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THE PROBLEMS ASSOCIATED WITH PREPARATION OF DISAGGREGATED INFORMATION

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A b s t r a c t

In this article the author discusses the problems associated with the preparation of disaggregated information. These problems include: identification of segments, measuring segment profitability, internal prices, and measuring segment assets.

PROBLEMY ZWIĄZANE Z UJAWNIANIEM INFORMACJI O SEGMENTACH

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S ł o w a k l u c z o w e: MSSF, sprawozdawczość dotycząca segmentów działalności, rachunkowość zarządcza.

A b s t r a k t

W artykule zaprezentowano problemy związane ze sporządzaniem informacji w podziale na segmenty, do których zaliczono: identyfikację segmentów, pomiar zyskowności segmentów, ceny wewnętrzne, pomiar aktywów segmentu.

Introduction

The core principle of segment reporting is to disclose information about different areas of business activities, such as the types of products and services, groups of customers, distribution channels or geographic areas. This information enables managers and investors to analyse segments separately, thereby

supporting the decision-making process (GAMBLE, SIMMS 2010, p. 85). Segment reporting makes a contribution to improving the reporting potential of financial statements and the internal reporting used for decision making and management control. Segmentation of activities gained particular significance in financial statements in connection with the frequency of mergers. It is true that they have been a common phenomenon in the business community for decades. But initially mergers did not have a significant importance from the point of view of financial reporting, because their goal was to achieve growth within a company's basic lines of business. Nowadays, most mergers concern companies engaged in unrelated businesses. This increasing diversification has led the accounting profession to question the adequacy of financial statements of „conglomerates"[1].

Mergers mean a reduction in the amount of information available to investors, because one company ceases to prepare financial statements. In addition, the surviving company prepares financial statements reporting only the results of total operations. On the other hand, investors would like to obtain information not only about the settlement of the merger, but also would like to receive separate information about the activities of the merged companies. This information should be detailed enough to enable financial analysts to appraise past performance and future prospects and opportunities for growth (LARSEN 2006, p. 541).

The aim of the article is to present the problems associated with the preparation of segment information.

The basic issues in segment reporting

Four basic issues of segments reporting are highlighted in the literature of management accounting (OTONKUE et al. 2009, pp. 3–6, LARSON et al. 1990, pp. 1010–1011):

1. Identification of the segment – it is not possible or desirable to define the segment, due to the fact that there are many possible criteria for dividing a company: products and goods, distribution channels, production processes, conditions of competition.

The management board is the best source of information about criteria used to split the company into segments because of its knowledge of the company structure. For the purpose of external segment reporting, the company should be divided into enough segments to show the basic areas in

[1] The term „conglomerate" is used to describe a company that diversifies to different activities by acquisitions or mergers. Diversification results from internal expansion and development.

which it operates, but it should not be divided into so many segments that the information becomes confusing.

2. The measurement of segment profit or loss – segment results can be measured in different ways. The choice depends on many factors: the degree of decentralization, the skills of heads of functional areas and responsibility centres, the quality of the accounting system, the types of business conducted by a company.

Even if each segment operates as a highly independent unit, there is still a problem of common expenses, i.e. expenses related to more than one segment. During the preparation of internal reports by segments, management must decide which expenses are to be allocated to particular segments and which are to be left unallocated. For allocated expenses the most reasonable basis for allocation must be determined.

3. Determining the level of internal prices – segment results should include the effects of intersegment transactions, which are eliminated when financial statements are prepared. Disclosing such transactions is important because it means increasing the revenues of the supplying (selling) segment and increasing the expenses of the receiving (buying) segment. The internal price should be determined at a level which will allow proper presentation of the profitability of both supplying and receiving segments.

4. The measurement of segment assets – segment assets, as well as segment results, can be determined at different levels. This is because some assets can be easily allocated to different segments, as they are used solely by one segment, while other assets are used by more than one segment. Depending on the assumed basis for allocating common assets to segments, one can get different values of segment assets. To report assets in each segment, a reasonable basis must be determined for allocating common assets to segments that benefit from them.

Identification of significant segments

Segment reporting for external purposes should have the same structure as internal segment reporting. However, internal segment reporting adopts several criteria of disaggregation of information and accounting values, because the information requirements of the subjects to whom it is addressed are different. From the point of view of external reporting, information provided to the chief operating decision maker is important. This means that companies need an integrated reporting system which can provide the necessary information for producing different segment reports.

Of particular interest to top management and division heads is the segmentation of information by strategic business units (SBU), business subsystems corresponding to responsibility centres which present strategic management problems to such an extent that they require the formulation of a competitive strategy. Segment reporting by SBU also provides information on the performance of key variables for the success of the competitive strategies formulated for each business. Table 1 presents a model that includes the following levels of data aggregation.

Table 1

Levels of data aggregation in segment reporting

<table>
<tr><th>Cost centre</th><th>Profit or investment centre</th><th>Operating segment</th><th>Strategic business unit</th></tr>
<tr><td>Cost centre 1</td><td rowspan="2">profit or investment centre 1</td><td rowspan="4">segment 1</td><td rowspan="4">SBU 1</td></tr>
<tr><td>Cost centre 2</td></tr>
<tr><td>Cost centre 3</td><td rowspan="2">profit or investment centre 2</td></tr>
<tr><td>Cost centre 4</td></tr>
<tr><td>Cost centre 5</td><td rowspan="3">profit or investment centre 3</td><td rowspan="3">segment 2</td><td rowspan="3">SBU 2</td></tr>
<tr><td>Cost centre 6</td></tr>
<tr><td>Cost centre 7</td></tr>
<tr><td>Cost centre 8</td><td rowspan="2">profit or investment centre 4</td><td rowspan="2">segment 3</td><td rowspan="4">SBU n</td></tr>
<tr><td>Cost centre 9</td></tr>
<tr><td>Cost centre 10</td><td rowspan="2">profit or investment centre n</td><td rowspan="2">segment n</td></tr>
<tr><td>Cost centre n</td></tr>
<tr><td>Report for cost centre</td><td>report for profit or investment centre</td><td>financial statements</td><td>strategic report</td></tr>
</table>

Source: Own study based on DOMENICO (2006, p. 7).

According to IFRS 8, segment information is obtained via increasing levels of aggregation. In the beginning expenses, revenues, assets and liabilities are allocated to different responsibility centers. This stage takes place wholly within internal reporting. Then, responsibility centers are aggregated to operating segments, and then reporting segments are selected, i.e. the segments presented in the financial statements.

Thus, aggregation increases from segmentation by responsibility centres – from more elementary cost centres to more complex profit and investment centres – until it reaches the operating segments disclosed in the financial statements and reported to the managers of the SBU. In this model the expenses included in reports intended for the managers of the most elementary cost centres are added and supplemented by revenues. In this way profit centre

reports are obtained. A reporting system of this kind overcomes the distinction between internal and external segment reporting and allows the production of segment reports suitable for satisfying different information requirements (DOMENICO 2006, pp. 6, 7).

An operating segment may coincide with a profit centre, as long as that business unit has the following characteristics enumerated in paragraph 5 of IFRS 8:

– It is a component of an entity that engages in business activities from which it may earn revenues and incur expenses (including revenues and expenses relating to transactions with other components of the same entity).

– Its operating results are regularly reviewed by the entity's chief operating decision maker to make decisions about resources to be allocated to the segment and to assess its performance.

– It makes available discrete financial information (KARWOWSKI, ŚWIDERSKA 2009).

In addition, it is necessary to verify the characteristics of a reportable segment laid down in paragraph 12–16 of IFRS 8.

The aggregation of several segments resulting from internal reporting for external reporting purposes may be useful for satisfying the need for greater synthesis in financial statements with respect to the internal one. Thanks to this, investors receive a clear picture with regard to the different areas of operations. This need justifies the aggregation of segments that are similar in terms of profitability and risk. In turn, two or more reporting segments can also be contained in one SBU.

External and internal segment reporting must be considered as a subsystem of overall reporting used by management for decision making. Segment reporting is achieved by attributing accounting values to responsibility centres and, through subsequent aggregations, to reportable segments. By overcoming the distinction between internal and external segment reporting, there is a reduction in the asymmetry between the level of information available to management and investors. It increases stakeholders' confidence and, consequently, the entity can exploit advantages such as a reduced cost of capital. Also the reporting process is simplified and the cost of producing external reports is diminished. On the other hand management has the necessary information during the accounting period to exercise control of segment performance and to make choices aimed at improving results and reducing segment risk.

The measurement of profitability segments

Another problem associated with internal segment reporting is the measurement of segment results. Segment results are determined using segmented income statement, and are particularly useful in assessing the segment as a profit centre. Segment results can be the basis for comparisons of one segment to another and actual results to those expected (DRURY 2013, pp. 327, 328).

There are four possibilities for reporting the results of operations by business segment (FESS 2012, p. 2):

– all sales revenues and expenses divided by segment,

– only sales revenue, cost of goods sold, gross profit or loss on sales, direct operating expenses by segment,

– only sales revenue, cost of goods sold, gross profit or loss on sales by segment,

– only sales revenue by segment.

Of the four possibilities – the segment income statement reporting all revenues and expenses appears to be not only impractical from an accounting standpoint, but also unrealistic for many conglomerates. Such reporting means the allocation of all expenses to separate segments. In practice, in many cases this requires estimates, assumptions and arbitrary allocation. This type of information would not only impact on users of the financial statements, but could also be misleading for them. The other three reporting capabilities avoid the problem of arbitrary allocation of common expenses to segments.

In segment reports, a distinction should be drawn between traceable and common expenses (according to the direct cost approach). The traceable expenses of a segment are expenses that are incurred because of the existence of the segment and if the segment was eliminated, the expenses would disappear. Common expenses are expenses that relate to more than one segment. Even if the segment was entirely eliminated, there would be no change in common expenses. Traceable expenses should be assigned to segments. Common expenses should be treated in a manner that managers consider most appropriate in pursuit of the overall objective of segment financial reporting. In particular, if no cause-and-effect relation exists between common expenses and the activity in any particular segment, then any allocation of these expenses to segments is completely arbitrary and can be endlessly debated by segment managers (BREWER et al. 2005, p. 428). The best solution is to assume that common expenses are allocated to segments presented in financial statements, if an enterprise apportions common expenses for the purpose of internal reporting. If allocating common expenses in

financial statements is misleading, they should be deducted from total segment results (KIESO et al. 2008, p. 1296).

Managers of conglomerates accept reporting of sales revenue by segments, but express opposition to disclosure of business segment results. They oppose it because the results of segments are especially useful to competitors. According to this view, disclosing too many company secrets can be detrimental to the company. However, presenting information about sales revenues by segment without information about segment expenses does not enable financial analysts to make any meaningful analysis of conglomerates. Without information about expenses analysts cannot determine whether segments with high profits are subsidizing other segments, that is, whether the company is achieving the highest possible corporate profit.

According to the third solution, a conglomerate reports sales revenue, cost of goods sold and gross profit or loss on sales by segments. A more detailed method of reporting segment information includes sales revenue, cost of goods sold, gross profit or loss on sales by segments, direct operating expenses and segment operating profit or loss by segments. Such segmented income statement, which is illustrated in table 2, indicates the contribution made by each segment to profitability of the entire company.

Table 2

Scheme of segment income statement according to the third possibility

Segment	*A*	*B*	Total
Revenues from external customers	XXX	XXX	XXX
Revenues from transactions with other operating segments of the same entity	XXX	XXX	XXX
Cost of goods sold	XXX	XXX	XXX
Gross profit or loss on sales	**XXX**	**XXX**	**XXX**
Segment expenses	XXX	XXX	XXX
Segment profit or loss	**XXX**	**XXX**	**XXX**
Operating common expenses	–	–	XXX
Operating profit or loss	–	–	**XXX**
Interest income or expenses	–	–	XXX
Gross profit or loss	–	–	**XXX**
Income tax expense	–	–	XXX
Net profit or loss	–	–	**XXX**

Source: Own study.

Internal prices between segments

Another problem associated with internal segment reporting is determination of internal prices at a level that properly presents the profitability of the supplying and the receiving segments. At the beginning of the last century, the Chief Operating Officer of United Motors pointed out the necessity of setting the internal price at the market price, in order to motivate managers of business units to work efficiently. Since 1918, when United Motors was acquired by General Motors, there was no possibility of using market prices, making it impossible to calculate the rate of return on investments (ROI). Prices of materials transferred from one unit to another were set at cost plus a predetermined percentage of profit. At the same time in order to avoid a situation where the supplying segment has high production expenses, the operations of this segment were analysed and compared with expenses of competitors.

In the 1950s, economists began to emphasize the importance of internal prices determined at the level of opportunity cost. In the case of a perfectly competitive market, the opportunity cost is the market price, because the supplying segment loses sales revenue to external customers when there is an internal transfer. According to economists, in the absence of a market for the transferred goods, the optimal internal price should be set at marginal cost (JOHNSON, KAPLAN 1991, pp. 166–168).

An internal pricing system is used to provide information that is useful for evaluating the managerial and economic performance of segments. The internal price represents an expense to the receiving segment and a revenue to the supplying segment. Transactions between segments can be shown in financial statements in a number of ways. They will be illustrated based on the example of the consolidated financial statements of *ABC*, whose revenues amounted to 600,000 PLN (OTONKUE et al. 2009, pp. 5, 6). Sales revenues of segments are presented in table 3. Possible solutions are presented in tables 4 and 5.

Table 3

Sales of segments in the *ABC* group (in thousands PLN)

Segment	Sales outside the group	Sales to segment *A*	Sales to segment *B*	Sales to segment *C*	Total
A	250	0	70	60	380
B	220	80	0	90	390
C	130	40	30	0	200
Total	600	120	100	150	970

Source: Own study based on OTONKUE et al. (2009, p. 5).

Table 4
Presentation of segment sales within the *ABC* group (in thousands PLN) – first solution

Segment	Sales outside the group	Intersegment sales	Total sales
A	250	130	380
B	220	170	390
C	130	70	200
Total	**600**	**370**	**970**

Source: Own study based on OTONKUE et al. (2009, p. 6).

Table 5
Presentation of segment sales within the *ABC* group (in thousands PLN) – second solution, third solution, fourth solution

Second solution	Sales outside the group
Segment *A*	250
Segment *B*	220
Segment *C*	130
Total	**600**
Third solution	Sales
Segment *A*	380
Segment *B*	390
Segment *C*	200
Total sales of segments	970
Total intersegment sales	370
Total	**600**
Fourth solution	Sales
Segment *A*	260
Segment *B*	290
Segment *C*	50
Total	**600**

Source: Own study based on OTONKUE et al. (2009, p. 5, 6).

In the first solution internal and external sales are presented separately. In the second solution intersegment sales are deducted from the total sales of the supplying segment, so that segment sales represent its sales to third parties. This tends to understate the total level of activity of the supplying segments. In the third solution intersegment sales are deducted from the total figure of all segments. This presentation gives a clearer picture of the level of activity of each segment, but does not show which segment is interacting and in which direction. In the fourth solution intersegment sales are deducted from sales of purchasing segments, so that segment sales represent the extent to which sales

have been generated within the segment. This approach gives information about the extent to which sales are attributable to the activities of segments but requires careful interpretation and conceals the extent of segment dependence.

Identification of segment assets

The task of investment centre managers is to achieve two main goals. Firstly, managers should achieve an appropriate return on investment (ROI). Secondly, they should invest in new assets if the minimum ROI is obtained. This means that the aim of linking profit with assets is to motivate the managers of investment centres and business units to achieve at least the assumed return. It means that determination of the value of segment assets is important. Many assets can be easily assigned to a particular segment because they are used exclusively by this segment. Other assets are used by more than one segment, which means that a reasonable base for allocating common assets to segments must be specified. In contrast, the assets relating to general activities should not be included in segment assets unless they bring significant benefits in terms of the segment. However, any arbitrary allocation of assets should be avoided (YOUNG 2008, p. 227).

In determining the level of assets that a segment uses responsibility should be assigned for common assets, such as cash, buildings, and equipment and commonly created assets such as accounts receivable. Then the value of these assets should be determined (ATKINSON et al. 2004, p. 550). There are many costing alternatives: historical cost, net book value, replacement cost or net realizable value. Most companies use the net book value approach, because managers generally view consistency as the most important consideration.

The assets base used in the formula of ROI is typically computed as the average of the operating assets between the beginning and the end of the year. Operating assets include cash, accounts receivable, inventory, plant and equipment, and other assets held for productive use in the organization. Examples of assets that would not be included in the operating assets category are land held for future use, an investment in another company, or a building rented to someone else (BREWER et al. 2005, p. 429, 430).

Conclusions

IFRS 8 has introduced the so-called management approach, according to which the identification of reportable segments and the measurement of items reported under operating segments should be based on internal reporting

targeted to managers that enable them to make decisions about allocating resources to segments and assess the results of their operations. The opinion that segment reports should not be based solely on information from financial accounting, comes from the view that rules are lacking related to segments, in particular:

– principles for the identification of segments,

– internal (transfer) prices between segments,

– basis for the assignment of revenues, expenses, assets, and liabilities to segments.

No regulation requires the use of management accounting, which includes the above-mentioned issues. However, the solutions in this area are often not clear.

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