



# The Impact of Accounting Treatment of Research and Development Costs: Evidence from Chemring Group Plc

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**Abstract:** This study seeks to examine the accounting treatments of Research and Development (R&D) costs and to assess the impact of the treatments on the statement of profit or loss, and financial position of Chemring Group Plc using secondary data for 2015 financial year. To achieve this, data were obtained from Chemring Group's 2015 annual reports and accounts, and analyzed using content analysis such as tables, walk through accounting illustration and key financial ratios, this is the major contribution of this study demonstrating practically the impact of the treatments of R&D costs, which to the best knowledge of the researcher has not been analyzed before. Findings from the analysis show that expensing all R&D costs has reduced the value of non-current asset and equity at the same proportion to the tune of the initial capitalized amount of development costs. This has impacted the financial position and the balance sheet size negatively by £36.1m. Due to the decline in profit and the balance sheet size in terms of assets and equity, the efficiency ratios have indicated down ward trend while the long term solvency ratio indicates the company is more geared. The study concludes that expensing all R&D costs reduces net asset and equity thereby reducing the size of the balance sheet, and potential investors and other users of financial statement evaluating the company would note that the assets appearing on the balance sheet are incomplete because the huge amount spent to create future benefits are not recognized and reported in the statement of financial position of the company.

**Keywords:** R&D, Cost, Expenditure, IAS 38, Profit or Loss, Financial Position, Chemring Group

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## 1. Introduction

Research and Development (R&D) investments are foundations for generating new knowledge through basic research and ultimately for generating products and services through applied research and commercialization [11]. The revised International Accounting Standard (IAS) 38 Intangible Assets was issued in March 2004. The objective of the standard is to prescribe the accounting treatment for intangible assets that are not dealt with specifically in another Standard. This Standard requires an entity to recognize an intangible asset if, and only if, specified criteria are met. The Standard also specifies how to measure the carrying amount of intangible assets and requires specified disclosures about intangible assets such as brand names, goodwill and R&D expenditure. According to IAS 38, an intangible asset is an identifiable non-monetary asset without physical substance.

IAS 38 requires the immediate expensing of all expenditure of the research component of R&D and allows capitalization of development expenditure only for an intangible asset if all conditions are met. [4] opined that, in practice the point at which companies meet the capitalization criteria will vary. For instance, from an industry perspective, it is likely that pharmaceutical and biotech companies will only meet the recognition criteria late in the development phase because drug approvals from relevant regulatory agencies would need to be received before commercial feasibility of the drug could be demonstrated. Companies that do not require legislative approval on a product are likely to have a comparatively earlier recognition date to capitalize development costs.

However, it is worthy of note that most of the conditions specified under IAS 38 are subjective in the sense that how does a company assess the probability of whether or not

development expenditure will generate future economic benefits? Invariably, this means that in practice a company has a choice whether or not to capitalize its development costs; this practice negates the provision of IAS 38 as it does not provide a theoretical choice in the standard.

Research in IAS 38 is defined as ‘the original and planned investigation undertaken with the prospect of gaining new scientific or technical knowledge and understanding’ (paragraph 8). The standard provides the following examples of research activities in paragraph 56:

- (a) Activities aimed at obtaining new knowledge;
- (b) The search for, evaluation and final selection of, applications of research findings or other knowledge;
- (c) The search for alternatives for materials, devices, products, processes, systems or services; and
- (d) The formulation, design, evaluation and final selection of possible alternatives for new or improved materials, devices, products, processes, systems or services.

Development in IAS 38 is defined as ‘the application of research findings or other knowledge to a plan or design for the production of new or substantially improved materials, devices, products, processes or systems before the start of commercial production or use’ (Paragraph 8). The standard provides the following examples of development activities in paragraph 59:

- (a) The design, construction and testing of pre-production or pre-use prototypes and models;
- (b) The design of tools, jigs, moulds and dies involving new technology;
- (c) The design, construction and operation of a pilot plant that is not of a scale economically feasible for commercial production; and
- (d) The design, construction and testing of a chosen alternative for new or improved materials, devices, products, processes, systems or services.

Research and Development (R&D) is a significant cost for many companies especially those in the health-care equipment and services, pharmaceuticals, biotechnology and life sciences, and software sectors. The reason these costs are incurred is because the companies believe it will result in future revenue flows and profits. However, realistically this is a speculative belief in view of the future uncertainty and so there is no direct relationship between these costs and the future benefits, and in which case the benefits may not materialize. In the same vein, this negates the accrual accounting. The issue of research and development can be quite complex because of the different accounting treatments between research expenditure and development expenditure. All research expenditure is written off to the income statement as and when it is incurred, whereas development costs can be recognized as an intangible asset if, and only if, a company can meet all the conditions stated under IAS 38, though these conditions are virtually subjective. Therefore, this study aims to examine this complexity in the treatment of R&D Costs and its impact on financial statements of Chemring Group Plc. The major contribution of this study is demonstrating practically the impact of the treatments of

R&D costs, which to the best of knowledge of the researcher has not been analyzed before. The study also intends to address the gap of previous studies [2, 8, 10] by presenting a better impact assessment of the treatments of R&D costs in an organized form. Besides this, it enlightens readers with new insights on R&D accounting. It also provides useful guidelines for effective measurement of the impact of R&D costs. The researcher has reviewed the financial reports of some multinational corporations and found that either they did not meet the criteria for capitalizing R&D costs or they expensed all R&D costs with the exception of Chemring Group. It is only Chemring Group among them that capitalized portion of R&D costs with a clear line item in the statement of financial position as development costs. This is why Chemring Group is chosen for the study to clearly demonstrate the impact of expensing all R&D costs having capitalized part of it in the first place to see what transpired in both scenarios and explain the impact of the change. Chemring Group is a global defence technology company focused on the development and manufacture of Countermeasures, Sensors & Electronics, and Energetic Systems for the aerospace, defence and security markets. The Chemring Group delivers high-reliability solutions to protect people, platforms, missions and information against constantly changing threats. With international production facilities, Chemring meets specific customer requirements in defence and security markets in more than fifty countries worldwide. The data set includes extracts from the annual reports and accounts of Chemring Group Plc and covers the period of 2015. The impact is tested using content analysis.

## 2. Literature Review

Paragraphs 52–67 of IAS 38 provide accounting treatments for research and development costs and classified generation of asset into:

- (a) A research phase; and
- (b) A development phase.

If an entity cannot distinguish the research phase from the development phase of an internal project to create an intangible asset, the entity treats the expenditure on that project as if it were incurred in the research phase only.

According to Paragraph 54 of IAS 38, no intangible asset arising from research (or from the research phase of an internal project) shall be recognized. Expenditure on research (or on the research phase of an internal project) shall be recognized as an expense when it is incurred. In the research phase of an internal project, an entity cannot demonstrate that an intangible asset exists that will generate probable future economic benefits. Therefore, this expenditure is recognized as an expense when it is incurred (Paragraph 55).

Paragraph 57 states that an intangible asset arising from development (or from the development phase of an internal project) shall be recognized if and only if, an entity can demonstrate all of the following:

- (a) The technical feasibility of completing the intangible asset so that it will be available for use or sale.

- (b) Its intention to complete the intangible asset and use or sell it.
- (c) Its ability to use or sell the intangible asset.
- (d) How the intangible asset will generate probable future economic benefits. Among other things, the entity can demonstrate the existence of a market for the output of the intangible asset or the intangible asset itself or, if it is to be used internally, the usefulness of the intangible asset.
- (e) The availability of adequate technical, financial and other resources to complete the development and to use or sell the intangible asset.
- (f) its ability to measure reliably the expenditure attributable to the intangible asset during its development.

[12] opined that R&D capitalization poses challenges for financial analysts to make accurate forecasts due to the high complexity involved in the process of forecasting the benefits of R&D projects, capitalization rates, subsequent amortization, and impairments. In the same vein, the informativeness of the capitalization signal increases with greater business environment's uncertainty, potentially exceeding the additional challenges that result from the complexity. [12] empirically found that the capitalization of development costs is significantly associated with both higher individual analysts' forecast errors and forecast dispersion. This suggests that the increasing complexity surrounding the capitalization of development costs negatively impacts forecast accuracy. However, firms with high underlying environmental uncertainty, forecast errors are negatively associated with capitalized development expenditures. This is also consistent with other studies (Aboody and Lev, 1998; Amir et al., 2003; Chambers et al., 2003; Gu and Wang, 2005) cited in [12] which found that capitalization of R&D costs is highly uncertain and complex, making it hard to obtain accurate analysts' forecasts. [9] believes that it will be more difficult to discretely capitalize development expenditure under IAS 38 due to the tight conditions for capitalizing development costs which must be met. This potentially leads to reduced amounts of capitalized R&D being recorded and, accordingly, to more R&D expenditure is being expensed as incurred in the period since the adoption of IAS 38. However, these opponents of capitalization of R&D costs believe that expensing all R&D costs would go a long way in addressing the financial analysts' challenges and be able to provide accurate financial forecast that would assist investors take an informed investment decisions.

In the light of the above, expensing all R&D costs is consistent with accounting principle of conservatism. The conservatism principle is the general concept of recognizing expenses and liabilities as soon as possible when there is uncertainty about the outcome, but to only recognize revenues and assets when there is guarantee they would be received. Conversely, expensing all R&D costs negate logical reasoning because that means that the company fails to show some of its valuable assets in the balance sheets

despite the possibility of future benefits. It could also be argued that the balance sheet does not represent a fair picture of the organization. In the same vein, expensing R&D costs violates the matching principle of accounting because these expenditures are made in the hopes of generating future revenues but the expenses are written-off immediately.

There are proponents of capitalization of R&D costs, for example [10, 8, 10] have empirically found evidence for higher forecast accuracy, higher value relevance, lower information asymmetries, lower forecast dispersion and lower forecast error associated with capitalized development costs. Studies investigating the value relevance of capitalized R&D in Australian firms have found, generally, that it is positively associated with the firms' market value [9]. In the same vein, Abrahams and Sidhu (1998) cited in [9] investigated the value relevance of capitalized R&D costs as well as the relationship between R&D accruals, firm performance and share return. They found that R&D capitalized was value-relevant for capitalizers, and expressed a note of caution for standard setters in reviewing Australian reporting standards. [13] provides evidence of benefit for capitalizing development costs that management is capitalizing when their firm has more certain intangible investments, i.e. investments with less uncertain future benefits and, therefore, more predictable earnings to the firm.

### 3. Research Methodology

The objective of this study is to analyze the impact of the treatments of research and development costs on the financial statement of Chemring Group. This research uses secondary data and it collects and analyzes data from statement of profit and loss accounts, and statement of financial positions of Chemring Group for the period of 2015 financial year. The research bases its measurement of the impact on the content analysis and financial ratio analysis of Chemring Group Plc. This method (content analysis) is similar to that used by [3], but the difference is that this research uses a case study approach and would be analyzing data from key performance indicators reported in Chemring Group Plc's 2015 annual reports and accounts. According to [6] content analysis has two significant advantages. Firstly, once the particular variables have been chosen (a subjective process), the procedure is relatively objective. Therefore the results are independent of the particular research. Secondly, because this technique is more mechanical, larger sample sizes are possible'. Data would be analyzed using walk through accounting illustration and key financial ratios computations in a tabular format. The use of secondary data is justified by the fact that written or printed document are more accurate and reliable in ascertaining compliance to principles in research work than primary data gathered through personal interview or questionnaire administration (Dandago and Muktar, 2003) cited in [14]

## 4. Analysis and Discussion

### 4.1. Data Presentation and Analysis

*Table 1. Financial Performance Highlights.*

Financial Highlights	2015	2014
Order Book	£ 569.6M	£ 486.8M
Underlying Operating Profit	£ 34.4M	£ 46.7M
Revenue	£ 377.3M	£ 403.1M
Underlying Operating Margin	9.10%	11.60%

Source: Chemring Group Plc, annual reports and accounts 2015

Table 1 above shows a decline in revenue and operating profits in 2015 compare to the previous year from £403.1M to £377.3M, and £46.7M to £34.4M respectively.

*Table 2. Research & Development Costs.*

	2015 (£m)	2014 (£m)
Customer-funded R&D	38.2	28.5
Internally-funded R&D		
– expensed to the income statement	9.2	11.6
– capitalized	8.9	11.9
Total R&D expenditure	56.3	52.0

Source: Chemring Group Plc, annual reports and accounts 2015

Table 2 above shows R&D expenditure, including discontinued operations, was £56.3 million in 2015 (2014: £52.0 million). Continued investment in R&D is a key aspect of the Group's strategy, and levels of internally-funded R&D are expected to be maintained as investment in product development continues, particularly within Sensors & Electronics.

Chemring Group Accounting Policies is that development

*Table 5. Impact of Expensing All R&D Costs.*

	Reported 2015 £'m	Expense all R+D	Adjusted 2015 £'m
Revenue	377.3		377.3
Profit before tax	-9.1	Additions - (8.9m)	
Add back finance cost	-14.6	Amortization - 6.2m	
Profit before interest and tax	5.5		2.8
Profit/loss after tax (continuing operation)	(5.3)		(8)
Non-current assets	447	(36.1)	410.9
Current assets	197.4		197.4
Current liabilities	(111.3)		(111.3)
Non-current liabilities	(242.5)		(242.5)
Net Assets	290.6		254.5
Equity	290.6	(36.1)	254.5

Source: Illustration from Chemring Group Plc, annual reports and accounts 2015

Table 5 above shows an illustration of expensing all R&D costs, clearly depicting the positions before and after the adjustment. Chemring Plc policy is to expense research costs and capitalize development costs. However, capitalizing both research and development (R&D) costs shows a decline in

costs that qualify as intangible assets are capitalized as incurred and, once the relevant intangible asset is ready for use, are amortized on a straight-line basis over their estimated useful lives, averaging five years. The carrying value of development assets is assessed for recoverability at least annually or when a trigger is identified.

*Table 3. Statement of Profit or Loss.*

	2015 (£m)
Revenue	377.3
Profit before tax	(9.1)
Add back finance cost	(14.6)
Profit before interest and tax	5.5
Profit/loss after tax (continuing operation)	(5.3)

Source: Chemring Group Plc, annual reports and accounts 2015

Table 3 above shows key financial highlights of statement of profits or loss of Chemring Group Plc.

*Table 4. Statement of Financial Position.*

	2015 (£m)
Non-current assets	447
Current assets	197.4
Current liabilities	(111.3)
Non-current liabilities	(242.5)
Net Assets	290.6
Equity	290.6

Source: Chemring Group Plc, annual reports and accounts 2015

Table 4 above shows key financial highlights of statement of financial position of Chemring Group Plc

*Table 6. Key Financial Ratios.*

Key Ratios	Reported 2015	Expense all R+D	Adjusted 2015
Return on capital employed:			
Profit before interest and tax	5.5	2.8	
Equity+Non-current liabilities	290.6 + 242.5	254.5 + 242.5	0.56%
Return on equity:			
Profit after tax	(5.3)	-8	-3.14%

Key Ratios	Reported 2015		Expense all R+D	Adjusted 2015
Equity	290.6		254.5	
Gearing:				
Non-current liabilities	242.5	45.49%	242.5	48.79%
Equity+Non-current liabilities	290.6 + 242.5		254.5 + 242.5	

Source: Illustration of key ratios from Chemring Group Plc, annual reports and accounts 2015

Table 6 above shows computations of key ratios before and after the adjustment. Chemring Plc policy is to expense research costs and capitalize development costs. However, capitalizing both research and development (R&D) costs shows a decline in Return on capital employed (ROCE) from 1.03% to 0.56% and Return on equity (ROE) from (1.82%) to (3.14%). However, there was an increase in Gearing ratio from 45.49% to 48.79%.

#### 4.2. Interpretation and Discussion of the Impact

Profit before interest and Tax (PBIT) has declined from £5.5m to £2.8 while loss after tax on continuing operation has increased from (£5.3) to (£8). The decline in PBIT and increase in loss after tax is short time and one off occurring in 2015, what this means is that the subsequent years profits would be increased by the supposed annual amortized R&D cost that would have been charged which is now expensed fully in 2015 profit or loss account.

In the same vein, expensing all R&D costs has reduced the value of non-current asset and equity at the same proportion to the tune of the initial capitalized amount of R&D costs. This has invariably impacted the financial position and the balance sheet size negatively. Due to the decline in profit and the balance sheet size in terms of assets and equity, the efficiency ratios have indicated down ward trend while the long term solvency ratio indicates the company is more geared, this means the proportion of financing the business with external fund has increased due to the decline in the value of equity.

Expensing all R&D costs is consistent with the principle of conservatism, and allows for comparability of R&D costs spent between years and between companies. The conservatism principle is the general concept of recognizing expenses and liabilities as soon as possible when there is uncertainty about the outcome, but to only recognize revenues and assets when there is guarantee they would be received. Since the future flow of revenue is uncertain, it is justifiable to expense R&D costs because the possibility for manipulation of capitalized R&D costs is virtually eliminated, there will be no more speculation of likely success or probable failure of R&D project. Again, there will be no more undue reporting advantage by manipulating the estimation of a future outcome. All the R&D costs will now impact the account as they are incurred and exempt the profit from future amortization costs. Expensing all R&D costs is the simplest accounting treatment thereby eliminating the need for judgment by accountants. Difficult estimates are not needed and the possibility of manipulation by accountants is eradicated, and allows decision makers to see the amount spent by management on R&D activities at a glance because they would be quite interested in

the amount invested in the search and development for new ideas and products for the company.

Conversely, this accounting method of expensing all R&D costs means that the company fails to show some of its valuable assets in the balance sheets despite the possibility of future benefits. Expensing all R&D costs in one accounting period especially for this company that spent heavily does not make sense because the expected benefits that would have accrued to the business is beyond one accounting period as such this requires expensing only research costs and capitalizing development costs which should be amortized over the anticipated useful life of the benefits. Expensing all R&D costs violates the matching principle of accounting because R&D costs are incurred with the optimism of generating future revenues but the said costs are expensed immediately in the period without the matching taking place.

## 5. Conclusion

IAS 38 conditions for capitalizing R&D costs are subjective, for instance how does a company assess the probability of whether or not development expenditure will generate future economic benefits? And since the expected future flow of revenue is uncertain, it would be difficult to match revenue and R&D costs. In consequence, this favours the argument of expensing all R&D costs in the accounting period they are incurred. However, potential investors and other users of financial statement evaluating the company would note that the assets appearing on the balance sheet are incomplete because the huge amount spent to create future benefits are not recognized and reported in the statement of financial position of the company. This informs the decline in net asset and equity thereby reducing the size of the balance sheet by £36.1m.

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