Research and development costs can be presented in the financial statements in several ways. The law, the different interests and the given features of the company (like size and ownership) influence which way of accounting will be prioritized. In this lecture the accounting of research and development will be analysed according to the national (Hungarian, German, French) and the international standards. Regarding the various accounting methods I make an attempt to reveal the different reasons behind choosing a certain way depending on the interests and features of the company. As a result we can get an picture how advisable is to use the data of a financial statement in survey of innovation expenses at companies.

Keywords: accounting, R&D, experimental development, matching concept

1. Introduction

The most important part of the innovation activity is the R&D (research and development). “The specific innovation activities that firms can use to develop or acquire innovations include R&D and/or many other activities.” (OECD [2005] p. 35) The non-R&D activities according to the Oslo Manual for example: new concepts for products, processes, marketing methods or organisational changes, technical information, human skills, invest in equipment, software, etc. The term R&D covers in the Frascati Manual (OECD [2002]) three activities: basic research, applied research and experimental development.

In the above mentioned innovation activities the most problematic field is accounting of experimental development, because research costs must be exclusively written off as incurred. Costs of experimental development can be presented in the financial statements in several ways. Therefore only accounting problems of experimental development is analysed.

The Frascati Manual was written by and for the national experts in OECD member countries who collect and issue national R&D data and submit responses to OECD R&D surveys, which definition is very similar to the accounting definition of the experimental development: “systematic work, drawing on knowledge gained from research and practical experience, that is directed to producing new materials, products and devices; to installing new
processes, systems and services; or to improving substantially those already produced or installed." (OECD [2002] p. 79)

The definition of the experimental development is in the Hungarian accounting low the translation of definition from Frascati Manual.

2. Expenditure on experimental development

Expenditure on experimental development can be assaying from an accounting perspective and according to the recommendation of OECD.

From an accounting perspective

In the income statement where the expenses are classified by nature, expenditure on experimental development could be presented in the following lines:

- Materials and external services:
  - costs of materials used for development (for example: the costs of test tube)
  - external services incurred for development purposes (for example: services closely related to development activities or rents for research facilities)
- Staff costs: salaries, wages and other employee related costs of workers involved on development
- Depreciation and amortisation expense: depreciation of equipment and buildings, which are strictly connected to development activities.

According to the recommendations of OECD

According to the Frascati Manual (OECD [2002]) the expenditures devoted to R&D as intramural expenditures comprise current costs and capital expenditures.

- Current costs:
  - labour costs of R&D personnel: annual wages, salaries and all associated costs
  - other current costs: purchases of materials, supplies and equipment to support R&D in a given year
  - indirectly paid current costs (for example: rents for research facilities)
- Capital expenditures: annual gross expenditures on fixed assets
– land acquired for R&D and buildings constructed or purchased, including major improvements, modifications, renovations and repairs
– instruments and equipments acquired for use in the performance of R&D
– acquisition of separately identifiable computer software for R&D

Comparison

Current costs are shown as accounting costs in the income statement, but the depreciation for building and equipment should be excluded from the measurement of intramural R&D expenditures as per Frascati Manual (*OECD* [2002]).

The entire expenditures on the fixed assets used in the R&D programmes should be reported as development expenditures (namely: capital expenditures) in the period when they took place. However from an accounting perspective these assets are presented as non-current assets in the balance sheet of the enterprise, and depreciation of these assets are shown as costs in the income statement.

<table>
<thead>
<tr>
<th>Expenditures devoted to R&amp;D/development:</th>
<th>Accounting</th>
<th>Frascati Manual</th>
</tr>
</thead>
<tbody>
<tr>
<td>– Materials and external services costs in income statement</td>
<td>–</td>
<td>currents costs</td>
</tr>
<tr>
<td>– Staff costs</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>– Depreciation and amortisation expense</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>– Expenditures on fixed assets assets in balance sheet</td>
<td>–</td>
<td>capital expenditures</td>
</tr>
</tbody>
</table>

Although the accounting standards and OECD recommendations relating to the definition of experimental development are the same, expenditures devoted to R&D are handled differently. The financial statements can only be used for the measurement of the R&D expenditures if they are presented in the Notes separately in detail.
3. Two methods of accounting development expenditures

Development expenditures can be presented in the financial statements in two several ways:

- Development expenditures can be regarded as part of the continuing cost of running the business and these can be written off as incurred.
- Development expenditures can be also capitalised as intangible asset, when it is probable that the future economic benefits that attributable to the result of experimental development will flow to the enterprise.

Writing off development expenditure as it is incurred

In case the development expenditures are written off as incurred, these costs reduce profit of the enterprise in the accounting period during the experimental development. In upcoming years when incomes from the project will flow to the enterprise, these incomes can be reduced only by the actual production and general costs but not development expenditures.

Example

An enterprise has development expenditure of $100,000, relating to the development of a new product. It is expected that the demand for the product will stay at a high level for the next four years. Annual revenues of $500,000 and fabrication costs of $300,000 are expected in every years over this period. The enterprise decides to write off development expenditure.

Revenues and costs in reference to the development, fabrication and distribution of the new product are the followings:

<table>
<thead>
<tr>
<th></th>
<th>0. years</th>
<th>1. years</th>
<th>2. years</th>
<th>3. years</th>
<th>4. years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue</td>
<td>0</td>
<td>500</td>
<td>500</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>Work performed by the entity and capitalised</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Costs:</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Materials and external services</td>
<td>100</td>
<td>300</td>
<td>300</td>
<td>300</td>
<td>300</td>
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<tr>
<td>- Staff costs</td>
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<tr>
<td>- Depreciation and amortisation expense</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Profit before tax</td>
<td>-100</td>
<td>200</td>
<td>200</td>
<td>200</td>
<td>200</td>
</tr>
</tbody>
</table>

Capitalising development expenditure

In several countries development costs can be capitalised if specific conditions apply. In this case, the development expenditure does not reduce
profit of the enterprise in the year, when experimental development takes place. In the future years when incomes can be realised from the result of the experimental development the costs (as depreciation) can be matched with these incomes.

Example

The data are the same as in the previous example, but the enterprise decides to capitalise development expenditure.

Revenues and costs in reference to the development, fabrication and distribution of the new product are the followings:

Table 3

<table>
<thead>
<tr>
<th></th>
<th>0. years</th>
<th>1. years</th>
<th>2. years</th>
<th>3. years</th>
<th>4. years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue</td>
<td>0</td>
<td>500</td>
<td>500</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>Work performed by the entity and capitalised</td>
<td>100</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Costs:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– Materials and external services</td>
<td>100</td>
<td>300</td>
<td>300</td>
<td>300</td>
<td>300</td>
</tr>
<tr>
<td>– Staff costs</td>
<td></td>
<td>+25</td>
<td>+25</td>
<td>+25</td>
<td>+25</td>
</tr>
<tr>
<td>– Depreciation and amortisation expense</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Profit before tax</td>
<td>0</td>
<td>175</td>
<td>175</td>
<td>175</td>
<td>175</td>
</tr>
</tbody>
</table>

The costs incurred in the 0. year is expected to be recovered from the future sales of the new product. The development expenditure is a work performed by the entity and can be capitalised as intangible asset under certain conditions. In following four years, the development expenditures will be presented in the income statement as depreciation of the intangible asset.

4. Theoretical reasons of different accounting of experimental development

The problems in accounting for experimental development revolve around the following accounting concepts: realization, accruals, matching and prudence.

Reasons: Realization, accruals, matching concept

The realization concept: A profit is made at the time when goods are actually given to the customer, not when the customer orders the goods or pays for them.

The accruals concept: “Under accruals accounting it is the time an expense is incurred or revenue is earned that determines the accounting period in which the
transaction is accounted for.” (Groves – Pendlebury [2001] p. 13) The accruals concept is often also referred to as the matching concept.

The matching concept: “…the accountant measures profit by comparing or ‘matching’ the total cost of the many trading transactions undertaken during an accounting period with the total revenues arising from the trading activity.” (Marriot – Edwards – Mellett [2002] p. 50)

Before start to produce a product developed by the enterprise it is necessary to recognise development expenditure. That is why the costs of this product include not only the production costs but the development expenditures as well. In the financial statements all income and related expenditure should be presented. In this case the development expenditures are also related expenditure.

Income and expenses should be matched with one another, when development expenditure is capitalising as intangible asset. In fact an instrument or equipment for production will enable revenues over several accounting periods. Also in this case a company must match the appropriate costs against revenue in the same accounting period. These assets should be presented as a non-current asset in the balance sheet and charged to the income statement as depreciation to each period that will benefit.

A company with R&D activity must match the appropriate costs against benefits and the development expenditure is recommended to carry forward to future periods providing it is likely that future benefits can be directly attributable to the costs. Benefit of a development project can be in the form of revenue from the sale of the new product or of reduced costs from improved production processes.

According to these concepts (especially the matching concept) development expenditure should be deferred to the extent that its recovery can reasonably be regarded as assured. In another way: in case of capitalising development expenditure as intangible asset the realization, accruals and matching concepts dominate.

Reason: The prudence concept

The prudence concept: “Accountants should be cautious in the valuation of assets or the measurement of profit. The lowest reasonable estimate of an asset’s value should be taken, whilst a forecast loss would be included but not a forecast profit.” (Black [2005] p. 4)

Prudence dictates that it is impossible to determine whether future revenue will arise from the development activity, thus development expenditure should be written off as incurred.

We can say in case of writing off development expenditure the prudence concept dominates, while the matching concept prefers capitalising this expenditure.
Reason: The principle cost-benefit comparison

The principle cost-benefit comparison: According to this principle declared in the Hungarian accounting law the collection costs of the accounting information can’t exceed the benefit of the usage this information.

To an enterprise with low R&D activity the writing off development expenditures is much more simple than capitalising these expenditures.

Conflict between concepts

The prudence concept proposes writing off so expensing the development expenditure, but according to the matching concept it is recommended to capitalise it.

<table>
<thead>
<tr>
<th></th>
<th>Prudence</th>
<th>Matching</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue recognition</td>
<td>Realization by form</td>
<td>Realization by substance</td>
</tr>
<tr>
<td>Cost reporting</td>
<td>Expensing</td>
<td>Capitalising</td>
</tr>
</tbody>
</table>


5. Accounting laws and standards in relation to experimental development

The accounting of experimental development is analysed according to the national (Hungarian, German, French) and the international standards (IFRS, US-GAAP).

National laws

The Hungarian accounting law allows capitalising only the development expenditure devoted to experimental development immediately. The enterprises have to declare their choice (expensing or capitalising) in the accounting policy and apply to this choice consistently. Though value of capitalised experimental development costs cannot exceed the prospective revenues of the development project.

It was not permitted by the German Handelsgesetzbuch (HGB – German Commercial Code) that firms recognize research or development expenditures as assets on the balance sheet till 29/05/2009 because only bought intangible asset could be presented in the balance sheet, so own-produced intangible assets could
only be expensed. Because of law changes expenditures of experimental development after 31/12/2009 can be capitalised in Germany as well. According to the French regulation Plan Comptable General (PCG – General Accounting Plan) capitalising of development expenditure is highly recommended under certain conditions. So capitalising is preferred from the two methods of accounting development expenditures.

**International Standards**

According to IFRS (International Financial Reporting Standards) research costs must be written off as incurred and development costs must be capitalised but IAS 38 requires these costs meeting the six criteria to be capitalised: technical feasibility (1), intention (2), ability (3) to complete and use or sell the intangible asset, probable future economic benefits (4), availability of adequate technical, financial and other resources to complete (5) and ability to measure the expenditure (6).

Under US-GAAP (United States Generally Accepted Accounting Standards) all R&D expenditures are charged to expense when incurred, because prudence principle should be clearly predominant, so in the case of conceptual conflicts, prudence concept should apply.

“In the short run, the differences in requirements between US-GAAP and IAS in respect of the accounting for R&D costs can lead to differences in earnings, assets, equity, and EPS that impact decisions of users of financial statements.” (Ampofo–Sellani [2005] p. 226)

**6. Conclusions**

Different interests and given features of the company (like size and ownership) influence which way of accounting will be prioritized. Regarding the various accounting methods I make an attempt to reveal the different reasons behind choosing a certain way depending on the interests and features of the company.

Capitalising of development expenditures is prevalent principally by
– large and international companies because of interests of management
– starting enterprises because of deficits of the first several years and
– enterprises that have significant and sustained development activity.

Writing off development expenditure is prevalent principally by
– small and medium enterprises because of taxation aspects and
– enterprises that have minimal development activity.
“The change in emphasis from the prudence principle to the matching principle, (…), is most often accepted if it does not influence tax, as in the group accounts.” (Walton at al. [2003] p. 322)

References


OECD [2005]: Oslo Manual, Guidelines for Collecting and Interpreting Innovation Data, OECD.


Handelsgesetzbuch (HGB)

Plan Comptable Général (PCG)

International Financial Reporting Standards (IFRS)

International Accounting Standards (IAS)

United States Generally Accepted Accounting Standards (US-GAAP)