Relevance trees and morphologic analysis (Relevance trees)
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Relevance trees & morphological analysis

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1. Introduction

Relevance Trees & Morphological Analysis are normative forecasting methods which start with future needs or objectives, and then seek to identify the circumstances, actions, technologies, etc. required to meet them.

A relevance tree is an analytic technique that subdivides a broad topic into increasingly smaller subtopics thereby showing 'all' possible paths to the objective, and provides a forecast of associated costs, durations and probabilities for each element.

Similarly, morphological analysis involves mapping options to obtain an overall perspective of possible solutions.

2. Methodology

When is this method appropriate?

Relevance trees are used to analyse situations with distinct levels of complexity, in which each successive lower level involves finer distinctions or subdivisions. It can be used to identify problems and solutions, establish feasibility, select the 'optimum' solution and deduce the performance requirements of specific policies, technologies, etc. It may also be used to estimate the overall cost and duration of implementing policies or increase technological performance, thereby scheduling the detailed R&D programme.

The purpose of morphological analysis is to organise information in a relevant and useful way in order to help solve a problem or stimulate new ways of thinking.

3. Process

A relevance tree looks much like an organisational chart and presents information in a hierarchical structure. The hierarchy begins at a high level of abstraction and descends with greater degrees of detail in succeeding level of the tree. The entries at a particular level are intended to describe, in a complete manner, the item to which they are connected in the level above. Ideally, each entry at a particular level is orthogonal, that is, it should not overlap with any other entry, thus being mutually exclusive of other entries. Finally, the items at the same level should be addressed from the same point of view. If done properly, the structure can lead to a clearer understanding of the topic under analysis.

Morphological analysis involves mapping a discipline to obtain a wide perspective of existing solutions and future possibilities. The approach can be based on five basic steps:

1. Formulation and definition of a problem;
2. Identification and characterisation of all parameters toward a solution;
3. Construction of a multidimensional matrix (morphological box) whose combinations will contain all possible solutions;
4. Evaluation of the outcome based on feasibility and achievement of desired goals; and
5. In–depth analysis of best possibilities considering available resources.

Steps 1, 4, and 5 often stem from a different analysis, whereas steps 2 and 3 form the heart of morphological analysis, as step 2, identification of parameters, involves studying the problem and present solutions to develop a framework. This step can involve developing a relevance tree to help define a given topic. Once the
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Parameters are identified, a morphological box can be constructed that lists parameters along a single axis. The second axis is determined by the nature of the problem.

3.1 Resources needed

There is no one single “right way” to construct a morphological analysis. Good knowledge about a problem or issue, however, is essential to developing the most effective morphological framework.

3.2 Outputs

The output of a relevance tree analysis is a graphical representation with a hierarchical structure that shows how a given topic can be subdivided into increasingly finer levels of detail.

4. Review

4.1 Evaluation of results

[To be filled in]

4.2 Experiences

[To be filled in]

4.3 Combinations

[To be filled in]

4.4 Strength and Weaknesses

Strengths

Relevance trees analysis has demonstrated to be a powerful intellectual stimulus to ensure that a given problem or issue is illustrated in comprehensive detail and that the important relationships among the items considered are shown in both current and potential situations.

Weaknesses

The development of relevance trees or morphological analysis, like most of Foresight methods, requires critical judgment thus the possibility of human error is present. Finally, if the underlying thought processes are not insightful, the outcomes of this method will be weak.

4.5 Further work

[To be filled in]

4.6 References

http://forlearn.jrc.es/guide/2_design/meth_morpho-analysis.htm#Description