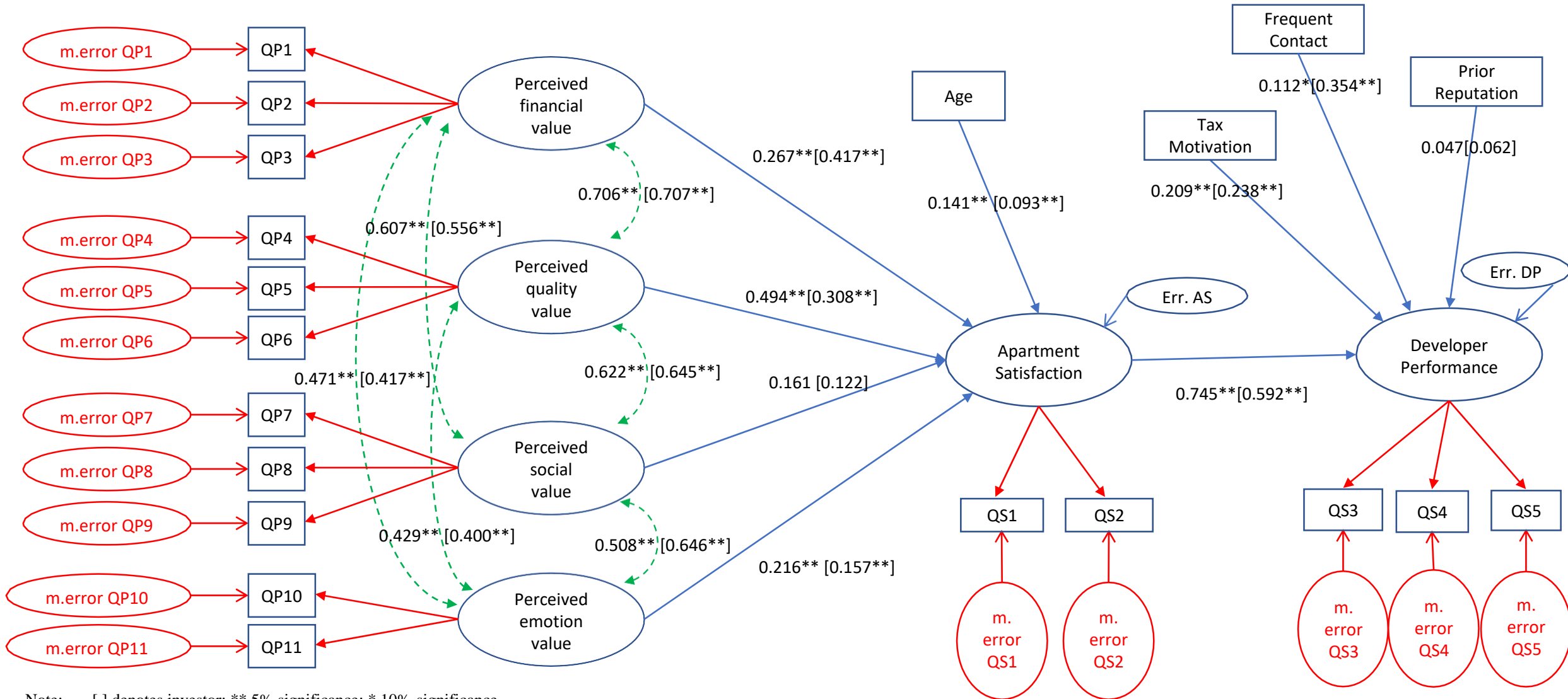
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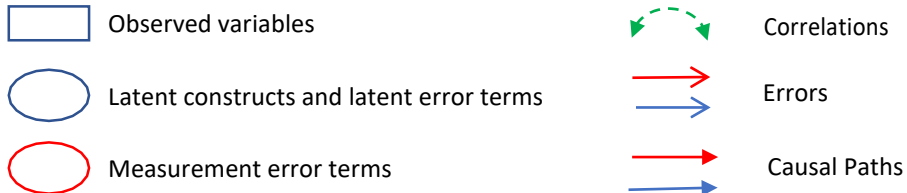
ⁱ Enquête logement is the source for France (1996) and CML Private Landlords Survey 2016 and CLG Private Landlords Survey 2010 for Britain (various years).

ⁱⁱ Cognitive dissonance refers to the state of having inconsistent thoughts, beliefs, or attitudes in relation to a decision/behavioural action. A respondent might be thinking "I bought the house, I better like it" when answering the survey questions. This can lead to an empirical observation of a reversal in the direction of causality.

Figure 1: SEM Group Variant Structural Model Results



Note: [] denotes investor; ** 5% significance; * 10% significance



	Homebuyers	Investors
N	117	78
SRMSR	0.048	0.068
R ² Apartment	0.89	0.72
R ² Developer	0.68	0.67

Table 1: Descriptive statistics and fraction of variance explained

Multiple Scale Items [English Translation]	Scale	Total database (n = 195)			First-time Buyers (n = 52)			Repeat Buyers (n = 65)			Home Buyers (n = 52 + 65 = 117)		Investors (n = 78)	
		Mean	Std Dev	R ²	Mean	Std Dev	CV	Mean	Std Dev	CV	Mean	Std Dev	Mean	Std Dev
Apartment Satisfaction														
QS1: I am happy/satisfied to own this house	1 to 5	4.11	0.89	0.77	4.44	0.75	0.17	3.95	0.78	0.20	4.17	0.80	4.01	1.00
QS2: This house meets my requirements	1 to 5	3.86	0.82	0.61	3.96	0.82	0.21	3.88	0.78	0.20	3.91	0.79	3.77	0.85
Developer Performance														
QS3: How satisfied are you with the relations with this developer?	0 to 20	15.23	4.37	0.82	15.23	4.26	0.28	14.60	4.95	0.34	14.88	4.65	15.74	3.88
QS4: Would you recommend this developer to your relatives?	0 to 20	15.34	4.61	0.95	15.46	4.27	0.28	14.38	5.44	0.38	14.86	4.96	16.06	3.95
QS5: In the future, would you buy a property from this developer?	0 to 20	14.86	4.79	0.90	15.17	4.26	0.28	13.97	5.60	0.40	14.50	5.06	15.40	4.32
Perceived Financial Value														
QP1: This house is a good deal/bargain for the price	0 to 20	12.16	4.10	0.71	12.83	4.01	0.31	11.22	4.37	0.39	11.93	4.28	12.51	3.83
QP2: This house offers value for money	0 to 20	13.30	3.95	0.85	14.25	2.75	0.19	12.31	4.62	0.38	13.17	4.00	13.50	3.88
QP3: This house is a good financial investment	0 to 20	13.42	4.15	0.73	14.08	3.59	0.26	12.31	4.75	0.39	13.09	4.35	13.90	3.81
Perceived Quality Value														
QP4: This house has an acceptable standard of quality	0 to 20	12.82	4.59	0.86	13.60	3.67	0.27	12.03	5.24	0.44	12.73	4.65	12.96	4.52
QP5: This house will last a long time	0 to 20	12.81	4.21	0.87	13.92	3.63	0.26	11.72	4.81	0.41	12.70	4.45	12.97	3.85
QP6: The materials used to build this house are good quality	0 to 20	12.77	4.60	0.82	13.52	4.49	0.33	11.94	4.78	0.40	12.64	4.70	12.96	4.47
Perceived Social Value														
QP7: I am proud to be the owner of this house/apartment	1 to 5	3.62	0.89	0.78	3.94	0.80	0.20	3.57	0.79	0.22	3.74	0.81	3.44	0.97
QP8: This house improves the way I am perceived by my family/relatives	1 to 5	3.81	0.83	0.52	4.17	0.65	0.16	3.62	0.82	0.23	3.86	0.80	3.73	0.88
QP9: This apartment is for me like a social gratification	1 to 5	3.26	1.00	0.44	3.48	1.08	0.31	3.08	0.91	0.29	3.26	1.00	3.27	1.00
Perceived Emotion Value														
QP10: It will be a pleasure to live in this house	1 to 5	3.88	0.85	0.79	4.31	0.67	0.16	3.75	0.87	0.23	4.00	0.83	3.71	0.85
QP11: We feel good about this accommodation	1 to 5	3.78	0.91	0.95	4.15	0.78	0.19	3.71	0.90	0.24	3.91	0.87	3.59	0.95
Additional Controls														
Buyer's age/100	continuous	0.45	0.14	n.a.	0.38	0.11	0.29	0.49	0.14	0.28	0.44	0.14	0.46	0.13
Frequent Contact (Dummy) : It was easy to contact the developer's agent	0 or 1	0.68	0.47	n.a.	0.79	0.41	0.52	0.68	0.47	0.70	0.73	0.45	0.60	0.49
Tax Motivated: Would you say that the purchase of this house is mainly motivated by tax reduction considerations?	0 to 20	9.58	7.82	n.a.	6.13	6.54	1.07	7.52	7.98	1.06	6.91	7.38	13.60	6.69
Prior Reputation (Dummy): Client origin [1 = from recommendation or reputation]	0 or 1	0.38	0.48	n.a.	0.33	0.47	1.45	0.35	0.48	1.36	0.34	0.48	0.45	0.50
Investor (Dummy)	0 or 1	0.40	0.49	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Note: CV = Coefficient of Variation
R²= the fraction of the variance of the item explained by the latent variable

Table 2: Structural (Group Invariant) Model Results and Diagnostics

Equations and Variables	SEM A		SEM B		SEM C	
	estimate	p-value	estimate	p-value	estimate	p-value
Apartment Satisfaction (ApartSat)						
Perceived Financial Value [PerPrice]	0.332	0.000	0.331	0.000	0.340	0.000
Perceived Quality Value [PerQual]	0.477	0.000	0.428	0.000	0.437	0.000
Perceived Social Value [PerSoc]	0.099	0.291	0.168	0.083	0.150	0.112
Perceived Emotion Value [PerEmo]	0.156	0.046	0.181	0.017	0.165	0.025
Buyer's age	n.a.	n.a.	0.166	0.001	0.162	0.001
Investor	n.a.	n.a.	n.a.	n.a.	-0.118	0.123
Developer Performance (DevPer)						
Apartment Satisfaction Value	0.752	0.000	0.708	0.000	0.721	0.000
Frequent Contact	0.156	0.004	0.190	0.000	0.194	0.000
Prior Reputation	0.133	0.011	0.057	0.225	0.059	0.206
Tax Motivation	n.a.	n.a.	0.250	0.000	0.213	0.000
Investor	n.a.	n.a.	n.a.	n.a.	0.137	0.052
Selected Correlations in Measurement Model						
[Perceived Financial Value, Perceived Quality]	0.704	0.000	0.704	0.000	0.704	0.000
[Perceived Financial Value, Perceived Social Value]	0.566	0.000	0.565	0.000	0.564	0.000
[Perceived Financial Value, Perceived Emotion]	0.428	0.000	0.428	0.000	0.428	0.000
[Perceived Quality, Perceived Social Value]	0.617	0.000	0.616	0.000	0.613	0.000
[Perceived Quality, Perceived Emotion]	0.401	0.000	0.401	0.000	0.401	0.000
[Perceived Social Value, Perceived Emotion]	0.587	0.000	0.586	0.000	0.584	0.000
[Perceived Financial Value, Age]	n.a.	n.a.	-0.108	0.152	-0.109	0.151
[Perceived Quality, Age]	n.a.	n.a.	-0.062	0.424	-0.062	0.424
[Perceived Social Value, Age]	n.a.	n.a.	-0.214	0.007	-0.214	0.007
[Perceived Emotion, Age]	n.a.	n.a.	-0.059	0.449	-0.059	0.450
N	195		195		195	
Model Diagnostics						
Standardized root mean squared residual SRMSR	0.045	n.a	0.040	n.a	0.039	n.a
R ² Apartment Satisfaction Equation	0.81	n.a	0.84	n.a	0.85	n.a
R ² Developer Satisfaction Equation	0.64	n.a	0.69	n.a	0.69	n.a
Satorra-Bentler: model vs. saturated:	$\chi^2(115)=216.80$	0.000	$\chi^2(137)= 240.57$	0.000	$\chi^2(147)=251.38$	0.000
Satorra-Bentler: baseline vs. saturated:	$\chi^2(152)=2464.04$	0.000	$\chi^2(168)= 2639.01$	0.000	$\chi^2(200)=2698.41$	0.000
Root Mean Square Error Approximation (RMSEA)	0.067	n.a	0.062	n.a	0.060	n.a
Akaike's information criterion (AIC)	11623.7	n.a	12688.5	n.a	12936.1	n.a
Bayesian information criterion (BIC)	11865.9	n.a	12992.9	n.a	13279.7	n.a
Comparative fit index	0.956	n.a	0.958	n.a	0.958	n.a
Tucker-Lewis index	0.942	n.a	0.943	n.a	0.943	n.a

n.a. not applicable

SRMSR values below 0.05 indicate an excellent fit and values between 0.08 to 0.05 a good to reasonable fit to the data ;

RMSEA values below 0.08 indicate a good fit ;

The comparative fit index (CFI) and Tucker-Lewis index (TLI) fall within the recognized cut-off range 0.90.

Fit refers to how well the estimated variance covariance matrix matches the sample variance covariance matrix.