5  Evaluation of innovative solutions

5.2  Point Rating system

Keywords
Scaling, comparative scaling techniques, non-comparative scaling techniques, point rating

Learning Objective
This module will introduce you to the process of point rating which can be used in a company to assist with, decision making, evaluation of company activities, rating clients, sales etc. Suitable examples along with links to internet sites and bibliography are provided.
After reading the component you will be aware of:
• how to EVALUATE a product or services in order to take the correct decision
• which STEPS are needed
• and evaluation METHODS.
This will take you approximately 40 minutes.

Introduction
A rating system is a process whereby the specific characteristics of an object, process etc are measured and compared. Problems are then solved by comparing these characteristics, evaluating the results and making a decision.

Imagine that you are faced with an alternative. What action will you take?
Let’s remember the ancient story about a man who remains unmoved because he is as hungry as he is thirsty and is positioned exactly between food and drink (Aristotle 384 BC – 322 BC) or the story of the Buridan’s ass. ¹

Figure 1 Buridan’s donkey paradox ²

¹ http://en.wikipedia.org/wiki/Buridan's_ass

²
If you have to choose among two or more options, then in order to make the correct
decision you will have to perform an evaluation process on the basis of a certain choice of
measures, i.e. Point Rating will be required.

5.2.1 What is the Point Rating system?

A Point Rating system evaluates something according to defined evaluation criteria. For
this purpose we may require experts in the field. They will carry out an evaluation process
on the basis of certain choice of measures (scaling).
There are a number of evaluation methods which can be used in order to carry out the
comparisons, each of which may be applicable in different situations. The different
methods have different levels of complexity.

5.2.2 Where and why is the Point Rating system used?

The Point Rating system is used in all applications, when a number of elements need to
be compared.

In general a rating system is used:

- To give a general indication of the development of a product
- To serve as an indication of the progress of a project
- To make a choice between several options

It can be used by a company to make decisions such as, future investments, ICT
implementation, personnel training etc.

The Point Rating system allows for a quantified comparison, where specific elements are
given a score which can then be easily compared i.e. you can make a decision by
comparing the points scored by the different elements.

5.2.3 How a rating system works?

2 Source: CorelDraw objects library
There are 4 steps that you should follow in the implementation of the Point Rating system in the company:

1. Establish scaling or weighting methods. Scaling is the process of measuring or ordering the quantitative features of an object. For example, a scaling technique might involve the assessing and measuring the quality of products.
2. Obtain information
3. Carry out the comparisons
4. Produce the evaluation results, which can be used to make a decision

5.2.3.1 Scaling and Weighting

The features of a product, service or processes can be measured by using either a scaling or weighting method.

Scaling Methods

A) Comparative scaling

Using this technique every product/service/process is directly compared to the other.

Examples:
- What do you like better? Wine or Beer?
- Rate the TV advertisements on innovations from 1 to 10
- If you had 5000 EUR to spend on ICT tools in the company, how much would you spend on hardware, on software, on hiring personnel, on NPD (New Production Development) activities etc?

B) Non-comparative scaling

Using this technique every product/service/process is scaled independently of the others.

Example:
- How do you feel about product quality in the company?

C) Composite measures of variables

Using this technique two or more indicators of the product/service/process are combined into a single one.

Weighting Methods

With weighting scaling specific attributes or a product/services/process are weighted depending on their importance. In this category two measures can be used:

- Scales are used for measuring or ordering entities with respect to quantitative attributes or traits
indexes - they are similar to scales except that multiple indicators of a variable are combined into a single measure.\(^3\)

5.2.3.2 Obtain information (data collection)

Several methods for collecting data are used:

- **Questionnaires**

  A questionnaire is a self-report data collection instrument that is filled out by research participants. Questionnaires are usually paper-and-pencil instruments, but they can also be placed on the web for participants to go to and fill out.\(^4\)

- **Interviews**

  Example:

  Interviewees are asked to indicate the level of agreement or disagreement (from strongly agree to strongly disagree) on a five to seven-point scale – refer to Table 1.

<table>
<thead>
<tr>
<th>Question: How do you accept the involvement of external evaluators of your company’s financial status?</th>
<th>completely agree 1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>completely disagree 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 1: Example of a questionnaire</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Observations** (i.e., looking at what people actually do)

- **Existing or Secondary data** (i.e., using data that are originally collected and then archived or any other kind of “data” that was simply left behind at an earlier time for some other purpose) etc.

All methods have strengths and weaknesses which should be taken into consideration.

5.2.3.3 Carrying out comparison

When the scaling and data collection have been complete, you need to perform the evaluation of the products/services/processes in question. For this we should have a reference object/process on which to base the evaluation of the features of the process/object of interest.

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\(^3\) [http://en.wikipedia.org/wiki/Index_%28economics%29](http://en.wikipedia.org/wiki/Index_%28economics%29)

5.2.3.4 Evaluation of results

Evaluation can be subdivided into categories, such as: market research, product certification, materials testing, quality management etc.

The evaluation of the results should lead to a decision. However, bear in mind that:

- evaluation activities should meet the information needs of decision makers
- the purpose of evaluations is to provide feedback to decision makers about how the object/process works/operates and its effectiveness.

5.2.4 Case studies

A) Comparative scaling: The Advantage/Disadvantage Table:

We will use the table in order to compare two current flat panel television technologies.

Table 2 shows a simple Advantage/Disadvantage Table:

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Plasma</th>
<th>LCD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Advantage</td>
<td>Disadvantage</td>
</tr>
<tr>
<td>Contrast</td>
<td>√</td>
<td></td>
</tr>
<tr>
<td>Viewing angle</td>
<td>√</td>
<td></td>
</tr>
<tr>
<td>Colour reproduction</td>
<td>√</td>
<td></td>
</tr>
<tr>
<td>Screen refresh rates</td>
<td>√</td>
<td></td>
</tr>
<tr>
<td>Burn in</td>
<td></td>
<td>√</td>
</tr>
<tr>
<td>Voltage requirements</td>
<td></td>
<td>√</td>
</tr>
<tr>
<td>Thickness</td>
<td></td>
<td>√</td>
</tr>
<tr>
<td>Longevity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>4</td>
<td>- 4</td>
</tr>
</tbody>
</table>

Table 2: Advantage/Disadvantage characteristics of 2 products

5 InnoSupport: Supporting Innovations in SME. 5.2 Point Rating System, 2005
Table 3 shows the same comparisons, but this time using weighted criteria.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Contrast</td>
<td>0.2</td>
<td>√</td>
<td>20</td>
<td>√</td>
<td></td>
<td>20</td>
</tr>
<tr>
<td>Viewing angle</td>
<td>0.25</td>
<td>√</td>
<td>25</td>
<td>√</td>
<td></td>
<td>25</td>
</tr>
<tr>
<td>Colour reproduction</td>
<td>0.15</td>
<td>√</td>
<td>15</td>
<td>√</td>
<td></td>
<td>15</td>
</tr>
<tr>
<td>Screen refresh rates</td>
<td>0.1</td>
<td>√</td>
<td>10</td>
<td>√</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Burn in</td>
<td>0.1</td>
<td>√</td>
<td>10</td>
<td>√</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Voltage requirements</td>
<td>0.05</td>
<td>√</td>
<td>5</td>
<td>√</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Thickness</td>
<td>0.05</td>
<td>√</td>
<td>5</td>
<td>√</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Longevity</td>
<td>0.1</td>
<td>√</td>
<td>10</td>
<td>√</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1</strong></td>
<td><strong>70</strong></td>
<td><strong>-30</strong></td>
<td><strong>40</strong></td>
<td></td>
<td><strong>-60</strong></td>
</tr>
</tbody>
</table>

Table 3: Advantage/Disadvantage characteristics of 2 products using weights

Using the plain Advantage/Disadvantage table (Table 2), the LCD screen came out as being better. When weights were applied (Table 3), the Plasma screen actually obtained a better score.

So, depending on the importance that we place on different elements, the score may vary greatly.

**B) Innovations point rating**

The Point Rating system, applied to measuring innovations in the company is referenced in ⁶.

The author (Mark Turrell) researched innovation metrics as organisational measurements that help classify the organization’s ability to innovate and its record of success.

In the cited reference by Mark Turrell there are a number of metrics that are commonly used as a basis for measuring innovation:

- Revenue growth from new products
- Patent submission
- Idea submission and flow

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⁶ [http://www.innovationtools.com/Articles/EnterpriseDetails.asp?a=146](http://www.innovationtools.com/Articles/EnterpriseDetails.asp?a=146)
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In this review under an innovation index (Please read again on page 5 of this document what index variables are listed):

- idea generation
- employee participation
- revenue growth, and
- patent filing.

The index is based around an ideal 100 point score. It is discussed at regular management meetings to set targets, track performance and look for gaps.

Please take 10 minutes to define the advantages and disadvantages of obtaining information for carrying out Point Rating in the company on the basis of existing data on CUSTOMERS FEEDBACK:

Hints:
- Interviews from customers
- Time periods of collecting data? Are they complete?
- Are they representative for the specific purpose? Etc.

5.2.5 Summary of Key Points

The main objective of this component was to improve your ability in evaluating your products/services/processes, using the Point Rating system.

The following issues are most important:

- Type of scale was used: A comparative scale or a non-comparative scale?
- Number of scale divisions or categories used
- Level of data involved
- The way data is used.

The main objective of this component was to improve your ability in evaluating your products/services/processes, using the Point Rating system.

Constructing rating scales need a little practice, and the process is not very difficult. Your product/process can only benefit when you apply the Point Rating system.

The ability to present changes in scores, reported by both staff and clients, is an important tool in promoting your product/services credibility.

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7 http://www.dowcorning.com/content/publishedlit/solarticles/How_Innovation_Supports_Sustainability.pdf
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Further Reading


Websites

www.gate2growth.com - Gate2Growth is a European Commission initiative supported under the Innovation/SME’s Programme and its main aim is to support innovative entrepreneurs in Europe. It provides a Business Plan Toolbox with tutorials, tools, case studies and guides on finance, business plan writing, budgeting and much more, viewed 16-th July, 2008

There are many websites offering advice, direction and samples of for business planning. A general search on Business Planning will give you a list of such sites, some examples are following. Each of following sites will give you tips on how to develop a business plan as well as a range of business plan templates.
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GLOSSARY

Indexes - a single number calculated from a set of prices or of quantities. (Source: http://en.wikipedia.org/wiki/Index_%28economics%29)

Quality management - is a method for ensuring that all the activities necessary to design, develop and implement a product or service are effective and efficient with respect to the system and its performance. (Source: http://en.wikipedia.org/wiki/Quality_management)

Metric - A metric is a standard unit of measure, such as mile or second, or more generally, part of a system of parameters, or systems of measurement, or a set of ways of quantitatively and periodically measuring, assessing, controlling or selecting a person, process, event, or institution, along with the procedures to carry out measurements and the procedures for the interpretation of the assessment in the light of previous or comparable assessments. (Source: http://en.wikipedia.org/wiki/Metrics)