



RELATIVE IMPACT OF DIFFERENT INFLUENCING FACTORS ON APARTMENT VALUE

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ABSTRACT

The calculation of the so-called “general property value” of an apartment in Slovakian (i.e. a part of audit in which the value of co-ownership share of landed property on which the dwelling is build is not yet taken into account), uses “method of positional differentiation” that includes sixteen (16) different factors with five (5) corresponding classes.

This contribution points out, how large is the relative impact of different factor. in calculation of General Property Value by Method of Positional Differentiation. This article compares the factor 3 (Recent technical state of the dwelling house and apartment), factor 6 (Accessories and facilities in the apartment, i.e renovated, new or old), factor 12 (Infrastructure - train, bus, etc) and factor 13 (Infrastructure - services (post office, bank, kindergarten, hospital, shops).

INTRODUCTION

The additional thermal insulation has a significant impact on the property valuation. Even the starting values¹ for an apartment valuation can be improved with a modification of coefficient k_v containing type of building structures, *finishings (additional insulation included)*, facilities (standard level = 1, better level > 1, worse level < 1). Afterwards, a calculation of building technical value² presents starting values reduced by a value of amortization while the building life-cycle is increased about 20 years as the additional insulation was applied. Type of the additional thermal insulation system has a significant impact on acoustic properties of the wall envelope and depending on a type of the ETICS sound insulation may increase, stay the same or, in some cases, even decrease [1,2].

Finally, the 16 factors influencing an apartment valuation are included in calculation of *General Property Value* by Method of Positional Differentiation. Besides the named factors (Fig.1, Tab.1) also other factors e.g. size, age of the apartment (in connection therewith amortization), lifecycle of constructions, energetic performance, etc. have impact on the final price.

During the years, it has been confirmed that acoustic comfort in dwellings can have significant impact not only on living standard but can also affect human health, in terms of insomnia or other diseases [5,6,7]. In the recent calculation algorithms the acoustic situation inside buildings, such as installation noise, façade insulation or insulation between apartments are not really taken into account [8]. The case study example verifies if the sound insulation – as a factor in calculation of General Property Value has a significant influence on an apartment valuation.

¹ Starting values $VH = M \cdot (RU \cdot k_{CU} \cdot k_v \cdot k_{ZP} \cdot k_{VP} \cdot k_K \cdot k_M)$ [Sk],

² Calculation of building technical value $TH = VH - HO$ [Sk], VH – value of amortization,

CALCULATION METHOD

Categories of individual factors affect the calculation of the coefficient of positional differentiation k_{pd} and thereby *General Property Value* $V\dot{S}H = TH * k_{pd}$, where TH is the property technical value. The calculation of co-ownership share of landed property is not taken into account.

Table 1. Description of different factors and their weight in recent calculation algorithm used in Slovakia

No	description of a factor	weight	%
1	Real estate market in the given location	10	7%
2	Location of the dwelling house in relation to city center etc.	30	21%
3	Recent technical state of the dwelling house and apartment	7	5%
4	Infrastructure around the dwelling house (sports facilities, parks etc.)	5	3%
5	Facilities inside the dwelling house	6	4%
6	Accessories and facilities in the apartment (renovated, new or old)	10	7%
7	Employment possibilities	8	6%
8	Inhabitants in dwelling house and nearby (density of population etc)	6	4%
9	Orientation of the living rooms (north, south, east, west)	5	3%
10	Position of the apartment in the dwelling house (floor etc)	9	6%
11	Number of apartments in the block of the dwelling	7	5%
12	Infrastructure - train, bus, etc.	7	5%
13	Infrastructure - services (post office, bank, kindergarten, hospital, shops)	6	4%
14	Natural resort nearby	4	3%
15	Quality of living environment (noise and air pollution, drinking water)	5	3%
16	Experts opinion	20	14%

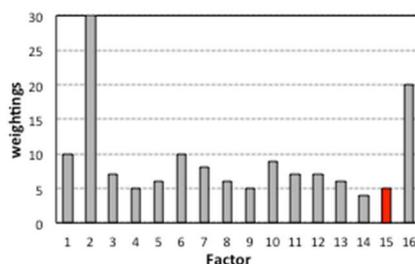


Figure 1: Weights of 16 main parameters that are taken into consideration when calculating the value of apartment in Slovakia.

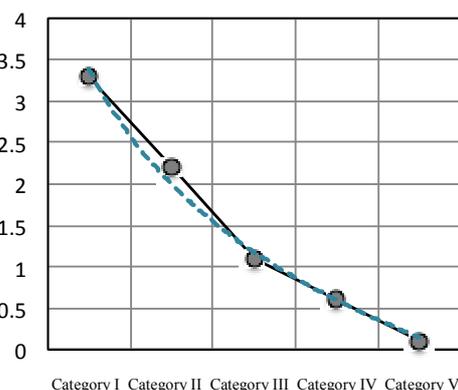


Figure 2: Distribution of the five categories used within each of 16 mentioned factors that are taken into consideration when calculating the value of apartment in Slovakia.

In the given standard calculation system (used also in the Hypo software), each factor is described by 5 basic categories (Fig.2) expressing the qualitative situation (within each factor). If we look at the weights we will see, that the distribution of categories in the calculation algorithm is not linear. This generally used calculation method distributes categories more or less logarithmically.

CASE STUDY

The case study presents a 2 rooms flat in an older residential building (from 50-ties) in the city center of Bratislava. Assessed apartment is some 10 minutes walking distance from the historic centre in Bratislava, 5 minutes walking distance from the main bus station and 10 min from large shopping mall near river Danube call Eurovea (Fig.3). The floor surface of the apartment is 64 m².

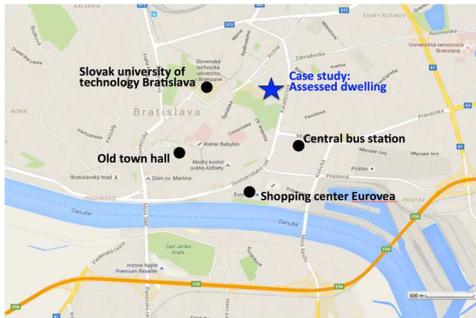


Figure 2: Map of Bratislava with indication of the case study (i red)



Figure 3: Picture of the dwelling house with indication of the apartment chosen for the case study.

The dwelling house is situated nearby a park “Medická záhrada“ and St Andrew's Cemetery „Ondrejský cintorín“, which is a historic cemetery, protected as a National Culture Heritage. While the park Medická záhrada provides a space for old and young people to relax, play games, picnics and sports, Ondrejský cintorín is a city park with a quiet and meditative atmosphere. The property in question is situated at only 10 minutes walking distance from the historical part in Old City (town hall and Main Square) in Bratislava.

CALCULATION OF THE APARTMENT VALUE

The General Property Value of the apartment (e.g. without taking into account share of landed property) have been estimated to 126 370, - EUR. The value of the co-ownership share of landed for the given apartment at the given location, in a multi-storey building was evaluated to 16 668, - EUR.

INFLUENCE OF DIFFERENT FACTORS ON THE VALUE

The value of the apartment was calculated for all five categories within 4 chosen Factors No.3, No.6, No.12, No.13 and No.15, summarized in matrixes of values shown in the Tables 2-5 and Figures 5-7. Factor No.3 (Recent technical state of the dwelling house and apartment) has weight 7, which in the global weighting system corresponds to 5%. Factor No.6 (Accessories and facilities in the apartment, renovated, new or old) is in the recent calculations the most influencing factor with an absolute weight 10 (and corresponding relative weight of 7%). Factor No.12 (Infrastructure - train, bus, etc.) is in the recent calculations the most influencing factor with an absolute weight 7 (and corresponding relative weight of 5%). Factor No.13 (Infrastructure – services, post office, bank, kindergarten, hospital, shops) is in the recent calculations the most influencing factor with an absolute weight 6 (and corresponding relative weight of 4%). Factor No.15, which deals with noise, air and water pollution, has in the recent calculation scheme weight 4 which corresponds to 3%.

Factor No.3 (e.g. recent technical state of the dwelling house and apartment) distinguishes: (Category 1) very well maintained property, (Category 2) property does not require repairs only ordinary maintenance, (Category 3) property requires repairs, (Category 4) property requires major repair, renewal, (Category 5) property requires immediate major repair, renewal.

Factor No.6 (e.g. facilities - finishings, accessories of apartment) distinguishes: (Category 1) comprehensively renewed apartment with high standard equipment, or new apartment with high standard equipment, (Category 2) comprehensively renewed apartment with standard equipment, or new apartment with standard equipment, (Category 3) service core and kitchen renovations performed, (Category 4) without performing renovations, with uniform refurbishing, (Category 5) apartment requiring an extensive renovation.

Factor No.12 (e.g. infrastructure - train, bus, etc., transport nearby apartment building) distinguishes following classes: (Category 1) railway, bus, local transport, taxi – within reach in 5 minutes, (Category 2) railway, bus, local transport, taxi – within reach in 10 minutes, (Category 3) bus, local transport – within reach in 15 minutes, (Category 4) bus – within reach in 15 minutes, and (Category 5) no transport, or some at a distance of 2 km.

Factor No.13 (e.g. infrastructure – services-post office, bank, kindergarten, hospital, shops) distinguishes following classes: (Category 1) post office, bank, school, kindergarten, nursery school, hospital, theater, complete network of shops and services, (Category 2) post office, school, health center, cultural center, complete network of shops and essential services, (Category 3) post office, primary school, health center, cultural center, basic network of shops and essential services, (Category 4) post office, school – 1st level, doctor, dentist, restaurants, grocery stores and manufactured goods, and (Category 5) no civic amenities.

Factor No.15 (e.g. noise and air pollution) distinguishes following classes: (Category 1) quiet environment without pollution of air or water, (Category 2) ordinary noise and air quality conditions, (Category 3) increased pollution and noise near main traffic roads, (Category 4) increased noise and air pollution, exhalants or smells, and (Category 5) very noisy and polluted areas, presence of radon or water pollutions etc.

CASE STUDY RESULTS

The rows in the Tables 2 shows dependence of apartment value on the noise and air quality in different technical state of the dwelling house and apartment (expressed by columns). In Figure 5, arrows indicate the same value depending on different classes in Factor 3 and 15. For example, if we would like to keep the price of the apartment in different technical state of building from category III to category V, we would need to improve the quality of the environment from Class III to Class II.

Table 3: Summary of calculated prices for different categories of the Factor 15 and Factor 6.

	Factor 15 -cat1	Factor 15 -cat2	Factor 15 -cat3	Factor 15 -cat4	Factor 15 -cat5
Factor 3 - cat1	164 688,48	162 150,70	159 612,92	158 477,60	157 342,28
Factor 3 - cat2	161 082,16	158 544,39	156 073,39	154 938,07	153 735,96
Factor 3 - cat3	157 542,63	155 004,85	152 467,07	151 331,75	150 196,43
Factor 3 - cat4	155 939,82	153 468,83	150 931,05	149 728,94	148 593,62
Factor 3 - cat5	154 403,80	151 866,02	149 328,24	148 192,92	147 057,60

Table 2: Summary of calculated prices for different categories of the Factor 15 and Factor 3.

	Factor 15 -cat1	Factor 15 -cat2	Factor 15 -cat3	Factor 15 -cat4	Factor 15 -cat5
Factor 6 - cat1	166 157,72	163 619,94	161 082,16	159 946,84	158 811,52
Factor 6 - cat2	161 082,16	158 544,39	156 073,39	154 938,07	153 735,96
Factor 6 - cat3	156 073,39	153 535,61	150 997,83	149 862,51	148 727,19
Factor 6 - cat4	153 735,96	151 198,18	148 727,19	147 591,87	146 389,76
Factor 6 - cat5	151 465,32	148 927,54	146 389,76	145 254,44	144 119,12

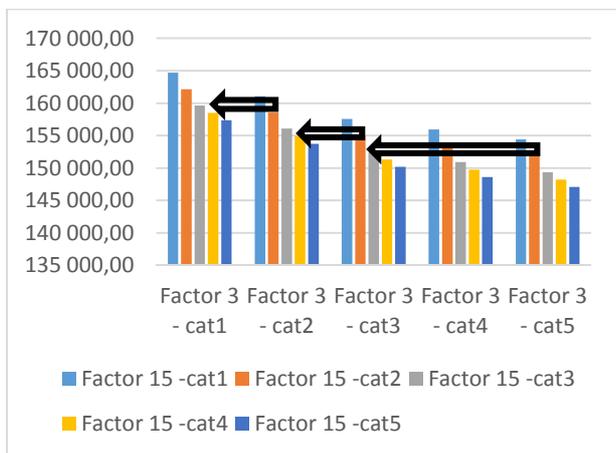


Figure 5. Columns in example show to what extend can Factor No.15 and Factor No.3 influence the apartment value.

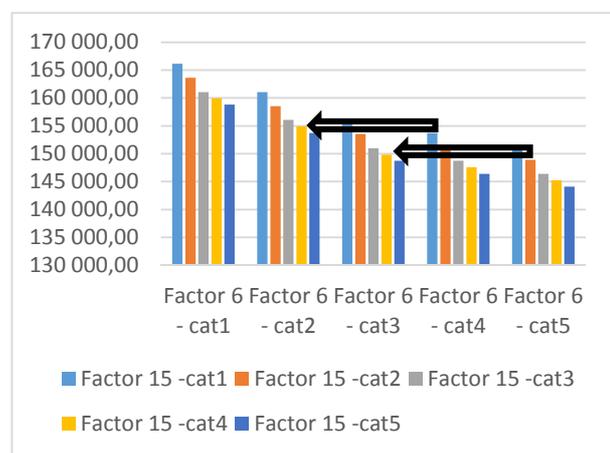


Figure 6. Columns in example show to what extend can Factor No.15 and Factor No.6 influence the apartment value

In the Tables 3 the rows express the value changes depending on the noise, water and air quality under different facilities - finishings, accessories of apartment (Factor No.6) given in columns. Figure 6 is related to the Table 3 and arrows indicate the same apartment value depending on different categories in Factor 6 and 15. Some conclusions can be carried out from the figure. For instance: keeping the price of the apartment under different facilities, accessories category II to category IV, it is needed to improve the quality of the environment from category V to category I. The influence of quality of the environment is evident mainly in columns with lower category of apartment facilities or furbishment.

Table 4. Summary of calculated prices for different categories of the Factor 15 and Factor 13.

	Factor 15 -cat1	Factor 15 -cat2	Factor 15 -cat3	Factor 15 -cat4	Factor 15 -cat5
Factor 13 - cat1	161 082,16	158 544,39	156 073,39	154 938,07	153 735,96
Factor 13 - cat2	158 076,90	155 539,12	153 001,34	151 866,02	150 730,70
Factor 13 - cat3	155 004,85	152 467,07	149 996,08	148 793,97	147 658,65
Factor 13 - cat4	153 669,18	151 131,40	148 593,62	147 458,30	146 322,98
Factor 13 - cat5	152 266,72	149 728,94	147 257,95	146 122,63	144 920,52

Table 5. Summary of calculated prices for different categories of the Factor 15 and Factor 12.

	Factor 15 -cat1	Factor 15 -cat2	Factor 15 -cat3	Factor 15 -cat4	Factor 15 -cat5
Factor 12 - cat1	161 082,16	158 544,39	156 073,39	154 938,07	153 735,96
Factor 12 - cat2	157 542,63	155 004,85	152 467,07	151 331,75	150 196,43
Factor 12 - cat3	154 003,10	151 465,32	148 927,54	147 792,22	146 656,90
Factor 12 - cat4	152 400,29	149 862,51	147 324,73	146 189,41	145 054,09
Factor 12 - cat5	150 797,48	148 259,70	145 788,71	144 653,39	143 451,28

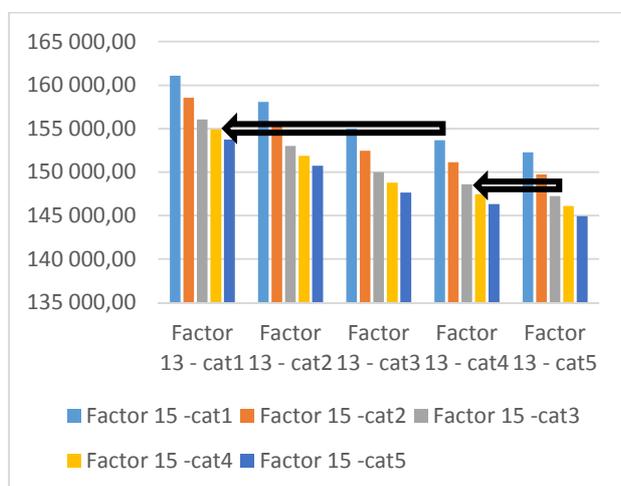


Figure 7. Columns in example show to what extent can Factor No.15 and Factor No.13 influence the apartment value.

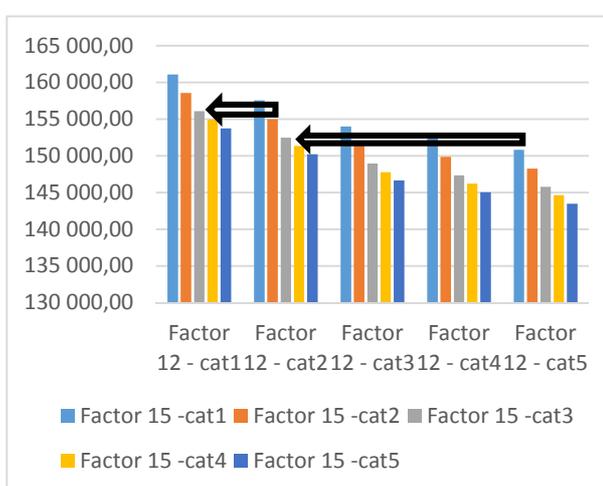


Figure 8. Columns in example show to what extent can Factor No.15 and Factor No.12 influence the apartment value.

The next comparison relates to the Factor No.13 describing infrastructure; services - post office, bank, kindergarten, hospital, shop nearby of the apartment and the environmental Factor No.15 (Table 4 and Figure 7). The last example describes the relationship of the Factor No. 12 (infrastructure - train, bus, etc., transport nearby apartment building) and the environmental Factor No.15 (Table 5 and Figure 8). Both figures No.7 and No.8 show that the environment will have impact only in “middle and lower” categories of the Factor 13 and the Factor 12.

CONCLUSIONS

Generally, the environmental factor No.15 doesn't show an important impact on an apartment value. If the factors used in the case study “move” an apartment in unfavourable categories, the environmental factor can influence the value of a dwelling more significantly.

In fact, complaints of inhabitants show that acoustic comfort is considered as an important parameter in an assessment of living standard. [2, 3,4]. Therefore, it is needed to revise the weights of the 16 factors according to the nowadays requirements in the general property value or to modify coefficient kv containing type of building structures in calculation of the starting value.

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