Housing performance, data management and decisionmaking
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ABSTRACT

This paper focusses on performance measurement in the framework of the strategic housing management. Reference is made to a research on behalf of two housing associations in the Netherlands.

The performance measurement is an element in the methodology of intervention planning and market positioning of housing estates.

Aside of the measurement of technical and functional performances in this methodology market-technical and price-technical data are processed.

These data collections, eventually, can be completed with data of consumer’s living appreciation.

An insight is acquired based on this methodology in:
- the market position of the estate;
- the performances of the dwelling and living environment;
- the relative position among estates.

Diverse performance aspects and performance levels can be distinguished in the offered representation. The presented performance measurement is dealt with from the angles of the dwelling and living environment;

On the level of the estate the performances are represented in the form of a quality profile.

To enable the comparison of performances on the portfolio level a performance-index is developed, a so-called Housing Performance Rate (HPR).

The performance measurement on estate and portfolio level is the basis of diverse management decisions on the level of particular estates, as well as on portfolio level, such as quality policy, rent policy, target groups policy and policies concerning neighbourhood management.

1. INTRODUCTION

In the light of problems in rentability and decreasing proceeds real estate managers are increasingly interested in the measurement of the performances of their real estates.

First of all a performance measurement is of great importance in the occupancy phase of the estate.

Quality in the occupancy phase is determined by the rate of match between offered and demanded performances.

In case of a mismatch between offered and demanded performances in some parts
on certain moments management interventions will become necessary. Performance knowledge is not only necessary in the occupancy phase, but also in the other phases of the building process (initiative-, programme-, design- and construction phase) insight in the required performances is necessary (RGD 1992).

To agree on required quality levels with other market parties the client will formulate already in a very early stage (the initiative phase) the required performances.

In the programming phase performance requirements form important preconditions in negotiations with the developer. For the designer performance requirements form on one side limitations and on the other hand design freedom. For the constructor performance descriptions form the framework for possible technical solutions.

Setting of performances in the diverse phases of the building process is not only an important guideline for the parties, but is has also an important communication function among the different market parties.

Unambiguous formulated performances prevent differences of interpretation in the communication among the diverse parties (REM, 1992).

In the hereby presented strategy the performance measurement relates only to the occupancy phase of the building process. We also restrict ourselves to the real estate object "dwelling".

The performance measurement forms part of the strategic management of one housing portfolio.

2. PERFORMANCE MEASUREMENT AS PART OF STRATEGIC HOUSING MANAGEMENT

Performance measurement forms part of strategic decisionmaking. In the diverse steps of this decisionmaking process insight in the offered and required performances is desirable. Especially in the course of locating strong and weak points performance measurement is essential.

We have already dealt with a methodology to structure information for strategic housing management (see Smeets, 1992, 1994). A short description may suffice here.

For housing managers it is of essential importance to have insights in the market position of their property. In the diverse phases of the rental process data over the rate of match between the offered product and the requirements of the consumer become available.

The rental process can in this sense be regarded as a measurement path where process data can be collected.

The market position is additionally a result of the offered performances. By means of a so-called product data this offered performance is identified.
Knowledge of the relation between the "market position" and the "offered performance" c.q. the "price/performance rate" on one side and the rate of match between offered performance and the required performance (the appreciation) on the other side is of essential importance (see also figure 1). This insight can be acquired by means of a systematic collection of information, whereby process- and product data are integrated and object-related. The set of object-related variables will make it possible to acquire insights in:

- the market position of estates;
- the performances of dwelling and living environment and the price/performance rate,
- the relative position among the estates.

The system delivers information for management measures on a short, medium and a long range and offers a tool for taking strategic decisions in the fields of the formulation of a quality policy, a target group policy, a rental price policy and a policy concerning the dwelling environment.

- Process data give an indication of efforts to be realized in the aspects of promotion and distribution (dwelling allocation, target group policy).
- Product data demonstrate the offered performances and offer access for adjustments in the quality policy on the level of the dwelling, the building...
and the environment.

By means of a combination of this information with other data, like the price and/or the appreciation, information can be acquired for the rental price policy.

3. MORE ABOUT THE PERFORMANCE MEASUREMENT

1.3. Areas, aspects and levels

The appreciation and rentability of dwellings can additionally be explained by the rate of match of offered and required performances in the occupancy phase. In this context one would speak of functional quality "Functionele kwaliteit is het totaal aan prestaties die een gebouw in de gebruiksfase levert" (SBR, 1990). This functional quality is determined by matters as functionality, comfort and safety (Stichting REN, 1992). Some distinguish the "design" as 4th performance cluster (SBR, 1990), others demonstrate the importance of "adaptability" (SEV, 1993).

The way on which the performance concept is implemented depends very much on the implementation of the quality concept. Is "Occupancy and appreciation value" (functionality, comfort etc.) put centrally or is "quality -in-future" (adaptability) also a point to consider?

A further differentiation of the concept is possible by way of distinguishing the functional quality along with the technical and spatial-visual quality (cf. RGD, 1992).

The technical quality deals especially with the performances of the building materials and building components. The spatial-visual quality encompasses performances in the field of the architectural and urban design qualities. Specifically the latter "soft" quality aspects are underexposed in many measuring systems. Matters as an architectural image, spatiality and design quality are difficult to measure objectively.

Another angle of incidence is by way of structuring towards the object levels "dwelling" "building" and "environment".

In practice mostly diverse angles of incidence are combined. Thus aspects of functionality, comfort and security can be demonstrated on the level of the dwelling. In our approach structuring in object levels is chosen on two grounds:

1. In a structure with scale-levels is clearly marked who has management responsibility. On the dwelling and building level it is the housing manager and/or the occupier. On the level of the environment the local government is the most important manager.
2. Performances like security, comfort are mostly resultant of the diverse single factor performances and therefore difficult to use as an output indicator. However, the use of single factor performance descriptions structured into object levels makes this possible.

The product-performances offered by the manager can be structured as follows: (Boekhorst & Smeets, 1990)

- The dwelling
  The sphere of influence encompasses the private territory of individual households, including all matters belonging to them like the size of the dwelling, the number of rooms, the height of rents, the dwelling type, the view from the dwelling.

- The housing type
  The housing type relates to all aspects of shared-use of the living environment in order to reach the dwelling like the entrance to the building, the entrance hall, the staircases and galleries etc. in short: on the semi-public parts of the living environment.

- The physical environment and the location
  This concerns all physical aspects of the public parts of the living environment like the access roads, shops and other facilities, greens, parking facilities etc.

- The social environment
  This concerns the way in which occupants/residents behave with each other and with their environment, whether they render each other into account, social cohesion, negligence etc. In short, the living behaviour.

The required data to substantiate this performance can be located by means of a checklist.
For a part these data are already available from the current dwelling appreciation system and for another part additional data collection is necessary.
In this research this additional data collection has already taken place by means of panels of experts.
The checklist consists of the different main aspects (dwelling, housing type, physical environment, social environment) and is structured in partial aspects. At each partial aspect the performances are described in measurable terms, substructured in five (5) performance levels.
Figure 2: Object levels and aspects of the offered performances

THE DWELLING
ground floor/multi-storey
number of rooms
size living room
size other rooms
layout
closed/open kitchen
kitchen equipment
sanitation/2nd toilet
finishing
garden orientation/size
size and situation balcony
privacy
view
isolation level
rent
service charges
management
store
separated shower/bath
quietness
own choice

THE HOUSE TYPE
house type
- one family house
- multi storey house
quality of entrance
- representation
- comfort
- privacy
principle of entrance
- gallery
- shared doorway
recreation space
elevator

THE PHYSICAL ENVIRONMENT
accessibility by public/private transport
parking facilities
distance to (central) facilities
greenery
suitability for children
maintenance of the environment
recreational possibilities
lay out
quietness

THE SOCIAL ENVIRONMENT
educational level
composition households
demographic structure
opinions about values and norms
social control
security
vandalism
public order
local authority allocation
suitability for children

IMAGE
The public opinion about:
- neighbourhood and location
- housing type and management
- the dwellings
- the manager
- the social environment
- lay-out of the neighbourhood
- design of dwellings and buildings
(identify, style, representativeness
diversity)

Source: Boekhorst & Smeets, 1990

A description of an aspect of an offered performance may look as follows:
Figure 3: Part of a checklist - a specimen

1. Dwelling level

The presence of insulation in the dwelling
- cavity-/roof-/glass pane insulation
- cavity-/roof insulation
- cavity- and glass pane insulation or roof- and glass pane insulation
- glass pane insulation or cavity insulation or roof insulation
- no insulation

2. Building level

Access to the dwelling
- dwelling with own access
- front door in shared hall
- front door to controlled gallery
- front door to open gallery
- others

3. Environment level

Traffic safety at main access roads
- no traffic unsafe situation within 1000 m
- no traffic unsafe situation within 500 m
- no traffic unsafe situation
- one traffic unsafe situation
- several traffic unsafe situations

Visual attractiveness of public space
- design and material attractive
- design or material attractive
- neutral attractiveness
- design or material unattractive
- design and material unattractive

A so-called "estate profile" represents the offered performances of all main- and partial aspects.

3.2. The Housing Performance Rate (HPR)

To make it possible, also to compare the strength - weakness profiles of technical estates among them the profile is converted into a score, the so-called Housing Performance Rate (HPR). In calculating this HPR a number of weighing factors is used. The basis of this calculation rests on data from the Housing Market Research (see: Pott & Smeets, 1993a).
From that research it turns out that for moving motives the characteristics of the dwelling are more important than those of the living environment.
If it is concerning the dwelling specifically the size of the dwelling, the number of rooms and the private outside space is mentioned.
On the neighbourhood level traffic safety, social security, playground provision and the quality of the road service play a relative large role.
This results in the following weighing factors:

On dwelling level
The dwelling quality is regarded as most important and gets a weighing factor of 3.
This forms a more important house moving motive than aspects concerning the neighbourhood.
Additionally, on the level of the dwelling "the total floor area", the "size of the master bedroom", the "number of bedrooms" and the "private outside space" are weighted extra heavily (factor 4). These points appear to be of great importance for the house moving motives according to the survey in the market research.

On building level
Building quality aspects get a weighing factor 2.
Here the quality of "access" gets an extra weight (factor 2).

On the level of the neighbourhood
Neighbourhood quality aspects get a weighing factor 1. Here "quality of road service", "quality of playground provision", "safety of public space", "traffic safety" and "sense of unsafety" get extra weight (factor 2).
These points also appear to be relatively frequently mentioned as house moving motives.

Here the point of departure is that if an estate has scored on all partial aspects, a "performance level 3", then the HPR will be 1:
\[ HPR = \frac{\text{standard}}{\text{standard}} = 1 \]
whereby the standard score is the total of weighted scores at the quality level 3.

If on all partial aspects the minimum performance level is scored (total weighted scores minimum) then the score is
\[ HPR = \frac{\text{min.}}{\text{standard}} = 0.32 \]

If on all partial aspects the maximum performance level 5 is scored (total weighted scores 590) then the score is
\[ HPR = \frac{590}{372} = 1.66 \]
Through the methodology the following data on estate and portfolio level become available:

1. The market s.c. process informations.
   Specifically the indicators, registration rate, rejection rate, occupancy period, house moving propensity, and mutation rate are of importance. All these may be aggregated into a "rentability index" (Nauta, 1994).

2. The offered product performance
   The offered performance is demonstrated in the particular "estate profiles". In the aggregated form HPR is calculated. The HPR makes the comparison of technical estates possible. The HPR can also be compared with market informations, with which insight information grows in the relation between market position and the delivered or offered product performance.

3. The rental price
   Obviously we dispose over the rental price of the technical estates, the "price tag" on the delivered product performance. This rental price can be related to HPR as well as to the market position of the estate.

4. The appreciation data
   By means of surveys among residents appreciation data can be collected. These appreciation data demonstrate the evaluation by the housing consumers of the offered housing performances. This represents a rough image of match between the offered and required performances.

4. APPLICATION OF THE METHOD

In a research in Waalwijk (Mausen & Smeets, 1993) a housing portfolio of a local housing building association is analysed on 2 levels:
- the estate level: estates with 18 or more dwellings.
- the portfolio level, differentiating one-family and multi-family houses.

The information is presented on estate level in the form of an "estate profile". These quality profiles are constructed on the basis of an extensive checklist. Along with the estate profile an estate score is calculated: the HPR. This HPR is compared with the market- and price-technical data. By doing this an insight appears in the relation among the market position, price and the delivered or offered product performance.
On portfolio level a typology is made and the estates compared by means of
position matrices.
Let me present an example of an estate profile.

Technical estate 8.4 has got the highest mutation rate (31%). The HPR is 0.91. This low performance can be attributed to the environmental characteristic (see also the estate profile in fig. 5): the poor quality of playground facilities and road service, traffic unsafety in residential roads and on access roads, insufficient social-cultural facilities, sense of insecurity and negative image. Additionally, on the dwelling level the size of the kitchen, position of the kitchen and the sanitary facilities scored low.
Moreover, neighbourhood 8.4, of all neighbourhoods, has the shortest occupation period.

Figure 4: Portfolio single-family houses

Rental price and HPR
single-family houses

Bron Maussen & Smeets, 1993
Figuur 5: profile of a dwelling estate

<table>
<thead>
<tr>
<th>Dwelling level</th>
<th>++</th>
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</thead>
<tbody>
<tr>
<td>Construction quality</td>
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<tr>
<td>physical quality</td>
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<tr>
<td>Dwelling quality</td>
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<tr>
<td>Heating</td>
<td></td>
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<tr>
<td>Heat water supply</td>
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<tr>
<td>Insulation</td>
<td></td>
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<tr>
<td>Total dwelling size</td>
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<tr>
<td>Size of living room</td>
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<tr>
<td>Size of the kitchen</td>
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<tr>
<td>Location kitchen</td>
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<tr>
<td>Size master bedroom</td>
<td></td>
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<tr>
<td>Number of bedrooms</td>
<td></td>
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<tr>
<td>Sanitation</td>
<td></td>
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<tr>
<td>Presence of balcony</td>
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<tr>
<td>Access to dwelling</td>
<td></td>
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<tr>
<td>Store space</td>
<td></td>
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<tr>
<td>Private outside space</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Neighbourhood level</th>
<th>++</th>
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</thead>
<tbody>
<tr>
<td>Physico-spatial quality</td>
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<tr>
<td>Character of the design</td>
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<tr>
<td>Quality road surface</td>
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<tr>
<td>Quality of sewer</td>
<td></td>
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<tr>
<td>Quality of green area</td>
<td></td>
</tr>
<tr>
<td>Quality of play area</td>
<td></td>
</tr>
<tr>
<td>Security of public space</td>
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<tr>
<td>Appearance of public space</td>
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<tr>
<td>Shopping facility</td>
<td></td>
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<tr>
<td>Education facility</td>
<td></td>
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<tr>
<td>Social cultural provision</td>
<td></td>
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<tr>
<td>Social cultural provision-adolescence</td>
<td></td>
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<tr>
<td>Quality of structural greens</td>
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<tr>
<td>Quality of playground facilities</td>
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<tr>
<td>Safety at main accessroads</td>
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<tr>
<td>Safety at residential roads</td>
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<tr>
<td>Noise disturbance</td>
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<tr>
<td>Parking facility</td>
<td></td>
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<tr>
<td>Environment disturbing activities</td>
<td></td>
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<tr>
<td>Influencing dwelling/non dwelling</td>
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<tr>
<td>Need for professional support</td>
<td></td>
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<tr>
<td>Need for community work</td>
<td></td>
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<tr>
<td>Corresponding life style</td>
<td></td>
</tr>
<tr>
<td>Sense of insecurity</td>
<td></td>
</tr>
<tr>
<td>Image</td>
<td></td>
</tr>
</tbody>
</table>

Bron: Maussen & Smeets, 1993

The acquired information on estate- and portfolio-level is one of the pillars for strategic management and strategic policy and offers a basis for the formulation of strategic policy.

On the basis of this analysis a strategy can be formulated. Vijverberg (1989) in this context is speaking of intervention planning. Such an intervention planning is based on the monitoring of strong and weak points on estate level.

On the basis of acquired insight timely intervention can be determined.
5. CONCLUDING CONSIDERATION

This here presented performance measurement offers a sufficient starting point for housing managers and the local authority, although rather crude, still. For the moment efforts are made for its refining, computerization and implementation in the organisation.

Refining

The methodology is specified more towards a target group. The required performances vary often, according to the target group; not only the required performance level varies, but also the weight that is attributed to the performances. Missing of an elevator in a multi-storey building may for the one target group (for example young, small households) cause no problem, for elderly people the presence of an elevator, which can stop on any floor, is a veto-condition. In the meantime, for this target group specific performance requirements are developed (Oudijk & Smeets, 1993; SEV, 1993).

Especially elderly people have set high requirements on accessibility to building and dwelling, dimensioning and positioning of spaces, installations of the dwelling, proximity to provisions etc.

Electronic data processing

Steps are also undertaken in the direction of implementation and electronic data processing. Work is set out on an electronic data processing system of this performance measurement (Blijenberg, 1994). This work appears to be made-to-measure, since data processing is among housing managers already taking place to a great extent. Additionally the integration of graphic information with data bases is on the long range a prerequisite.

Implementation in the organisation

Another point of attention is what information is necessary on which level in the organization.

Registration of data takes place in most cases on the operational level (front/back office). Part of these data may be used on operational level within departments to manage their own policy processes.

Another part of the analysed data is sent in "compressed" to higher management levels in- and outside the department.

In the research different methods of data compression are indicated (indexes, estate profiles, position matrixes). These data may become available for example (half)yearly as management information.

With these compressed data trends may become on display on estate as well as on portfolio level. They serve as one of the pillars for strategic decision making.

Another issue is the integration of rental data with information from other departments. The process and product data used in this research are specifically targeted on market position of housing estates. It is, however, desirable to integrate these market data with finance-economical and technical information.
This does not mean that one extensive dat system is to be developed, but it means that one should be working on an information household, composed out of diverse coherent "modules".

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