Designing and Testing a Strategy Game

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Summary

One of the long-standing issues in the field of corporate real estate management is the alignment of an organisation's real estate to its performance (Heywood, 2011). Despite extensive research, existing approaches to alignment have not had much uptake in practice and fall short in a number of aspects. Arkesteijn (to appear 2015) proposes Preference-based Accommodation Strategy (PAS), an approach that combines gaming and decision-support in order to design a more aligned real estate portfolio. This thesis describes the designing and testing of a PAS model at the Delft University of Technology for the university's portfolio of lecture halls.

The theoretical basis of PAS as an alignment approach lies in the work of De Jonge et al. (2009): Designing an Accommodation Strategy. They argue that in order to achieve alignment (i.e. optimally attuning corporate accommodation to organizational performance) and to make real estate decisions, a strategy is necessary. However, the demand of an organization continuously changes, which means that the aforementioned strategy cannot be static in order to achieve alignment. Alignment is thus both a strategy and a process: real estate strategy *design*.

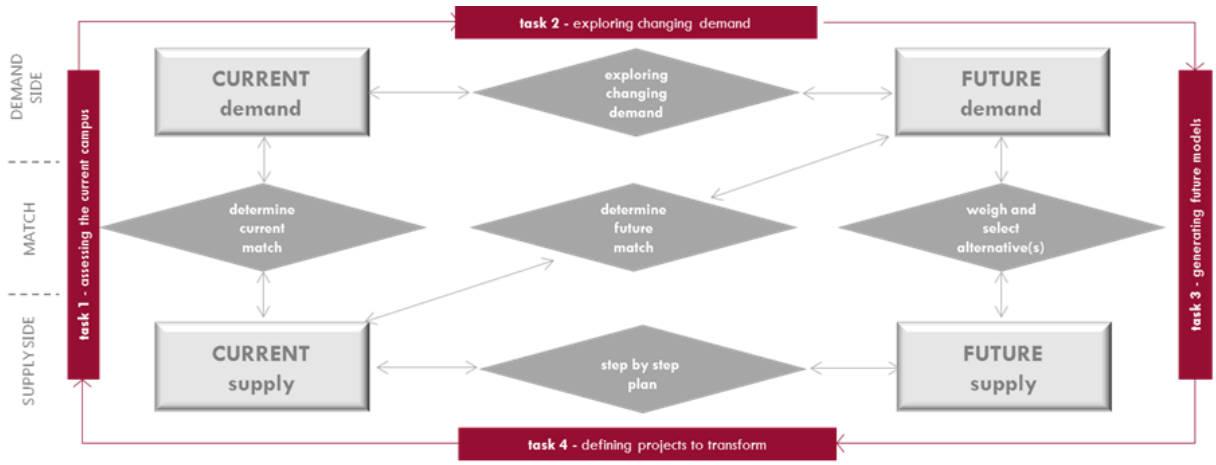

Figure 1 - DAS Frame (Den Heijer, 2011), adapted from De Jonge et al. (2009)

The DAS Frame visualizes the process of matching supply and demand in time and prescribes the steps to be completed iteratively. Preference-based Accommodation Strategy operationalizes the DAS Frame by making the current and future match between supply and demand measurable. Therefore the preference-based portfolio design (PBPD) methodology by Arkesteijn and Binnekamp (2012) is used. PBPD is projected onto the DAS Frame: the demands of the stakeholders within the organization are determined in interviews per stakeholder (task 1 and 2). These demands are related to the performance of the portfolio in a decision-making model, and in the collective workshop (task 3) the stakeholders design future alternatives using the model.

DAS Frame Task 1, 2 - Assessing current demand and exploring changing demand. (Interviews)
A. Specify the decision variable;
B. Assign the stakeholder's preference to each variable;
C. Assign the stakeholder's relative weight to each variable;
D. Determine the design constraints.

DAS Frame Task 3 - Generating future models. (Workshops)
E. Generate design alternatives.
(F. Use the PFM algorithm to yield an overall preference scale)

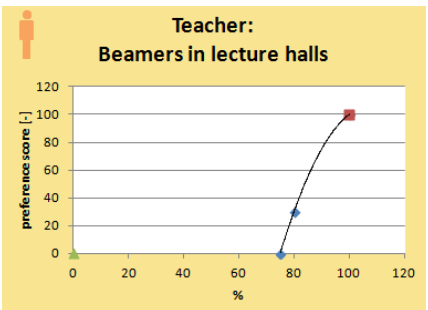

Figure 2 - Preference curve of a decision variable

In this thesis, the hypothesis is that the use of a decision-making model in a gaming context can help overcome difficulties in the use of decision-making models. Previous experiences reveal that decision-making models are complex, they are often not understood completely, and it requires time to get acquainted to them (Van de Schootbrugge, 2010; Van Loon, Heurkens, & Bronkhorst, 2008; Van Ussel, 2010).

The decision-making model designed in this thesis is preoccupied with optimally attuning the university's portfolio of lecture halls to the demands of the organisation. The problem is as follows:

- The current supply of lecture halls does not meet present-day requirements with regard to facilities and capacity;
- The university is starting a new curriculum next year, which will lead to a changing demand for lecture halls;
- There are too little types of educational facilities to accommodate this changing demand;
- The current supply is being used ineffectively.

In order to solve these problems in one decision-making model, a model is made that is able to make a timetable allocation for the university based on the demands set by its stakeholders and the characteristics of the supply. By modifying demand and supply the stakeholders can design a solution to the problem. The timetable allocation is modeled by using linear programming (LP). When designing alternatives in PAS, the stakeholders first focus on optimizing the university's portfolio based on their own demands: they optimize on *desirability.* During the design process, they have to control if the alternative portfolio is still able to host the educational activities at the university: the timetable allocation in LP is then used to control the *feasibility* of the portfolio design.

The results of the interviews and workshops show that the hypothesis can be largely affirmed. Most stakeholders have indicated that the model helps them to gain insight into the consequences of their actions, which suggests that they understand the relationships between variables in the model. The role of gaming in this process is that stakeholders are allowed to readjust and refine their decision variables. This iterative process has two advantages. Firstly, readjusting and refining criteria helps the stakeholders to understand what they really want and thereby creating a more accurate representation of their preferences. Secondly, it gives them a safe environment to experiment in and gain insight into the consequences of their actions in the model on their preferences without being held to the results.

References

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