

USE OF THE CONJOINT ANALYSIS TECHNIQUE TO ESTABLISH THE PERCEIVED QUALITY OF BUILDING MATERIALS IN THE RESIDENTIAL USE. PRELIMINARY STUDIES.



The investigation report, initiated in October 2008 with the thesis's Master on Urban and Management, is included in the area of investigation about Urban and Architectonic Valuation. The report's objective is to demonstrate the influence of the perceived quality of building materials when calculating an estimated market value of the property.

To get this objective, we have to design an approximation to the indicator of the perceived quality of building materials in order to improve and simplify the difficulties and problems aroused from the calculation of a more accurate market value estimate.

At this point of the investigation, developed at the *Politecnico di Torino*, we have to emphasize the importance of the utility of the product from the point of view of maximization, to establish the values of the demand and how they influence in the people's final decision.

Up to this point, we can resume that the investigation starts with the idea of the evaluation made by a person to chose something or to get a service, depending of his personal interest, his preferences and the logic. Each person chooses an item or gets a service based on the utility reported from the intrinsic attributes that determine his preferences.

We defined the **main objective** at the Politecnico di Torino, based on the use of the Conjoint Analysis's Method (CA) for the design of the approximation to the indicator of the perceived quality of the used materials, evaluating the level of well-being reported to the users and building experts when a specific group of attributes is applied in pavements and exterior coatings.



Specific objectives of the investigation:

1. To analyze and study the existing documentation about the *Conjoint Analysis's Method (CA)* and its evolution.
2. To learn the *Adaptive Conjoint Analysis's Method (ACA)* and the real possibilities it has to be applied in our investigation.
3. To create a sampler survey (pre-test) directed to users and building experts with the objective of establishing the correct attributes' level in the final survey.
4. To elaborate a final survey directed to users and building experts with the objective of knowing their opinion about the perceived quality of building materials and evaluate the results to open different ways of investigation.
5. To establish the necessary attributes to define the investigation's objective and the relative levels to the estimation of the utility of the building materials in areas with high humidity, different kinds of pavements and interior coatings.
6. To analyze the coherence of the results obtained from the survey about the subjective perceptions from users and building experts with the Adaptive Conjoint Analysis's Method (ACA) for the use of pavements and coatings, depending of the chosen material, its location and its uses in the property.
7. To compare the results obtained from the ACA and the SPSS methods.
8. To resume the conclusions.

The **methodology** is focused in showing the making of the preliminary and final surveys for the quantitative and interactive interview. First, the interviews are in Spain within the province of Alicante to keep the delimitation of the research conducted with the technique of SPSS. The results from the survey were obtained randomly in different towns and public locations where users, technical personnel and professionals in this field were.

We would like to mention that to elaborate the correct designs of the preliminary and final surveys, we have used the *Partial Profile* method, included in SMRTv.48 from the *Adaptive Conjoint Analysis* software.

The interview starts establishing a code number to be able to compare the information at any moment, continuing with a brief summary about the research's objective with the intention of taking the interviewee to the right context.

Once we have gotten it, we start with the first part of the interview, which contains seven social-demographic variables: gender, age, marital status, education level, family income's level, number of people living in the house and size of the house (see graphic number 1). Then, the interview continues with eight affirmations, meditating the eight attributes and their different levels in order to reject the non-preferred building materials, according to localization and residential use (see graphic number 2).

The objective of the second part of the interview is to detect the best and the worst perceived materials, appreciating the preferences in pavements and coatings for kitchens, bathrooms, living rooms and bedrooms. Then, each interviewee sorts in a Likert scale (from 1 to 5) utilities of different levels of the attributes of the materials included in the survey, using the Rating scale mode. The third part of the interview aims to graduate and ordering preferences of the interviewed people about building materials which, as alternatives to the under analysis are shown for a location and concrete implementation of the housing (see graphic number 3). The next step will be to change from the Partial Profile to the pair's comparison. To be able to do it, the interviewee is asked about the preferred alternative included in the preliminary survey, giving a rate from 1 to 5 in the Likert scale. With all these questions and answers, the preliminary survey gives two casuistries, six questions made from the combination of two levels (importance) (see graphic number 4) and another six questions made from more than two levels (pairs) (see graphic number 5), The preliminary survey ends with the fifth part, named Calibration Concepts (see graphic number 6) where a range of possible solutions is given to the interviewee when choosing between different building materials for pavements and coatings in residential use.



Por favor indique con un click su nivel de estudios finalizados

Sin estudios

Primarios incompletos

Primarios completos

Secundarios

Bachillerato

Formación profesional

Universitarios

Graphic 1

Seleccione cualquier material de construcción que considere inaceptable para pavimentar un baño de uso residencial. Continúe con un click cuando todos los materiales de construcción los considere válidos para pavimentar un baño de uso residencial

PARQUET EN BAÑO PARA PAVIMENTO

TARIMA EN BAÑO PARA PAVIMENTO

AZULEJO EN BAÑO PARA PAVIMENTO

GRES ESMALTADO EN BAÑO PARA PAVIMENTO

GRES PORCELÁNICO EN BAÑO PARA PAVIMENTO

GRES RÚSTICO EN BAÑO PARA PAVIMENTO

MÁRMOL EN BAÑO PARA PAVIMENTO

GRANITO EN BAÑO PARA PAVIMENTO

PIZARRA EN BAÑO PARA PAVIMENTO

TERRAZO EN BAÑO PARA PAVIMENTO

Tenga en cuenta que exclusivamente elimina los materiales de construcción que no considere aceptables para esa estancia y ubicación concreta. Si se elimina una característica por error, simplemente haga click de nuevo para cambiar su respuesta

Graphic 2

Por favor cuantifique el material según su preferencia. Tenga en cuenta que 1 es no deseable/preferible, 2 es algo deseable/preferible, 3 indiferente, 4 muy deseable/preferible, 5 extremadamente deseable/preferible

	1	2	3	4	5
PARQUET EN BAÑO PARA PAVIMENTO					
TARIMA EN BAÑO PARA PAVIMENTO					
AZULEJO EN BAÑO PARA PAVIMENTO					
GRES ESMALTADO EN BAÑO PARA PAVIMENTO					
GRES PORCELÁNICO EN BAÑO PARA PAVIMENTO					
GRES RÚSTICO EN BAÑO PARA PAVIMENTO					
MÁRMOL EN BAÑO PARA PAVIMENTO					
GRANITO EN BAÑO PARA PAVIMENTO					
PIZARRA EN BAÑO PARA PAVIMENTO					
TERRAZO EN BAÑO PARA PAVIMENTO					

Por favor para otra alternativa, haga click sobre este icono y explique su opinión de preferencia

Graphic 3

Si le dejarán elegir ¿Qué opción de las dos propuestas prefiere usted para un uso residencial?

AZULEJO EN BAÑO PARA REVESTIMIENTO	o	GRANITO EN BAÑO PARA REVESTIMIENTO
TARIMA EN DORMITORIO PARA PAVIMENTO		MÁRMOL EN DORMITORIO PARA PAVIMENTO

1 2 3 4 5

Por favor haga click en el número que mejor describa su opinión. Tenga en cuenta que 1 es no deseable/preferible, 2 es algo deseable/preferible, 3 indiferente, 4 muy deseable/preferible, 5 Extremadamente deseable/preferible

Graphic 4

De las dos opciones propuestas ¿Qué material prefiere usted considerando un uso residencial?

AZULEJO EN BAÑO PARA PAVIMENTO

en lugar de

GRES PORCELÁNICO EN BAÑO PARA PAVIMENTO

1 2 3 4 5

Por favor haga click en el número que mejor describa su opinión. Tenga en cuenta que 1 es no deseable/preferible, 2 es algo deseable/preferible, 3 indiferente, 4 muy deseable/preferible, 5 Extremadamente deseable/preferible

Graphic 5

¿Cuánto le satisface esta elección de materiales de construcción para pavimentos y revestimientos de un uso residencial?

GRES RÚSTICO EN SALÓN PARA PAVIMENTO

GRES RÚSTICO EN DORMITORIO PARA PAVIMENTO

GRES PORCELÁNICO EN COCINA PARA REVESTIMIENTO

GRES RÚSTICO EN COCINA PARA PAVIMENTO

GRES PORCELÁNICO EN SALÓN PARA REVESTIMIENTO

GRES PORCELÁNICO EN BAÑO PARA REVESTIMIENTO

Definitivamente no le agrada como materiales para una vivienda

Definitivamente si le agrada como materiales para una vivienda

100

Por favor posicione la fecha de la escala en el número que mejor describa su opinión. Tenga en cuenta que en esta escala "0" significa absolutamente NO; y "100" significa absolutamente SI

Graphic 6

ConclusionsG

In a highly competitive industry as is the current context, accentuated also by growing globalization, the perception of the quality of the building materials in residential use represents an impact on the estimation of the market value and consequently in the behavior of the user. Therefore the satisfaction of the needs and preferences of users should be clear, allowing evaluators to maximize the market value estimate and possibly increase profits in companies aimed at the construction industry.

Analysis of the qualitative questionnaires surveys using the techniques of SPSS and ACA, with verification through this last technique, indicates that users are willing to pay more for a house that shows a clear positive assessment on their perception of building materials. The best perceived materials are wood, ceramic and natural stone, in pavements, and paints and papers in interior coatings in residential use. In the case of paving in bedrooms and living rooms, it consists mainly in parquet and/or wooden flooring accepting also marble in particular occasions, which confirms the importance of the esthetic preferences of the users for the quality of the material and the intention of showing their high level of wellness. Similarly, in vertical coatings users prefer paper and painting due, possibly, to a low-cost and multiple decorative possibilities.

Estimation of the relative importance of the attributes evaluated in this report, shows the high importance of the localization of the building material in the final perception on the choice of the user. As a final conclusion, we will say that users perceive all materials giving priority to quality against the aesthetic appearance.