Harmonisation in cost accounting practices at Wavin



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Creating harmonisation in cost accounting practices at Wavin

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Preface

This report is written to graduate for my Master of Science degree in Business Administration. I followed the track financial management during the master. In order to deepen en broader my knowledge about business finance I wanted to perform my thesis on a financial topic for an international operating company. Wavin has given me the opportunity to execute my thesis for them and to develop myself and gain more financial knowledge in a challenging environment.

I would like to thank several persons for the support during the research and writing the thesis. I would like to thank Vincent Diepmaat for the opportunity to perform my thesis within Wavin. Every two weeks we had a meeting to reflect on the process and discuss relevant topics of the research. These discussions had an added value to the research and helped to broader and deeper my knowledge about cost accounting. Next I would like to thank Cong Phung Nguyen who guided me throughout Wavin, was always available for questions and helped me to retrieve the necessary data.

I also would like to thank the supervisors of the University of Twente. I would like to thank Dr. Tom Schryver for his critical look to the research and interesting conversations in order to bring the thesis to a higher level. Next I also would like to thank Ir. Henk Kroon for the valuable adjustments to the report.

Finally I would like to thank all the persons of the controlling department of Belgium, Germany and the Netherlands who have provided me the necessary information to elaborate the research. Especially thank to the department of Hardenberg for the pleasant working environment where I have worked the last months.

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Summary

This master thesis analyses differences in cost accounting practices and explorers opportunities to increase harmonisation between Belgium, Germany and the Netherlands. Wavin had a decentralised organisation structure in the past, which caused diverging cost accounting practices. Wavin would like to harmonise cost accounting practices to reduce costs, improve communication and create transparency. Wavin has three types of cost price calculations the standard, IFRS adjustment and fiscal cost price, these are analysed to improve harmonisation.

The thesis provides insights about the cost prices namely the functions, definitions, calculations differences and a proposal for creating harmonisation. The problem definition of the thesis is: analysing differences in cost accounting practices and a proposal for the harmonisation of the cost accounting system. In order to answer the problem first the definitions, functions and calculations of the standard cost price, IFRS adjustment and fiscal cost price have to be known.

The standard cost price is the price for a product which is determined on forecasted raw materials, the budgeted direct production cost and depreciation costs (Accounting Manual Wavin, 2008). Budgeted direct production costs are energy, labour, maintenance, packaging and other costs. Other costs incorporated in the standard cost price are direct materials, depreciation based on replacement value and a mark up. The function of the standard cost price is used for profit measurement, inventory valuation and to support managerial decision making.

The IFRS adjustment calculation caused confusion, because among employees it was first known as the commercial cost price and the accounting manual of Wavin does not prescribes the right definition. The IFRS adjustment is calculated every month for inventory valuation, the total costs of sales have to match with the inventory value. To arrive at the IFRS adjustment the following calculations have to be performed an adjustment for raw materials, adjustment for direct depreciation, adjustment for indirect costs such as indirect production, storage & distribution and depreciation and finally an adjustment for intercompany products.

The fiscal cost price is calculated for external financial reporting to value inventory based on the international financial reporting standards (IFRS) and general accepted accounting principles (GAAP). The IFRS requires finished products to be valued at the absorption price or lower net realisable value. The fiscal cost price incorporates the similar costs as the standard cost price, but is based on actual costs. Depreciation is based on historical costs instead of replacement value. Besides actual indirect costs have to be added, these are the same as in the IFRS adjustment.

The standard cost price differs because of the different allocation methods of costs. Depreciation is in Belgium, Germany and the Netherlands not calculated according to the accounting manual and energy is in Belgium differently allocated in comparison to the other countries. Overall there are limited differences, because Wavin has already been started with the harmonisation of the standard cost price.

The IFRS adjustment was the most difficult to grasp. Each country has its own calculation model which causes inconsistencies. Costs for indirect storage & distribution are not allocated in Belgium and the Netherlands. Germany does not incorporate an adjustment for direct depreciation and the Netherlands bases their figures on average budgeted figures instead of actual figures. Remarkable contains the accounting manual mistakes about the definition and calculation of the IFRS adjustment, which creates ambiguity.

The Fiscal cost price differs because of rules, regulations and different calculation models. The most practices within Wavin are according to the rules of the International Financial Reporting Standards, but for inventory valuation countries have to follow to Local Accepted Accounting Principles. Germany has to calculate inventory according to net realisable value in contradiction to Belgium and the Netherlands, who value inventory according to current costs. In Belgium it is prohibited to incorporate indirect costs for inventory valuation.

Harmonisation in cost accounting practices can be achieved through eliminating the differences as much as possible. The harmonisation should lead to improved communication, prevents different interpretations, creates uniformity and reduces costs. This can be achieved by creating harmonisation in calculations and allocation of costs for all countries. The accounting manual should have an important role in the harmonisation, it should be the leading format where all important knowledge can be retrieved. Harmonisation of the standard cost price can be achieved by allocating costs according to an unified method. This means that depreciation has to be based on 80% of planned operating time and energy should be allocated based on production volume in all countries. For the IFRS adjustment it is recommended to create a redesign which incorporates all necessary costs. A redesign for the IFRS adjustment is elaborated in the thesis and could be applied for all countries. Benefits of the redesign are harmonisation of procedures, improvement of quality, employees can be exchanged between countries and calculations are simplified. The fiscal cost price is currently a very extensive calculation mainly the German method. It is recommended to redesign this calculation to improve efficiency and transparency. The redesign should consist of similar steps for all countries. The model of the standard cost price can be used to allocate actual costs, but instead of budgeted costs actual costs have to be used and indirect costs have to be added. Depreciation has to be based on historical value instead of replacement value. In Belgium it is prohibited to incorporate indirect costs, which makes the calculation less complex. After these steps Belgium and the Netherlands are finished and could upload the costs into SAP, Germany has to perform additional steps to meet the local requirements. Currently the calculation files of the cost prices are out dated and have to be updated with the newest functions of excel or replaced by SAP technology.

To overcome problems with the management of knowledge, it is recommended to improve storage of knowledge. The accounting manual should be the leading format which contains clear definitions and prescribes which cost components have to be incorporated. Without a clear accounting manual harmonisation will be impeded. Improved management of knowledge could prevent different interpretations, mistakes will be prevented and harmonisation will be stimulated.

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1. Introduction of company

1.1 Background Wavin

Wavin is an international operating company which produces plastic solutions for below and above the ground for hot & cold tap water, surface heating and cooling, soil and waste, rainwater management and last mile telecom. With offices in 26 European countries and 16 manufacturing plants Wavin is leader in Europe (Wavin annual report, 2010). To serve customers overseas Wavin has a network of agents in Asia, America, Africa and Middle East. The turnover was 1.2 billion worldwide in 2010. Wavin is listed on the Amsterdam stock exchange (Amsterdam midcap index). The strategy of Wavin is to bring the company back on the path to sustainable and profitable growth and the benefits when the markets return to normal levels (www.wavin.com). Priorities of Wavin are to continuously build on extending their market position in all markets, to offer a complete portfolio of products, produce 95% of the orders in time, reduce their carbon footprint and be innovative (wavin.com).

The company is active in two distinctive market segments above and below the ground. Above the ground products are plastic pipe and fitting systems for hot and cold tap water, surface heating and cooling, soil and waste discharge and electrical conduit applications. Below the ground products are plastic pipe and fitting systems for foul water discharge, water management, cable ducting as well as water and gas distribution. Products for the two market segments are produced in all countries. The plants of interest for this research are Hardenberg (Netherlands), Aalter and Sint-Niklaas (Belgium), Twist and Westeregeln (Germany). Plants are geographically located to serve customers in a range around the plant and because of the relatively high logistical costs per product due to the size, products can only be distributed within a range otherwise distribution costs would be too high. Production processes are injection moulding, extrusion and special products.



Figure 1 Plants Wavin Belgium, Germany and the Netherlands

Injection moulding is the production of plastic fittings using the injection moulding process. This is a manufacturing method where melted material is forced into a mould (which is the inverse of the product's shape), usually under high pressure, and then cooled so the material takes on the shape of the mirror image of the mould (Accounting manual, 2008).

Extrusion is the production of plastic pipes using the extrusion process. Extrusion is a manufacturing method where a material is pushed through a die to forming the desired product (pipes).

Specials consist of handmade products; "Handmade" is the department where plastic pipes, fittings or other products are manually manufactured or assembled. Examples: manholes, bends made from extruded pipe, handmade fittings, assemblies of injection moulded fittings, inspection chambers, reworked bought-in products, sewage treatment units (IBA's), non-standard drains (Tegra's), etcetera.





1.2 Introduction to problem

In the past Wavin was a decentralised organisation and consisted of a geographical structure, this caused that activities and processes were designed independently and performed to satisfy the needs of customers. In terms of responsibility centres Wavin had investment centres, local centres were responsible for revenue, costs, profit and investments. A major advantage was the responsiveness to local market conditions and greater accountability. Disadvantages of investment centres are problems with coordination, communication between responsibility centres and with the head quarter and unfairness in allocation of costs between responsibility centres. Since the globalization of the markets and decline in the housing market, the competition has increased and selling prices are under pressure. Existing practices have to be reviewed in order to be competitive. Wavin has started this process by reducing costs through centralising support functions as the purchase, HRM, planning and financial departments. These supporting functions are now centralised per region. The finance & controlling department which has the interest of this thesis, supports functions for Belgium, Germany and the Netherlands and is transferred to Hardenberg (Netherlands). The process of centralisation of the finance and controlling department revealed that the Belgian, German and Dutch centres have all their distinctive cultures, procedures, calculations and interpretations. Mainly cost accounting practices have major differences between the countries. In order to reap the benefits of the centralisation of the finance and controlling department, harmonisation between cost accounting practices have to be created. The harmonisation should lead to synergy effects, higher efficiency and reduce of costs finally.

Other reasons for harmonisation are to standardise practices, increase transparency, create uniformity across the organisation and improve communication. The aim of the thesis is to explore opportunities to reduce the differences in cost accounting practices in order to increase harmonisation.

The thesis is limited to the controlling department with special interest to cost price calculations. Wavin has three distinctive types of cost price calculations the standard cost price, commercial cost price and the fiscal cost price. The standard cost price is the price for a product which is determined on the forecasted prices of PVC and PE¹ (raw materials), budgeted direct production costs and depreciation costs (Accounting Manual Wavin, 2008). The standard is used as input for selling prices, variances analysis, profit measurement and managerial decision making.

The fiscal cost price is calculated for external financial reporting to value inventory based on actuals on the international financial reporting standards (IFRS) and general accepted accounting principles (GAAP). The IFRS requires finished products to be valued at absorption costing which comprises the costs of raw materials, actual direct production costs, actual direct depreciation based on historical costs and the actual indirect costs.

The Commercial cost price is for inventory revaluation each month. A decisive definition of the commercial cost price has not yet defined, because employees have different interpretations and the accounting manual does not defines the commercial cost price. The first research questions should clarifies the definition of the cost prices.

The aim of the thesis is to identify international differences between the standard, commercial and fiscal, propose a plan for harmonisation for the three cost prices and to find possibilities to create more integration between the three cost prices (standard, commercial and fiscal). First the problems will be further analysed, secondly literature will be reviewed, third the research questions will be answered through a gap analysis, a proposal for convergence will presented and finally one of the proposed solutions will be further elaborated and the impact will be analysed.

1.3 Problem Analysis

The problems will now be further analysed to underpin the need for harmonisation within Wavin. The most important findings related to the problem are:

- Wavin has a decentralised structure from the history
- Differences in allocation of costs
- Different interpretations about the commercial cost price
- Limited information/ knowledge is stored and therefore difficult to retrieve
- Limited integration between standard, commercial and fiscal cost price
- Efficiency of fiscal cost price

¹ Polyvinylchloride and Polyether

History & Culture

Wavin was a decentralised organisation in the past, countries worked independently of each other and communications was limited. An example is the introduction of the ERP system² SAP in the Netherlands, German employees have already been using the system for a while, but have not been consulted. The lack of communication between Germany and the Netherlands caused differences in the use of SAP. The lack of collaboration and communication was not limited to the SAP system, but effected also the calculations of the cost price runs. Cost price excel files were independently designed and have differences. Each country has its own process, format/ lay-out, which makes comparison difficult. For example German cost accounting procedures are more extensive in comparison to Belgian and Dutch cost price practices. The diverging formats causes differences in allocation of costs, which could have seriously impact on the performance of the responsibility centres. If there is arbitrary allocation, inaccurate assignment of costs will appear and the responsibility centres will have inaccurate estimations of costs.

Commercial cost price

The commercial cost price caused the most ambiguity between the countries. Through interviewing Belgian, German and Dutch employees (assistant controllers, controller operations) I noticed different interpretations about the commercial cost price. Different interpretations are caused through limited communication between the countries, and the lack of storage of knowledge in the accounting manual. Employees are lacking the limited guidelines and are depending on past experiences and other employees. At this stage of the research a decisive definition and overview of the right calculation has not yet be identified. Another remarkable finding concerning the commercial cost price is that it has not been calculated in the Netherlands for the last two years. According to the controller operations this is caused through the huge fluctuations of raw materials and production costs, which caused large deviations between the budgeted and actual prices and finally led to large re- devaluations of inventories. In December inventories were valuated according to the commercial cost price principle, which incorporates a comparison between the actual and budgeted costs. In the case of Wavin a huge revaluation occurred in December, because of the deviation between budgeted and actual costs (higher price raw materials and production costs). In January inventory was again revaluated against standard cost price, which caused a huge devaluation of inventory. Based on these fluctuations in value of inventory, there is decided not to calculate the commercial cost price anymore. In Belgium and Germany the commercial cost price is still calculated.

Storage of information

The limited storage of information mainly about the fiscal and commercial cost price is not beneficial for the comprehensiveness. The accounting manual of Wavin (2008 & 2010) describes the function of the standard and fiscal cost price and gives an overview of the cost components incorporated in the calculations, but does not prescribe how costs should be allocated and failed to incorporate the commercial cost price. The accounting manual describes the planning and control organisation, intercompany trade procedures, accounting and valuation principles, other reporting definitions, core parts of balance sheet and profit loss account, cost centre structure and examples of accounting

² SAP is an ERP system which is an integrated system and makes it possible to share and access information directly and helps processing and managing business information.

topics. The undefined definitions (fiscal and commercial cost price) form a grey area and are thus susceptible for interpretations. Currently employees obtain their knowledge from other employees.

Efficiency

The decentralised structure and the diverging practices have affected the efficiency. There are major differences in efficiency, mainly concerning the fiscal cost price (interviews assistant controllers). German employees spend on average one week on calculating the fiscal cost price and in contrast Dutch employees spend only one or two days. In the past the German calculation took two weeks, thus the efficiency has been increased. According to assistant controller's possible explanations for these differences are the complexity of the German calculation, amount of production lines in Germany and the requirements of the accountants. The requirements of the local accountants have affected the design of the fiscal cost price seriously in each country. The different working methods, experience and rules have caused an extremely extensive German fiscal cost price file according to the former German assistant controller. Wavin assumes that there opportunities to increase efficiency. Wavin would like to explore if integration between the different cost prices increases efficiency. Through exchanging and integrating data of the different calculation it might be possible that the calculation of the fiscal cost price could be simplified. For instance parts of the standard cost price could be used for the fiscal or commercial cost price or reversed.

Improvements

Since the last years, there have been significant improvements regarding the cost price runs. The SAP system is now similar for Germany and the Netherlands, which has increased the harmonisation. Since a few years ago the controller operations has started the process of harmonizing the cost price calculations through the design of a standard template for the standard cost price of extrusion. Compared with the past this template breaks costs down into separate cost elements. For example there is now a distinction between the allocation of set-up costs and packaging costs for each production process. In the past the set-up costs of a production line were not known and set-up costs were allocated over all products. As a consequence the selling price of some products increased or decreased, which affected Wavin's competiveness position. For example small batches of customized products have relative high set-up costs and large batches relatively low set-up costs. In the past there was no distinction between customized products and standardised products. This caused a higher price of standard products and a lower price of customized products compared with competitors. The existing template allows Wavin to allocate set-up costs per production line, which improves the allocation and competiveness.

The template for the standard cost price has already been used for the calculation of the standard cost price of extrusion in Belgium and the Netherlands and will be implemented in Germany in the next months. Employees of the controlling department have already made efforts to implement the template for other production process such as injection moulding and special products. Wavin would like to implement the format for all standard cost price calculations of North West European countries.

Conclusion

Cost prices calculations are different between Belgium, Germany and the Netherlands. Costs are allocated differently and procedures are diverging. Formats are not transparent enough which makes it difficult for employees to perform, understand calculations or make comparisons. Employees have different interpretations about the commercial cost price, there are no clear guidelines how cost prices should be calculated, limited information is stored and cost price runs are not designed efficiently. As a consequence the cost price calculation takes more time in one country than in another and the analysis of figures is more sophisticated. The purpose of the thesis is to explore possibilities to eliminate differences between the countries and create more integration between the different kinds of cost price systems. Based on literature divergence and convergence in cost accounting practices will be explored and framework to analyse the differences will be presented.

1.4 Stakeholders

Actors and stakeholders involved in the project are employees within the organization who have an interest in the research or will be affected by research. The master thesis will be performed for the department finance and controlling for Wavin Belgium, Germany and Netherland. These countries are part of North West Europe region (NWE), other countries in this region are Denmark, Finland, Norway and Sweden. One of the main offices of the NWE region is located at Hardenberg, from where I perform my thesis. The most important stakeholders are mentioned in figure 2 and in the thesis you will find references to those stakeholders.

Stakeholders of Wavin directly involved in the process are:



Figure 2 stakeholders

1.5 Objectives

Objectives are defined beforehand in collaboration with the supervisor of Wavin. The objectives should be achieved at the end of the Master Thesis. The objectives are:

- Describe extensively the standard, commercial and fiscal cost prices of Wavin Belgium, Germany and the Netherlands
- Compose a detailed overview of differences in cost price calculation especially the commercial and fiscal cost price
- Identify causes and consequences of the difference between countries
- Elaborate a proposal to solve the problems; include a proposal for convergence of the international cost price system and a proposal for the integration of the different cost prices systems to achieve harmonisation and efficiency
- Create a redesign for the IFRS adjustment

1.6 Problem definition and research questions

During the exploratory analysis problems and causes are identified. Important findings are cost prices are calculated differently in countries, different formats are used, limited information is stored, efficiency varies strong across countries and different interpretations exists of the commercial cost price. Based on these findings the following problem definition is defined.

"Analysing differences in cost accounting practices and a model/ proposition for the harmonisation of the cost accounting system"

To answer the problem definition and to meet the objectives there are several sub questions developed. The research questions should provide the necessary information to answer the problem definition and meet the objectives.

- 1. What is the definition and function of the commercial, fiscal and standard cost price at Wavin?
- 2. How are the standard, commercial and fiscal cost price calculated and how should they be calculated according to the accounting manual?
- 3. What describes the theory about harmonisation, theoretical concepts of cost accounting, convergence and divergence of cost accounting practices?
- 4. What are differences and similarities in the calculation of the standard, commercial and fiscal cost price between Wavin Belgium, Germany, the Netherlands and the accounting manual and why?
- 5. How can the system of cost price calculation improved or redesigned in order to create more convergence and increase efficiency?
- 6. How can the IFRS adjustment redesigned?

2. Theoretical framework

The purpose of this chapter is to consult existing literature about international accounting differences and find possibilities to create more convergence within Wavin. Frameworks will be reviewed in order to obtain more comprehensive knowledge of convergence and divergence in cost accounting practices and to improve the cost accounting system of Wavin. Different perspectives described in the literature could provide a different angle of incidence, which might be beneficial for the research. Frameworks are selected based on suitability, feasibility and relevance for the thesis. First existing research and theoretical concepts are reviewed, secondly frameworks are selected and applied to Wavin in order to analyse differences.

International harmonisation of accounting standards has been the goal of many professional accountants (Baker & Barbu, 2007), despite their efforts and the introduction of International Accounting Standards (IAS) and International Financial Reporting Standards (IFRS) there are still international differences. The goal of achieving international harmonisation is to create uniformity between international accounting practices. Factors which might impede this harmonisation are cultural, education, traditions, economic and legal differences among countries.

Many researchers found differences in accounting systems because of Hofstede (1980) cultural dimensions, institutional variables (Powell & DiMaggio, 1983), contextual and economic variables (Granlund & Lukka, 1999). The field of comparative management accounting is extensive, most research focuses on e.g. control systems, market based accounting, activity based costing, guiding techniques and financial accounting differences. In contrast to previous studies our study focus on seeking explanations for exclusively cost accounting differences between national cost accounting systems (Belgium, Germany, and Netherlands). Limited papers have investigated the differences between cost accounting practices within countries, therefore this study might advance the field of research. Another benefit is the inclusion of Belgium, Germany and the Netherlands, most research focus on contradictions between UK, USA, Germany and Japan.

Most research focus on general management control systems, accounting management, financial reporting accounting (IFRS, IAS, and GAAP) and market based accounting research. E.g. Saudagran & Meek (1997), Tay & Parker (1990), van der Tas (1998) have developed a link between variables such as tax systems, inflations patterns, political and economic ties and education and differences in accounting systems. Doupnik and Salter (1995) included in their study environmental, institutional and cultural variables for explaining differences in national accounting system. Most research has compared management accounting practices between Germany, Japan, Australia and Anglophone countries (UK, VS). Krumwiede (1998) investigated activity based costing between Germany and Anglophone countries and Augst (1999) compared the degree of uncertainty avoidance between Japan and Germany in relation with their cost accounting system.

First the most relevant theoretical concepts are discussed which are recurring in many management accounting research. The concepts are based on the papers and books of Bhimani (1999, 2005, and 2007), Powell & DiMaggio (1983) and Hofstede (1987). Bhimani proposes several perspectives to explain international differences in management accounting practices, according to these

perspectives explanations for differences in accounting practices will be briefly discussed. Bhimani examines the following conceptual approaches: the contingency theory, the cultural contingency approach, the new institutionalism perspective and the societal effects approach. Each concept will be described independently, but it's possible to merge concepts to provide a broader perspective on cross national differences. A limitation of the studies of Bhimani is that he presents only the methodological perspectives and does not specify the differences in cost accounting.

The contingency theory states that contextual factors influence organization structure and hereby management accounting system. Contextual factors which can influence organisations are size, technology, culture, environment and strategy. The contingency approach mainly focus on analysing macro perspective. Through understanding contextual factors organizations are better enables to design their cost accounting system. Bhimani has collected and published results of management accounting practices based on the contingency theory of diverse nations in Europe, but did not elaborate on the differences and similarities in detail.

The cultural contingency approach emphasizes that culture is seen as the dominant factor that explains variation in management accounting across countries (Hofstede, 1987). Many researches who have investigated cultural variations have applied Hofstede's cultural variables. Hofstede identifies four dimensions which explain differences between countries, namely individualism versus collectivism, uncertainty avoidance, power distance and masculinity. Hofstede defines the dimensions: Individualism refers to the extent to which individuals are integrated into groups. Uncertainty avoidance refers to the degree of avoidance of uncertainty, organisations with a high degree of uncertainty avoidance have more strict control systems. Power distance is viewed as the extent to which the less powerful members of organizations and institutions expect and accept that power is distributed unequally. Masculinity refers to competitiveness and assertiveness versus modesty and caring. According to Schultz et al (2001), cultural factors play a dominant role in the development of accounting systems. Uncertainty avoidance is seen as the most important feature of explaining diversity among countries (Doupnik & Salter, 1995). Doupnik & Salter investigated uncertainty in Germany, Japan, UK and USA and concluded that Germany and Japan are uncertainty avoided countries compared to Anglophone countries (UK, USA). German and Japanese companies have detailed and timely cost information available and using complex accounting systems (Aust, 1999). Anglophone countries are focusing on more simple systems for their cost accounting practices in comparison to Germany and Japan.

New institutionalism studies how institutions interact and the way they affect each other and explains why organization have the same isomorphism. Institutionalism isomorphism can be distinguished by the literature of DiMaggio & Powell (1983) and incorporates the dimensions coercive, normative and mimetic. Coercive is related with political and informal influence e.g. rules and regulations. Mimetic pressures results from response to uncertainty and leads to the imitation of practices of other companies. Accounting and consultancy companies do often imitate each other practices. Companies imitate e.g. their activity based costing system, ERP software. Normative pressures are associated with professionalization, e.g. accounting practice can be homogeneous through professional institutions like Universities or professional networks who adapt the same practices. Different educational systems between countries could affect cost accounting systems and leads to divergence.

For further explanation of the institutional perspective the model of Granlund (1999) is used. Granlund & Lukka (1999) developed a framework (Figure 3 Granlund & Lukka (1999)) which includes both economic and institutional factors to identify convergence and divergence of management accounting practices. The framework is an appropriate tool for systematic analysing convergence in organisations and will therefore be used to analyse Wavin. Economic pressure are economic reasons for convergence or divergence of management accounting practices e.g. global economic fluctuations or increased market competition. The framework focuses on explanations for similarities and dissimilarities of management accounting practices and is a helpful tool to analyse economic and institutional pressures at Wavin. The model of Granlund & Lukka is chosen, because one of the objectives of Wavin is to create convergence between cost accounting practices. The model can be beneficial to explore possibilities for convergence.

Drivers of Convergence and Divergence of Management Accounting Practices



Figure 3 Granlund & Lukka (1999)

First the pressures of the framework (Figure 3 Granlund & Lukka (1999)) will be briefly discussed and compared with Wavin. Coercive factors for divergence are national legislation and national institutions. Legislation can be IFRS, GAAP and other accounting standards. Normative pressures are national culture and corporate cultures which are according to Bhimani (2007) the dominant factors for explaining differences in management accounting system. You might not expect that culture still dominates divergence, because the globalization has already diminished the impact of national cultures (Bhimani, 2008). Pressures of the framework of Granlund and Lukka are projected on Wavin to investigate if those pressures are also affecting the practices of Wavin. Through this exploration it should be clear which factors causes divergence in cost accounting practices and thus can be improved or adjusted. Based on the economic, coercive, normative and mimetic pressure practices are investigated at Wavin.

Economic

Economic pressures that can drive Wavin for convergence are production technology, economic climate, competition and information technology. Wavin has already made efforts for convergence of accounting practices because of globalization and competiveness. The SAP system is a good example of convergence. This system has already been operational in Germany, Belgium and the Netherlands and will be implemented in the Scandinavian countries in the next years. Through the SAP system, accounting practices are becoming more similar, standardization of data collection formats and tasks can be performed more efficiently. The increased competition through the globalization supported the need for convergence in cost accounting practices in the last ten years. Harmonisation of cost accounting practices should results in a reduction of costs and an improved competitive position. An example is the implementation of a harmonized SAP system. In order to utilize the benefits of SAP, working standards with the ERP system should be the same in all countries. Otherwise it could lead to divergence as it was the case by the implementation of SAP in the Netherlands. Other examples of increased convergence to reduce costs are centralised purchasing, exchange of employees and outsourcing of production to other Wavin countries.

Coercive

Coercive pressures for convergence at Wavin are legislation and pressure of head quarter of Wavin. Convergence through legislation can be achieve by the adoption of accounting standards like international financial report standards (IFRS), international accounting standards (IAS), general accepted accounting principles (GAAP). Since 2005 the use of IFRS is mandatory for companies who are listed. The introduction of the reporting standards have already increased the convergence between the countries of Wavin. The accounting manual of Wavin is based on the rules of IFRS, with some exceptions due to GAAP. Thus legislation could cause convergence through the adaption of accounting standard and divergence if local accounting standards are required (GAAP). The following practices are different between IFRS and GAAP (accounting manual Wavin, 2010):

- Bad debt provision
- Fixed Assets
- Defined benefit pension plans
- Financial lease
- Inventory valuation

Inventory valuation will be only further explored, because the other practices are not related to our topic and thus not relevant for this research. Wavin has three types of cost price calculations (standard, commercial and fiscal) especially the IFRS adjustment (commercial cost price) and the fiscal cost price are affected by the IFRS regulations. The IFRS adjustment is calculated for cost recognition purpose, to revalue inventory. This calculation is performed to check the total costs of sales with the inventory value, these figures should be corresponding. To achieve this calculation IFRS requires finished products to be valued at absorption price (accounting manual Wavin, 2010). To arrive at absorption costing the following components should be calculated:

- Raw materials shall be valued according to FIFO method (last three months) and compared with the replacement value of raw materials
- Indirect production costs

- Indirect storage & distribution in cost of sales
- Indirect depreciation³
- Direct depreciation⁴

Regulations for the IFRS adjustment are similar and might thus be harmonised for Belgium, Germany and the Netherlands. In the next chapters the calculations will be investigated if they are indeed similar between countries.

The fiscal cost price is calculated for external reporting and is based on GAAP or IFRS. Each country has its own local GAAP requirements for the calculation of the fiscal cost price (Table 1 Inventory valuation differences IFRS vs. local GAAP). The use of GAAP or IFRS regulations could explain differences within Wavin. In table 1 regulations of IFRS and GAAP for Belgium, Germany and the Netherlands for inventory valuation are presented. The Belgian GAAP does not allow the inclusion of indirect costs for the fiscal cost price, whereas Germany and the Netherlands should incorporate indirect costs. The IFRS requires that inventories shall be valued at lower of cost and net realizable value whereas GAAP does not requires both lower of cost and net realizable value in all countries.

IFRS	German GAAP	Dutch GAAP	Belgian GAAP
*Inventory shall be valued at the lower of cost and net realizable value (selling price less costs to complete and sell) To value costs three techniques can be used standard cost method, retail method and most recent purchase price	*Inventories shall be valued at cost or lower value according to types of inventories: replacement value, selling price less arising expenses, or the lower or both	*Inventory shall be valued at the lower of costs and net realisable value or at current cost ("replacement value")	* Comparable to IFRS, except that: it is allowed not to include indirect production
The use of LIFO is prohibited. Cost of inventories shall be assigned by using FIFO or weighted average cost formula	Costs can be assigned by using FIFO, LIFO, or weighted average costs	LIFO, FIFO, weighted average costs are permitted. LIFO is not recommended	LIFO, FIFO, weighted average costs are permitted.
*PWC, KPMG, Deloitte	*PWC Germany	*PWC, KPMG, Deloitte	*PWC Belgium

Table 1 Inventory valuation differences IFRS vs. local GAAP

³ Depreciation for indirect assets as production buildings and building related installations (Accounting manual, 2010)

⁴ Depreciation of fixed assets used in the production process (Accounting manual, 2010)

IFRS mentions lower of cost and net realisable value. The lower of cost method includes a comparison between the replacement value and the historical value. The lowest figure of the two can be used for valuation. This method is often applied if replacement value is lower than historical value. The net realisable value (NRV) is the selling price less the estimated costs of completion and sale. The costs of sale include marketing and distribution costs. The NRV will be compared with the historical costs of goods in stock, if the NRV is lower than it will be used for inventory valuation (KPMG, 2010).

Another important coercive pressure to create convergence in accounting practices of Wavin is the head quarter. As mentioned in the introduction the decentralised organisation structure in the past caused divergence between the different countries. Through increasing the influence of the head quarter Wavin could become a more centralised organisation and harmonisation might be improved. The head quarter could prescribe accounting practises and working procedures in order to create uniformity across the whole organisation and increases convergence (Carlile, 2004).

Normative

Normative pressures which lead to convergence are education and professional networks at Wavin. Education leads to convergence if employees have the same training. Convergence in training practices can be achieved by e.g. traineeships or intern education. Currently Wavin has already traineeships for German employees, but not for other employees. German employees are located at Dutch and German offices, this increases the exchange of knowledge and stimulates uniformity in working procedures.

The European educational system has becoming more and more harmonized, students can be transferred between countries which leads to more convergence between international universities and finally could lead to more convergence in organisations. Culture is another normative pressure for divergence. Wavin had a decentralised organisation in the past, which have caused distinctive corporate cultures. An examples of divergence in national cultural is that German employees are very accurate and perform tasks extensively whereas Dutch employees are accurate, but are trying do tasks as practical as possible to get maximum results. This is also mentioned by Jones and Luther (2004), who states that German accounting is highly educationally oriented, whereas Anglo-Saxon countries are based on a professional environment. Another example of divergence in national cultures is that there is limited collaboration between Belgium, German and Dutch employees, tasks are designed and performed independently.

Mimetic

Mimetic behaviour is based on social science, which states that under circumstance of uncertainty people are imitating the behaviour of others (DiMaggio & Powell, 1983). This behaviour leads to convergence in practices and is also applicable for organisations. Organisations as Wavin are using advice of international operating consultancy firms such as PWC. The relatively small set of major consulting firms leads to convergence in practices within organisations. Practices like activity based costing, working procedures, the SAP system have been adapted by Wavin and causes convergence.

All the forces for convergence of the framework of Granlund & Lukka (1999) have been discussed. Despite the increased convergence in the last years, there are still opportunities to create more convergence in cost accounting practices at Wavin. Opportunities for convergence are inventory

valuation, procedures and organisation structure. The findings above-mentioned can be helpful as a guideline to analyse the cost prices.

The societal effect perspective studies cultural characteristics of organizations that reflect institutional features in which they are located. This viewpoint studies social, economic and political factors. Education for example varies strongly across countries and could therefore influence accounting practices strongly and could explain variation. German management accountants are mainly trained in university, Anglophone by professionals and Japanese on the job (Jones & Luther, 2004). German management accounts are theoretically educated and very narrow specialized and focus on theoretical solutions to develop comprehensive cost accounting systems. In comparison British and Japanese management accountants focus rather on practical solutions (Ahrens & Chapman, (1999), Hoffjan et al, (2007). Based on this information Ahrens & Chapman (1999) concluded that German companies run more complex cost accounting systems than Anglophone and Japanese countries.

Another view point for analysing differences is the framework of Carlile (2004) based on organizational science. The framework can be used to specify practical and political mismatches and describes how common knowledge and domain specific knowledge can be managed effectively under different circumstances. The framework can be used in a setting of new product developments, inter organizational change or innovation to specify practical and political contradictions in order to create shared understanding. The framework is useful for analysing the current situation of Wavin, because Wavin would like to harmonise their existing cost accounting system (inter organizational change) and has problems with managing knowledge. Problems related to the management of knowledge mentioned in the problem analysis are limited information is stored and employees have different interpretations for dissolving the problems.

Figure 4 Framework for managing knowledge Carlile (2004)



The framework describes three processes namely transfer, translation and transformation and three boundaries syntactic, semantic and pragmatic (Figure 4 Framework for managing knowledge Carlile (2004). Besides these features there are three properties of knowledge described at every boundary namely differences, dependence and novelty. Differences refers to the differences in amount of knowledge acquired, if new knowledge is

acquired the knowledge should be shared and assessed. Dependence refers to the relations between actors, if dependence is high there is a high need for sharing knowledge, if there is limited dependence differences in knowledge are not important. The last relational property of knowledge is about the novelty of the circumstances. If novelty is high, there will be a high need for sharing and assessing knowledge.

Besides the three properties of knowledge there are as mentioned three categories to scale the complexity of managing knowledge syntactic, semantic and pragmatic (Shannon and Weaver's, 1949).

The framework can be seen as a vector (Figure 4 Framework for managing knowledge Carlile (2004)), if novelty increases then a boundary will be crossed and a new more complex stage will be entered. Each stage has its own circumstances, solutions and challenges to deal with problems. The circumstance and challenges of each stage are described.

- The first stage is the syntactic / information transferring boundary. At this stage knowledge has to be shared and assessed through specifying differences and dependencies between actors. This can be achieved by storage and retrieval of knowledge (Davenport and Prusak, 1988). Problems can occur when differences and dependence between actors are not known and no information is stored.
- 2. The next stage is the semantic boundary which focuses on translating knowledge. In this stage differences and dependencies which are unclear can cause different interpretations. In this stage it's important that differences are recognized and discrepancies are dissolved through the creation of shared meanings. In order to create common meanings it is possible that trade-offs between systems/ knowledge have to be made. Helpful tools to create common meanings are cross functional teams, translators and interaction. A treat in the process can be the presence of different interests among employees; this endangers the process of creating common meanings.
- 3. The last stage from the semantic to the pragmatic stage will be entered when different interests of actors have to be resolved (Carlile, 2004). Shareholders have different interest, but are still dependent on each other. This can be resolved through the transformation of common knowledge and domain specific knowledge in order to share and assess knowledge effectively. Solutions can be achieved through jointly collaboration.

If a border of complexity is crossed the problems in prior complexity levels can recur and should therefore first be dissolved. E.g. if the semantic stage is entered problems of the syntactic stage have to be first dissolved. The framework is a useful tool for analysing divergence in order to create convergence. Certain characteristics described in the framework can be identified at Wavin.

Wavin is currently positioned in the second stage the semantic boundary. This means that Wavin has to deal with problems occurring in the first and second stage. Problems related to these stages are differences between employees and actors are unknown, because information is not available and employees have different interpretations. Existing problems within Wavin related to the framework are limited information is stored about the fiscal and commercial cost price, which causes different interpretations. It is known that differences are present between cost price calculations, but there is a lack of insight in the differences. Employees in the different countries do not know how cost price calculations are performed in other countries. Sharing and storage of information about cost prices procedures is limited and could be improved.

The first stage consist of transferring knowledge, knowledge should be transferred across employees. Problems related to this stage are unknown differences between actors, differences in level of

knowledge and dependencies are not known between actors. Wavin has problems related to storage of knowledge as is mentioned in the problem analysis. Limited information is stored about the calculations of the cost prices, the accounting manual only prescribes which conversion costs (production costs) should be allocated. Most knowledge is only known by experienced employees, which can be a treat for the organisation. Knowledge of cost prices should be stored, in order to make it possible to retrieve information if necessary. Through the storage of information, divergence can be identified, knowledge can be transferred and common understanding improves (Carlile, 2004).

The semantic boundary focuses on creating common meanings. Problems in this boundary are related to different interpretations between actors. Wavin has different interpretations about the commercial cost price which leads to different interpretations. The commercial cost price is calculated differently between countries and employees have different interpretations. Problems can be solved by identifying differences through interaction between actors. The interaction should create common meanings about the commercial cost price. In order to find the best practice it might be possible that a trade of between the different interpretations have to be made to create common meanings. This could lead to the implementation of an unified commercial cost price for all countries.

Several perspectives and frameworks have been discussed the contingency theory, cultural theory, new institutionalism, societal perspective and organizational science. The framework of Granlund & Lukka (1999) and the framework of Carlile (2004) have been used to analyse the current situation of Wavin. The framework of Granlund et all presented an overview with both institutional and economic pressures for divergences and convergence and is therefore comprehensive in comparison to other perspective which only have incorporated one viewpoint e.g. social (Hofstede, 1987), contextual (Bhimani, 2006), institutional (Powell & DiMaggio, 1983). The framework is suitable for Wavin, because it explains mimetic, coercive, normative and economic pressures for driving convergence. Coercive factors could seriously affect the process of harmonisation, because local general accepted accounting principles are diverging (table 1). In the next chapters the normative pressures will be compared with Wavin in order to analyse if normative pressures also diverging for Wavin. Normative pressures which are causing divergence are national and corporate culture, which lead e.g. to diverging working methods. The framework will be used to determine international differences and find opportunities to create convergence in the cost accounting practices at Wavin. The framework of Carlile (2004) provides an overview to effectively manage knowledge in organisation and is based on organisational science which provides a different angle of incidence. As in the problem analysis is mentioned Wavin has problems related to the management of knowledge, there are different interpretations about the commercial cost price and limited knowledge about cost prices is stored. The framework can be used to set-up a proposal to deal with problems related to the management of knowledge at Wavin. The frameworks (Carlile, Granlund ET all) are both beneficial to analyse difference and can be used as a guideline to increase convergence in accounting practices.

3. Research design

This chapter explains the design of the research and describes how this research will be conducted, research questions will be answered and how a proposal for the problem definition will be designed. The main focus of the research will be on analysing differences between cost price calculations and find possibilities for convergence between Belgium, Germany and the Netherlands. The thesis is based on the defined research questions, which will be answer the problems and should lead to harmonisation (Figure 5 Research Design).



Figure 5 Research Design

The first chapter consists of a problem analysis to further explore problems and to define relevant research questions. The chapter provides background information about Wavin, the objectives of the thesis and an overview of the most important problems and the need for harmonisation of international accounting practices.

What describes the theory about harmonisation, theoretical concept of cost accounting, convergence and divergence of cost accounting practices?

Chapter two contains an elaboration of the most important concepts about cost accounting practices in the literature. Several theoretical perspectives are reviewed about convergence and divergence of international cost accounting practices. The aim of the exploration of theoretical concepts is to find possible frameworks which are beneficial to analyse convergence and divergence at Wavin. Important frameworks found are the framework of Granlund & Lukka (1999) and Carlile (2004). These frameworks are based on the new institutionalism perspective and organizational science and can be used to create convergence in cost accounting practices at Wavin.

What is the definition and function of the commercial, fiscal and standard cost price at Wavin?

This research question describes the function of the standard, commercial and fiscal cost price. Through answering the research question the definitions and functions should be clear and can be used as input for the analysis. By defining the definitions misinterpretations can be prevented, employees will know what the cost prices means and it ensures that the correct calculations are compared. Currently there are different interpretations of the commercial cost price, which makes comparison between the countries difficult, these have to be eliminated.

How are the standard, commercial and fiscal cost price calculated and how should they be calculated according to the accounting manual?

The elaboration of this research question how the standard, commercial and fiscal cost prices are calculated should provide the necessary information what steps should be taken to perform the calculations. The main aim of this chapter is to get an overview of the calculations of the standard, commercial and fiscal cost price according to the accounting manual, which is input for the gap analysis of the cost prices. This overview can be used to analyse the cost prices and identify gaps between accounting manual and practices in reality. The overview of the standard, commercial and fiscal calculation will be based on the accounting manual (2008 & 2010), interviews and internal document.

What are differences and similarities in the calculation of the standard, commercial and fiscal cost price between Wavin Belgium, Germany, the Netherlands and the accounting manual and why?

The analysis of the different cost prices consists of a comparison between the current practices of Belgium, Germany, the Netherlands and the accounting manual. For each cost price (standard, commercial and fiscal) practices in the different countries will be compared with the accounting manual in order to find convergence and divergence. In order to analyse the international differences pressures described in the framework of Granlund & Lukka (1999) will be applied. Relevant pressures are coercive factors as national legislation, normative factors are culture and mimetic pressures. In the literature review it was noticed that there are differences in inventory valuation (fiscal cost price)

between countries due to the use of GAAP or IFRS regulations. Wavin will be analysed if those rules are affecting or applicable for cost accounting practices of Wavin.

Besides the comparison between the countries there will be an analysis performed between the different kinds of cost price calculations, to explore if there are similarities between the cost prices themselves. The analysis between the different kinds of cost prices will be performed in order to find possibilities to harmonize these calculations. It might be possible that the calculation of the standard cost price can be used for the calculation of the fiscal and commercial cost price or reverse. Differences between countries will be analysed based on the founded calculations of standard, commercial and fiscal cost price (research question two).

Another problem which is mentioned in the problem analysis is the difference in efficiency (amount of time spend on calculations). Assistant controllers (German, Dutch) have mentioned some causes which might explain the differences in efficiency e.g. the different calculations for fiscal cost price, amount of production lines included and in the past developed practices. These causes will be analysed in order to underpin them and find explanations for divergence. Finally a table will be presented with all current practices of Belgium, Germany and the Netherlands of the standard, commercial and fiscal cost price and analysed and compared with the accounting manual. The table should provide a clear overview of the differences and similarities and can be used as input for the solution stage.

How can the system of cost price calculation improved or redesigned in order to create more convergence and increase efficiency?

The solution stage will be based on the literature review, answers on research questions and other relevant information. The solution stage consists of an advice for dissolving the problems related to the different interpretations of the commercial cost price, storage of information, efficiency of fiscal cost price. It should also contain a solution to bridge the differences between the countries and the three cost prices. This will be done by a proposal for creating convergence in accounting practices, which should lead to more harmonisation internationally and more integration between the three types of cost price calculation. International harmonisation should lead to similar accounting practices for the standard, commercial and fiscal cost price. Integration between cost prices should lead to an increase in efficiency and simplified calculations.

How can the IFRS adjustment be redesigned?

The former step consists of a proposal for creating harmonisation. This research question focuses on creating a redesign for the IFRS adjustment and the implementation of this redesign. Based on the required knowledge in the former research questions a redesign for the IFRS adjustment will be presented. The redesign shall be discussed with the stakeholders of Wavin in order to create a best practice of the IFRS adjustment and will be finally implemented. The proposed solution will be compared with the current situation to determine the impact of the redesign.

Conclusions; problem definition

The final part of the thesis consists of an answer on the problem definition, most important findings, recommendations, future research and the objectives will be reflected. The problem definition will be answered based on the required information. The most remarkable findings will be reviewed and explained. Recommendations for Wavin will be presented and future research to increase harmonisation shall be discussed.

The methodology of the research has been discussed, the following paragraphs comprises the research method, data collection method, data analysis method, limitations and relevance of the research. This should provide a clear overview of how the research will be performed.

3.1 Research method

Scientific research has many methods to solve problems, such as experimental research, survey research, cross sectional, inter temporal or a case study (Shadish, Cook & Campbell, 2001). The type of research that best fits is a case study. This research method fits the best, because it focus on descriptive and exploratory research based on limited information to uncover problems, this is the case for Wavin. Advantages of a case study are the flexibility and the use of different insights from many disciplines. Flexibility refers to the different information sources which can be chosen. Disadvantage of this method is that it is difficult to make generalisations (Shadish, Cook & Campbell, 2001). The unit of analysis are the standard, commercial and fiscal cost accounting systems in Belgium Aalter, Germany; Westeregeln and Twist and the Netherlands; Hardenberg. All of these production locations are part of the Wavin North West Europe (Figure 6 Wavin North West Europe).



Figure 6 Wavin North West Europe

3.2 Data Collection

The research will primarily consist of qualitative data. Qualitative data methods are interviews, focus groups, documentation, observations or diaries (Aaken et al, 2007). For this research interviews and documentation are the primarily data sources. Data will be gathered through semi-structured interviews, analysis of internal documents, books and existing theory.

Semi structured interviews will be used to further explorer the problems, define definitions and to identify underlying causes for differences between cost price calculations. Semi structured interviews are used instead of structured interviews, this makes it possible to further elaborate on a specific topic and you are better enable to find causes for divergence by asking (Aaken, 2007).

Internal documents are accounting manuals, management accounting reports, annual reports, excel spreadsheets and other internal document which might be beneficial for the research. The excel spreadsheets are major sources, because they contain the calculations for standard, commercial and fiscal cost price and are input for SAP software to calculate the final cost price. External documents which might advance the research are documents about accounting regulations e.g. IFRS or GAAP. Regulations should be known, because countries have to deal with IFRS rules and local rules. Those documents are retrieved from the major accountancy organizations as PWC, KPMG and Ernst & Young.

Excel sheets are clustered by type of production process. Products can be divided in four distinctive production processes namely extrusion, injection moulding, special products and trading goods. The production process extrusion, injection moulding and special products have each a separate standard cost price calculation, but not all countries have those production lines. Belgium has no injection moulding and special products, but only extrusion. The calculations of the commercial and fiscal cost price are all incorporated in one file for each country.

The area of our research is related to literature about international cost accounting or management accounting practices. Scientific literature will be used to discuss existing theoretical concepts and to review existing literature about cost accounting practices, which might be applicable for Wavin. The focus will be mainly on finding explanations for convergence and divergence in accounting practices internationally.

Analysis of data will be based on critical examining the gathered data, the use of extensive schedules with differences in cost accounting practices and theoretical frameworks will be used to critical discuss the findings. In order to prevent mistakes and misinterpretations all findings related to the cost price calculations will be discussed with the supervisor of Wavin and assistant controller of the Netherlands each week. A time schedule is made to manage the process. Differences between countries will be discussed and effects will be analysed in order to determine the impact.

3.3 Relevance of research

Limited research has investigated the differences between cost accounting within countries, most research focuses on differences in accounting and the effects for valuation, book value of equity and other effect for market based measures. In contrast to previous studies our study focus on seeking explanations for exclusively cost accounting differences between national cost accounting systems (Belgium, Germany, and Netherlands). Limited papers have investigated the differences between cost accounting practices in countries, therefore this study might advance the field of research.

Another advantage of this research is that previous studies focus on management accounting practices in Germany, Japan and Anglophone countries. This research focus on the countries Belgium, Germany and the Netherlands, this can be an addition to existing literature.

A limitation of our study might be the generalisation of the results, because only results of Wavin are applied. This limits the generalisation of the results to other industries. This is a logical consequence, because the thesis is elaborated especially for Wavin.

4. Definitions, functions and calculations of the standard cost price, IFRS adjustment and fiscal cost price

This chapter provides an overview of the definitions, functions and calculations of the standard, commercial⁵ and fiscal cost price of Wavin. The definitions should provide the required knowledge to understand the complex theory of cost price calculation and should dissolve the problems related to the management of knowledge. Problems related to managing knowledge are described in chapter two according to the framework of Carlile (2004). It was identified that Wavin has problems related to the storage of cost accounting information and different interpretations are existing of the commercial cost price. In order to solve problems related to managing knowledge Carlile (2004) states that knowledge should be shared and stored and differences between actors should be specified. Problems related to unclear differences and interpretations can be resolved by creating common meanings. Interpretations will be eliminated through defining a corporate definition, functions and calculations. The knowledge stored in this chapter will be necessary for analysing differences between the countries, without valid knowledge analysing for gaps will be impossible. The information of the cost prices are based on the accounting manual, excel spreadsheets and other internal documents.

4.1 Standard cost price

The standard cost price is the price for a product which is determined on forecasted raw materials, the budgeted direct production costs and depreciation costs (Accounting Manual Wavin, 2008). Raw materials are PCV and PE, the price of those materials is determined based on the expected price for the upcoming month. The standard cost price is based on budgeted costs instead of actual costs in order to avoid fluctuations of selling prices due to unexpected costs, irregularities or one-time-costs and is based on normal conditions (Drury, 2008).

The standard cost price incorporates budgeted direct costs. Direct costs incorporated in Wavin's standard cost price are direct production costs. Indirect costs according to Wavin are expenses with no nature or direct relationship with production output and sales levels and are directly assigned to the profit and loss account (see appendix for overview of direct and indirect costs ⁱ). Direct costs as defined by Wavin are diverging from the theory, which states that direct costs are directly related to a product (Drury, 2008). Wavin defines direct costs as costs which are directly connected to the production process of the product. The distinction with the theory is that Wavin assigns costs as direct, but these costs (e.g. depreciation) are not directly connected with the product.

The function of the standard cost price is for profit measurement, inventory valuation and to support managerial decision making. Profit can be estimated based on the standard cost price. Stock can be valued through the value of finished products based on standard cost price. In order to support managerial decision making, variance analysis are performed to evaluate performance based on

⁵ The commercial cost price will be mentioned as the IFRS adjustment in the rest of the thesis

actuals vs. budgeted costs. Wavin executes variance analyses for production, raw materials, stock adjustments and freight variances.

The calculation of the standard cost price comprises the forecasted (PVC) and forecasted (PE) costs of the raw materials and the budgeted direct production costs and direct depreciation (Accounting Manual Wavin, 2008). Production costs are direct labour, energy, packaging, maintenance and other cost (Figure 7 Standard Cost Price).



Figure 7 Standard Cost Price

Direct materials consist of raw materials, components, additives and re-crushed materials. Raw materials include the purchase price of the materials. These prices are based on prices at the beginning of the month and are updated to the expected price. Other costs directly related with raw materials are incoming freight costs, import duties and costs of external re-crushing (accounting manual, 2008). Normal rebates have to be deducted from the purchase price of raw materials. Components are bought-in from group companies or third parties examples are rubber rings, inserts, metal sheeting.

Direct production costs are direct labour, maintenance, energy, packing and other costs. Direct labour incorporates all personnel of mixing, crushing, production departments including shift leader, direct maintenance and direct quality control personnel, internal transport and handling personnel for production up to the delivery of finished products in the warehouse and finishing and packaging personnel. Repacking is not included as direct labour costs. Personnel costs are salaries and wages, social security costs, pensions and allowances. In contradiction to the theory Wavin defines conversion costs as direct labour, energy, packaging, maintenance and other costs. The theory defines conversion costs as direct labour plus manufacturing overhead costs (Drury, 2008). The definition of Wavin will be used in the thesis.

Energy incorporates all energy used for production, energy for heating and lighting of the buildings is excluded (indirect). Packing costs are costs for boxes, films, crates, reels etc. for products in

production. Maintenance includes the costs of maintaining machinery, other costs are for example lease costs of forklifts.

Depreciation costs of the standard cost price are the depreciation charges for the fixed assets used at the production process. Examples of fixed assets are machinery for extrusion, injection moulding and handmade equipment. Depreciation is based on the replacement value and should be based on 80% of the planned operating time. The replacement value is the historical purchase price and should be annually increased with an index. Planned operating time is the total available time minus the utilisation losses. Utilisation losses are all losses of a structural nature, such as weekends, holidays and including all scheduled downtime and planned maintenance (AM, 2010).

Finally a mark-up can be added to the standard cost price if necessary. A mark up could be unexpected costs as standard overweight, production losses, incoming freight or mixing losses.

The process of calculating the standard cost price consists of the calculation of the costs above mentioned in excel for each production line of a production process. Production processes are extrusion, injection moulding and special product. A production process consists of multiple production lines (machines), for which the production costs are calculated. First costs are identified for a production process, secondly assigned to each line through the use of distribution keys (e.g. production volume, consumption) and finally costs are assigned to an activity type. Wavin differentiate the activity types EEL (labour), EEM (machine) or EES (set-up). In a separate file all activity types and their costs are displayed, this file is used to upload the activity types and costs into SAP. In SAP the price per product can be determined. Each production process has its own activity type, with this activity type a price per product can be calculated. For example EEL001, EEM001, EES001 are the costs for extrusion machine 1. Figure 8 Calculation of standard cost pricepresents the allocation of costs to the activity types.



Figure 8 Calculation of standard cost price

4.2 IFRS Adjustment

The definition of the commercial cost price caused some inconsistency as is mentioned in the problem analysis stage. During interviews with employees of finance and controlling department it was identified that different interpretations existed of the commercial cost price. Beside there is limited information prescribed in the accounting manual, therefore it was difficult to formulate a clearly defined definition. The term "commercial cost price" was not even mentioned in the AM. It took a while before finally more information was found about the commercial cost price. After comparing the interpretations of all employees with each other and contacted the head quarter the decisive definition has been captured. The commercial cost price is better known as IFRS adjustment at the head office and is described in the newest accounting manual (31-12-2010). The term "IFRS adjustment" will be used in the report from now on instead of commercial cost price. The term commercial cost price has been used in the past, but is confused with the current IFRS adjustment. The newest accounting manual prescribes the IFRS adjustment, but still limited and contained some errors. The accounting manual (2010) states that IFRS adjustment is for recognition purpose; the total cost of sales value have to match with the inventory value (IFRS). The IFRS adjustment consists of a revaluation/devaluation of raw material based on FIFO correction, indirect production in cost of sales, indirect storage in cost of sales, indirect depreciation in cost of sales and an adjustment for direct depreciation. The re- or devaluation can be found on the balance sheet as IFRS revaluation commercial book value and is calculated each month and at the end of the year an overview with the total revaluation will be made. The total value of inventory each month consists of the value of finished products, raw materials, commercial articles, other costs and the IFRS adjustment. Raw materials are incorporated in the IFRS adjustment. The standard cost price plus the IFRS adjustment are partially the inventory value.

The IFRS adjustment consists of an adjustment for raw materials, indirect production, indirect storage & distribution, indirect depreciation and direct depreciation.



Figure 9 IFRS Adjustment

The adjustment for raw materials is based on the difference between FIFO (last three months) value versus actual price (replacement value) and is calculated each month.

Indirect costs are indirect storage, production and depreciation. Indirect production costs are costs for production planning, production management, engineering, maintenance management quality assurance and laboratory costs (accounting manual, 2010).

Indirect storage consists of costs to bring product in their current condition in the warehouse. Indirect costs for storage are costs related to storage, dispatch and transport. Examples of costs are:

- Internal movement of stock
- Storage materials, additives, finished products, packaging material in warehouse and depots
- Order picking
- Customized packaging
- Internal/ customized transport

Indirect depreciation incorporates the depreciation of production building, building related installations, silos and assets included in the overhead stock.

The adjustment for direct depreciation is the differences between depreciation based on replacement value and depreciation on historical value.

The total adjustment for IFRS consists of sum up of all above mentioned costs and leads to the revaluation of finished products.

4.3 Fiscal Cost Price

The fiscal cost price is calculated for external financial reporting to value inventory based on the international financial reporting standards (IFRS) and general accepted accounting principles (GAAP). The IFRS requires finished products to be valued at the absorption price or lower net realisable value at end of year. Inventory valuation for the fiscal cost price according GAAP differs between countries as mentioned before (chapter 2, coercive factors). According to Wavin's accounting manual (2008) absorption costing comprises the costs of the raw materials, the actual direct production costs the actual direct depreciation based on historical costs and the actual indirect production or logistical costs in order to bring the products in their current location and condition in the warehouse or stock transfer point from production to the warehouse. Non-manufacturing costs are not allocated to products, but are directly assigned to the profit and loss account. Wavin incorporates all manufacturing costs to value inventory for fiscal purpose.

The lower net realisable value is the estimated selling price less the costs to sell the products (Accounting manual, 2008), this calculation is used in Germany to value stock. Normally the lower net realisable value will be used if the value of stock is less than the actual costs (historical costs). When stock is re-valued at the net realisable value a loss has been made, because selling price is lower than actual cost price these losses should be reported on the profit and loss account. The fiscal cost price for inventory valuation based on actuals is booked on the balance sheet as for fiscal purpose. GAAP is not mentioned in the accounting manual, because each country has its own local GAAP which

requires different methods to value inventory. An overview of existing practices to value inventory practices will be presented in the next chapter.

The fiscal cost price requires finished product to be valued at absorption costing or lower net realisable value. Absorption costing requires that actual direct production, actual direct depreciation and indirect production or logistical costs are applied. All costs included in the fiscal cost price are presented below.



Figure 10 Fiscal Cost Price

Actual direct costs

Actual direct costs are direct material, labour, energy, packaging, maintenance and other direct costs. Labour, energy, packaging, maintenance and other direct costs are the same as the standard cost price, but are determined at actual prices.

Raw materials

Raw materials have to be valued at FIFO.

Depreciation

Depreciation is determined at historical costs and stops at zero.

Indirect costs

The indirect costs includes all costs in order to bring the products in their current location and condition in the warehouse or stock transfer point from production to the warehouse. Indirect production costs which have to be incorporated for valuation are production planning, production management, engineering, maintenance management, quality assurance and laboratory costs. Indirect storage costs are to transfer products into the warehouse or stock location. Indirect depreciation incorporates costs for depreciation of indirect production or logistical functions.

Net realisable value

Inventory can be valued according to the net realisable value this is a comparison between the selling price and actual price, the lower should be used to value inventory. The selling price is the price minus costs to complete sale. Costs for completion of sale are e.g. marketing and distribution costs.

The comparison between actual costs and selling price should be executed for all products and consists of many products for each country.

4.4 Comparison of cost prices

The standard, IFRS adjustment and fiscal cost prices are compared with each other to identify major differences and similarities. The cost prices have each their distinctive use. The standard cost price is namely used for profitability analysis, stock valuation and variances analysis and is calculated each month. The IFRS adjustment for revaluation of inventory based on the differences between budgeted and actuals. The fiscal cost price is calculated each end of the year to revalue stock at actual figures for external financial reporting.

The standard cost price is based on budgeted costs in contrast to the fiscal which is based on actuals. All calculations incorporates production costs, these are labour, maintenance, energy, packaging and other costs. The prices of raw materials included in the standard cost price are determined on prices of the last month and will be updated each month. The prices of the raw materials for the fiscal calculation and IFRS adjustment are determined based at FIFO valuation. The IFRS adjustment does not include production costs only direct depreciation.

Depreciation is incorporated in the standard and fiscal cost price, but the calculations diverge. Depreciation for the standard cost price is determined on the replacement value and on 80% of the planned operating time. In contrast the depreciation for the fiscal cost price is based at the historical value and stops at zero. The depreciation of the standard cost price will never be zero and the historical purchase price will be increased annually with an index. The depreciation included in the fiscal cost price could be zero.

Besides the above-mentioned costs the IFRS adjustment and fiscal cost price include indirect costs. The fiscal cost price incorporates all manufacturing costs; direct production, indirect production, storage and indirect depreciation. In contrast the standard cost price only incorporates direct production costs. The fiscal cost price is used to value stock according to the absorption method, which means that indirect costs are incorporated in the calculation. The IFRS adjustment and fiscal cost price both incorporates the same indirect costs; indirect production, indirect storage & distribution and indirect depreciation.
5. Analysing differences between Cost Prices of Belgium, Germany, Netherlands and Accounting manual

The standard, IFRS adjustment and fiscal cost price are analysed for divergence in Belgium, Germany and the Netherlands. The analysis should expose the major differences between countries and between countries and the accounting manual. The analysis incorporates a comparison of the standard cost price, IFRS adjustment and fiscal cost price between Belgium, Germany and the Netherlands. Table 3 presents an overview of all differences between countries and the accounting manual. Based on the results of the analysis a proposal for convergence can be elaborated.

5.1 Standard cost price

The standard cost price calculation has little deviations between the countries which are mainly caused through the use of a standard template (Figure 11 Standard template standard cost price calculation) for the countries. The standard template is an excel spread sheet with an allocation model to allocate costs to production lines. The template has already been operational for the Belgium and Netherlands and will be implemented in Germany the next year. Through the use of the template convergence has increased between Belgium and the Netherlands. Despite the introduction of this template there are still differences.

Extrusion Line	Work Center SAP	Activity type	Set up costs per set up€	Conversion costs per ton €	Labour €	Machine €	Set up (Recap Setup Total) €	Packing €	Mixing (Mix. Co. x prod. hr) €	Crushing €	Grinding €	Reallocation (guaranteed conv.co.)GL 17011200) €	Total €
125-49 PVC Apollo / Biax	12549	EEL001											0
091-04 PVC Elektro	09104	EEL002											0
091-08 PVC Elektro	09108	EEL024											0
091-03 PVC 25 t/m 75	09103	EEL003											0
125-50 PVC 110 t/m 160	12550	EEL004											0
114-01 PVC 125 t/m 315	11401	EEL005											0
090-06 Quickswitch	09006	EEL006											0
125-48 U-3 400 t/m 630 NL + GE	12548	EEL007											0
105-01 U-3 110 t/m 200 NL	10501	EEL008											0
100-03 U-3 125 t/m 200 GE	10003	EEL009											0
100-05 U-3 110 GE	10005	EEL009											0
125-47 U-3 250 t/m 315 NL + GE	12547	EEL010											0
114-02 PVC 200 t/m 450	11402	EEL021											0
075-02 U-3 32 t/m 90	07502	EEL022											0
178-02 deleted in 2011													0
Total			#DEEL/0!	#DEEL/0!	0	0	0	0	0	0	0	0	0

Figure 11 Standard template standard cost price calculation

The standard cost price should consist of raw materials, direct production costs, depreciation and a mark-up. Raw materials are calculated based on forecasted prices in each country, there are no differences between them. The calculation of the conversion costs (labour, maintenance, energy, packaging, and other costs) contains differences. First of all the design of the German format is different in comparison to Belgium and the Netherlands, because Germany has not applied the standard template as already mentioned before.

Another factor for divergence is the calculation of the distribution key for energy. In Belgium is energy calculated based on consumption KwH of the last year (Figure 12 Allocation energy Belgium

whereas in Germany and the Netherlands energy is based on budgeted production volume (Figure 13 Allocation energy Netherlands). Figures are not the actual reproductions of Wavin's figures, but fictitious.

	Activity type	Consumption KwH	Production Volume	Consumption	% verdeling	Total Extrusion
E01 Extruder 1 Glad 110 - 160	EEM011	1.000			8,069%	41.039
E03 Extruder 3 Glad 75 - 160	EEM013	50			0,403%	2.052
E05 Extruder 5 Glad 160 - 250	EEM014	800			6,455%	32.831
E06 Extruder 6 Ultra 3 80-200	EEM012	333			2,687%	13.666
E07 Extruder 7 Ultra-3 80 - 200	EEM016	555			4,478%	22.776
E08 Extruder 8 Ultra-3 80 - 200	EEM017	1.100			8,876%	45.143
E09 Extruder 9 Ultra-3 80 - 200	EEM018	555			4,478%	22.776
E10 Extruder 10 Glad 200 - 400	EEM019	8.000			64,553%	328.309
X000000X	0				0,000%	-
0	0				0,000%	-
0	0				0,000%	-
0	0				0,000%	-
0	0				0,000%	-
0	0				0,000%	-
0	0				0,000%	-
Subtotal extrusion		12.393			100,000%	508.592

Figure 12 Allocation energy Belgium

	Activity type	Consumpt ion KwH / ton	Productio n Volume	Consumpt ion	% verdeling	Total Extrusion
0	0	200	0	0	0,000%	-
0	0	150	0	0	0,000%	-
125-49 PV0	EEM001	75	681	51.076	2,579%	495
091-04 PV0	EEM002	300	1.000	300.000	15,151%	2.906
091-08 PV0	EEM024	180	500	90.00	4,545%	872
091-03 PV	EEM003	266	600	159.600	8,060%	1.546
125-50 PV0	EEM004	210	700	147.000	7,424%	1.424
114-01 PV0	EEM005	70	1.200	84.000	4,242%	814
090-06 Qui	EEM006	59	800	47.200	2,384%	457
125-48 U-3	EEM007	78	1.500	117.000	5,909%	1.133
105-01 U-3	EEM008	276	700	193.200	9,757%	1.872
100-03 U-3	EEM009	63	7.000	441.000	22,272%	4.272
100-05 U-3	EEM009	500	0	0	0,000%	-
125-47 U-3	EEM010	100	3.500	350.000	17,676%	3.390
114-02 PV0	EEM021	0	1.000	/ 0	0,000%	-
Subtotal ex	trusion	2527	19,181	1.980.076	100,000%	19.181

Figure 13 Allocation energy Netherlands

The Dutch method is more precise in comparison to Belgium, if production in Belgium would increase more energy will be consumed. The current method will not assign higher costs, because the figures are based on consumption of last year and not on production volume as in the Netherlands.

Direct depreciation is another factor which causes divergence between the countries. According to the accounting manual (2010) depreciation should be calculated based on 80% of the planned operating time⁶. When comparing Belgium, Germany and the Netherlands with the accounting manual all countries have diverging methods. Belgium and the Netherlands calculate depreciation based on replacement value, which is the replacement value divided by depreciation period (mostly 10 years). Germany calculates depreciation almost according to the accounting manual, but failed to incorporate a correction for maintenance. Depreciation is calculated in Germany as follows:

(replacement value / depreciation period)

* machine hours = direct depreciation

(planned operating time * 80%)

The difference in calculations influence the cost price, in Belgium and the Netherlands depreciation is not based on 80% of operating time in contrast to Germany (does not incorporate a correction for maintenance). If the same calculation in Germany was used as in Belgium and the Netherlands, the total depreciation of all extrusion lines together would be higher and should thus affect the cost price. In order to underpin the impact of the 80% rule, depreciation is calculated according to the 80% rule in the Netherlands. If the 80% rule will be applied deprecation shall drop with 39 and would affect selling prices considerably.

Divergence in the standard cost price calculation is caused through the allocation of costs (e.g. energy). In the Netherlands and Belgium depreciation costs are not allocated according to the accounting manual, which affects the standard cost price. Germany allocates depreciation almost correctly, but failed to incorporate a correction for maintenance. Overall there is limited variance between the countries, due to the implementation of a standard template.

5.2 IFRS Adjustment

The IFRS adjustment is calculated in all three countries each month and should consist of an adjustment for raw materials according to FIFO method, adjustment for indirect costs and direct depreciation. There were immediately difficulties to compare the calculations between the countries, because there are major differences between the excel files mainly due to the different formats (appendixⁱⁱ, IFRS adjustment calculations).

Another major difference is that the Dutch calculation of indirect costs is based on average percentage of last year, in contradiction Germany and Belgium bases their figures on actual absolute figures updated monthly. Considering this finding the Dutch calculations is less precise in comparison to the Belgium and German calculation. The Dutch IFRS adjustment method will be briefly explained (Figure 14 IFRS Adjustment Netherlands). First the percentage production costs have been calculated of finished products. Secondly the percentage indirect costs is calculated of production costs + indirect IFRS costs. The value of finished products (last month) is multiplied with the percentage conversion cost and then multiplied with the percentage of indirect costs (Figure 14 IFRS Adjustment Netherlands, point 3). The increase of conversion costs in stock minus direct depreciation of the

⁶ Planned operating time is the total available time minus the utilisation losses. Utilisation losses are all losses of a structural nature, such as weekends, holidays and including all scheduled downtime and planned maintenance (AM, 2010).

actual month is a percentage (adjustment finished products) of total finished products of last month and will be used to revalue the actual month (4). The percentage will be multiplied with the value of finished products in stock of the actual month, which is the IFRS adjustment of finished products. According to the administrator of cost prices this method is used, because it is easier than the others. But if you compare the Dutch method with the others, it is questionable if it is a simplified method. The method has limited structure, figures are based on estimations and the calculation is less understandable than the Belgian method.



Figure 14 IFRS Adjustment Netherlands

Raw materials should be calculated based on the differences between FIFO value versus the actual prices. All the three countries do perform this calculation, but have distinctive formats. The FIFO calculations of the Netherlands and Belgium are relatively simple in comparison to Germany. The FIFO calculation in Belgium and the Netherlands are based on raw materials of the last three months and compared with the total actual value of raw materials. Germany has more raw materials in comparison to Belgium and the Netherlands which extends the file. Another explanation for the extensiveness is that Germany makes limited use of formulas, which causes an extremely long list of data.

Germany does not compares the FIFO value with the actual value, but compares the FIFO price of materials with the price of 31-12-2010 this is not in accordance with the manual. The extensiveness of the FIFO calculations in Germany causes also an increase in calculation time in comparison to Belgium⁷ (Figure 15 FIFO Belgium and the Netherland).

⁷ Figures are not actual reproductions of Wavin's accounting figures.

C. Aanpassing voorraden tengevolge van FIFO (max. 3	maanden) "Raw materials"				
Herwaardering op basis van FIFO integraal per					
	Prime	Maalgoed	Off spec	Totaal	
September		-	-		
Augustus	-	10.000,00 -	6.000,00 -	16.000,00	
Juli		2.000,00		2.000,00	
Juni	-	-	-	-	
Mei	-	-	-	-	
April	-		-		
Maart	-	-			
Februari				-	
Januari	-		-	-	
December	-	-	-	-	
November	-	-	-	-	
Oktober	-	-	-	-	
Totaal		12.000,00 -	6.000,00 -	18.000,00	
Herwaardering op basis van FIFO maximum "3" maanden pe	Pr				
0-jan					
	Prime	Maalgoed	Off spec	Totaal	
September	-	-	-	-	
Augustus		10.000,00 -	6.000,00 -	16.000,00	
Juli		2.000,00		2.000,00	
Totaal		12.000,00 -	6.000,00 -	18.000,00	

Figure 15 FIFO Belgium

Indirect production costs are incorporated in all countries, but not specified in all countries. In Germany indirect production costs are specified and codes of SAP are displayed in order to upload costs directly from the system. Germany does specify all indirect costs by indirect production costs, indirect depreciation and indirect storage & distribution. Belgium has not specified the indirect costs, but incorporates a total figure for all indirect costs. After examining the indirect costs through uploading costs out of SAP and questioning the Belgian controller, I identified that they do include all the indirect costs as mentioned in the accounting manual. The Dutch method has also not specified the indirect depreciation are mentioned. Through interviewing the responsible employee (administrator cost prices), it was discovered that indirect storage and distribution are not incorporated in the calculation. According to the employee, that is because activities of storage and distribution are performed by employees of the production departments. In Germany these activities are performed by a separate crew and can therefore be allocate to indirect storage and distribution costs.

Belgium and the Netherlands have incorporated an adjustment for direct depreciation, which is based on the difference between replacement value and historical value. Germany has not incorporated this adjustment for depreciation, this is remarkable because the accounting manual prescribes the adjustment for depreciation. The adjustment have to be incorporated, because the standard cost prices values depreciation based on replacement value and reporting rules requires depreciation based on historical value. The adjustment ensures thus that depreciation is based on historical value.

The cost components are now discussed according to the accounting manual. When comparing the calculations it is noticed that Belgium, Germany and the Netherlands all incorporated an additional element in the calculation. All countries have incorporated an adjustment for intercompany finished products. These are products which are traded intercompany. This mark-up for intercompany products is 3.8% of total value finished products intercompany. Through interviewing all stakeholders it became clear that this additional adjustment is charged by the head office, but remarkably not prescribed in the accounting manual.

Major differences related to the IFRS adjustment are the deviating formats of all countries. Germany compares FIFO with prices of 31-12-2010 instead of actual prices and does not incorporate an adjustment for direct depreciation. The Dutch method bases their figures on average budgeted costs instead of absolute figures. Besides Belgium and the Netherlands do not incorporate indirect costs for storage & distribution, because it is not clear how it have to be comprised.

5.3 Fiscal cost price

The fiscal cost price is calculated for external financial reporting and incorporates a calculation for inventory valuation based on actual figures, in comparison to the standard cost price and IFRS adjustment. The fiscal cost price should consist of actual direct production costs, indirect production costs and raw materials based on FIFO valuation (4.3 calculation fiscal cost price). The abovementioned elements will now be analysed.

Wavin applies the principles of the international financial reporting standards (IFRS) for financial reporting. IFRS should lead to convergence between countries, but entities in different countries still have to deal with local general accepted accounting standards (GAAP), this causes differences. In chapter two rules and regulations for inventories have been explored (Table 1 Inventory valuation differences IFRS vs. local GAAP). Belgium, Germany and the Netherlands have all distinctive requirements for the fiscal cost price. Belgium and the Netherlands have determined their figures on actual prices to value inventory of the current year. Germany bases their figures on lower net realisable value called "Niederstwert-prinzip" (NWP), which means that a comparison is made between actual prices and selling prices. The lower of those two is chosen as input for inventory valuation. The current method of Germany is in accordance with the rules of IFRS and the German local accepted accounting principles (GAAP). The Belgian and Dutch methods are also in accordance with local GAAP. The Dutch uses the method to value inventory at current costs, which means the actual price of production costs and indirect costs are uses to value inventory. The Belgian GAAP method requires inventory to be valued according to IFRS, but it is prohibited to include indirect production costs. In reality they only include actual costs and do not incorporate indirect costs. The local requirements for GAAP have thus a major effect on the determination of the fiscal cost price.

Raw materials should be valued based on actual prices. Germany calculates the actual price of raw materials through the average price this year and compares it with last month and takes the lowest one. This figure minus bonuses and cash discount is the actual price for raw materials. This is done for each material and article in stock and comprises an extensive list. In the Netherlands the prices of raw materials are based on replacement value and are uploaded out of SAP and do not incorporate any other calculation. Belgium does not include actual prices of raw materials, they only incorporates actual direct production costs (conversion costs).

Actual direct production costs (energy, labour, maintenance, depreciation, packaging, and other costs) are incorporated in all countries, but Belgium excludes packaging and other costs. Germany allocates actual direct production costs through the use of the format for calculating the standard cost price, which makes it easier to perform the calculation. The Netherlands have designed a different format for the allocation of the actual conversion costs instead of using the format of the standard cost price in the Netherlands.

Indirect costs have not been allocated in Belgium as already mentioned before. In the Netherlands indirect costs are uploaded from SAP and assigned to other costs. In Germany indirect costs are also uploaded from SAP and are just as the actual costs allocated through the format for the standard cost price. By using the model of the standard cost price, costs can be easily allocated, but it is questionable if this is necessary, because for the fiscal cost price it is not necessary to assign indirect costs per product. According to the accounting manual indirect production, storage & distribution and indirect depreciation should be incorporated, but the Netherlands do also incorporate additional indirect costs for storage and expedition.

Depreciation is based on historical costs in all countries. Germany uses again the same model as for the standard cost price to allocate depreciation, this is based on 80% of total operating time * depreciation of the machine. Belgium and the Netherland do not bases depreciation on 80% of operating time, this causes thus again differences as in the standard cost price calculation.

The figures of Belgium and the Netherlands are based on the period January until 30 November. Germany bases there figures on January until 31 October. You might expect that all countries bases there figures on the same period, but this is not the case. Through interviewing the assistant controllers of all countries, it was identified that the assistant controller of Germany spends more time on the calculations then the other assistant controllers do and therefore starts one month earlier with the calculation of the fiscal cost price. The German assistant controller spends one to two weeks on the fiscal cost price. Belgian and Dutch employees spend one or two days on the calculation. The difference in calculation time is remarkable and therefore it is decided in consultation with the supervisor of Wavin to further explore this difference. What immediately is noticed is the extensiveness of the German Excel file, it is comprised of multiple file tabs and an extensive list of data. Whereas the Belgian and Dutch files are comprised of only a few file tabs. One explanation is that the countries applying different methods due to regulations. By interviewing assistant controllers it was noticed that the amount of products is playing an important factor in the amount of time spend on calculations. For Germany the costs of each product have to be separately defined if using the net realisable value. The extensive list of products and calculations to determine the costs do not improve the comprehensiveness of the calculation. The most time of the fiscal cost price run is spend on identifying new costs e.g. new production lines and adding them to the excel files. The German assistant controller and former Dutch assistant controller underpin that the assignment of new production line/ products increases their effort. New production lines/ products have to be added in all excel files, and linkages have to be checked if everything is still working properly. As already have been described in the theoretical part, German companies have more complex cost accounting systems in comparison to other countries (Ahrens & Chapman, 1999). It could be concluded that this is also the case German practices within Wavin.

Experience is another factor which affects the efficiency. The Dutch former assistant controller operation has more experience than the German assistant controller and therefore spends less time on the calculations. The fiscal cost price run is performed once a year and to obtain experience it takes you a few years. These factors and the limited information causes differences in the efficiency.

The fiscal cost price diverges between the countries, the major differences are caused through rules and regulations (IFRS and GAAP), the inclusion or exclusion of indirect costs and the specification of

costs. Germany specifies and allocates costs extensively in comparison to the Belgium and the Netherlands.

5.4 Differences between Standard, IFRS and Fiscal Cost Price

The differences have now been analysed between the countries, but there are also differences between the cost price runs themselves. This is of course caused by the distinctive functions of the standard, IFRS adjustment and the fiscal cost price, but the calculations have characteristics in common. Differences are briefly presented in Table 2 Differences between cost prices, the costs components in the quadrants (chapter 4) are compared with each other.

	Standard cost price	Fiscal Cost price	IFRS Adjustment
	Direct production costs (labour, energy, maintenance, packing, other costs)	Direct production costs (labour, energy, maintenance, packing, other costs)	
nces	Raw materials based on forecasted prices	Raw materials valued according to FIFO method	Adjustment for difference FIFO and actual prices raw materials
Differe	Direct depreciation based on replacement value	Direct depreciation based on historical value	Direct depreciation, differences between replacement value and historical value
		Indirect production, indirect storage & distribution, indirect depreciation	Adjustment of indirect costs, indirect production, indirect storage & distribution, Indirect depreciation
			Adjustment for intercompany products

Table 2 Differences between cost prices

The calculation of the direct production costs incorporate in the standard cost price returns in the fiscal, but are based on actual costs instead of budgeted. Regarding these findings you might expect that these calculations correspond and are instead of budgeted based on actual costs. If comparing the standard with the fiscal cost prices for all countries, it is found that Germany does incorporate the calculations for standard cost price in the fiscal cost price. The Netherlands have developed a distinctive model for the fiscal cost price, which is not based on the standard cost price. The Belgian fiscal cost price has no characteristics in common with the standard cost price. Another difference is

that the standard cost price is calculated separately for each production process and line, in contrast to the IFRS adjustment and fiscal cost price where there is no distinction made between production processes (Belgium).

Costs of raw materials are recurring in the standard, fiscal cost price and IFRS adjustment, but are composed differently. The standard consists of forecasted prices of raw materials (PVC, PE), the fiscal determines prices based on the FIFO method and the IFRS adjustment compares the FIFO prices with actual prices. Thus limited harmonisation between the calculations of raw materials is present.

The calculation of depreciation is similar for the standard and fiscal cost price, but instead of replacement value the fiscal cost price is based on historical costs. In Germany the same model as in the standard cost price has been used to determine depreciation costs of the fiscal cost price. The Netherlands and Belgium are using a different model. Depreciation of the IFRS adjustment is the difference between replacement value and historical value. You might expect that the difference between the standard and fiscal cost price the IFRS adjustment is. Depreciation in the standard and fiscal cost price is calculated per product in contradiction to IFRS adjustment which is the total sum of direct depreciation.

Indirect cost components of the IFRS adjustment and the fiscal cost prices have similarities. The costs are similar except the IFRS adjustment is calculated each month in comparison to the fiscal cost price which is calculated once a year. You might expect that the cumulative year value of indirect costs of the IFRS adjustment is similar compared with the fiscal, but this is not the reality. The IFRS adjustment comprises all indirect costs together, where for the fiscal cost price indirect costs have to be assigned to their production process and production lines, this makes it more comprehensive to transfer the total indirect costs directly from the IFRS adjustment to the fiscal cost price. Overall the same indirect costs can be uploaded from SAP, but for the fiscal cost price costs have to be further allocated to products. Another remarkable finding is that the Dutch method incorporates additional indirect costs for Storage and Expedition, which are not prescribed in the accounting manual.

Overall there is limited integration between the different kinds of cost price. Germany is the only country which has integrated the standard cost price calculation into to fiscal cost price. Belgium and the Netherlands have no integration between the standard, IFRS adjustment and fiscal cost price.

5.5 Conclusion

The standard, IFRS adjustment and fiscal cost price of Belgium, Germany and the Netherlands have been analysed and compared with the accounting manual. A complete overview of all differences is presented in Table 3 Overview differences cost prices. The different cost prices are also compared with each other in order to find opportunities for integration. The standard cost price has small differences, the IFRS adjustment and fiscal cost price have major differences between the countries. International differences related to the standard cost price are the diverging calculations of depreciation and the allocation of energy costs in Belgium. Belgium and the Netherlands do not perform the calculation of depreciation according to the accounting manual, which has seriously implications for the standard cost price. The IFRS adjustment in particular differs between the countries and the accounting manual. The calculations are partially in accordance with the accounting manual, but none of the countries has completely implemented the guidelines of the accounting manual. The Dutch calculation is based on average budgeted figures, the German method does not calculate FIFO according to the accounting manual and does not incorporate an adjustment for direct depreciation. The Belgian method is almost in accordance with the accounting manual, but has not specified indirect costs. The most ambiguity caused the diverging formats of the countries.

The fiscal cost price has differences, but these are mainly caused by rules and regulations. The German calculation incorporates the net realisable value method, the Dutch method is based on current costs and the Belgian method does not incorporate indirect costs. The German method is very extensive in comparison to the others. Differences are thus caused by rules and regulations, different working processes and history.

Table 3 Overview differences cost prices

Prescribed in Accounting Manual		In reality				
		Belgium	Germany	Netherlands		
	Raw materials are updated each month	✓ Based on forecasted (PVC) and forecasted (PE)	✓ Based on forecasted (PVC) and forecasted (PE)	✓ Based on forecasted (PVC) and forecasted (PE)		
Standard Cost Price	 Based on budgeted direct production costs: labour, energy, packaging (not bill of material), maintenance and other costs (conversion costs) 	 ✓ Budgeted direct production costs ! Energy is different allocated in comparison to Germany and Netherlands 	 ✓ Format for calculations diverge with NL and BE ✓ All conversion costs are incorporated 	 ✓ Allocation of costs is more complex than Belgium e.g. NL calculates energy based on KWH per ton, energy for Belgium is based on last year consumption kWh 		
	 Depreciation should be based on replacement value, which is defined as the historical purchase price to be increased with annually with an index. Direct depreciation for machinery should be based on 80% of planned operating time 	Pepreciation is based on replacement value, but not on 80% of planned operating time	Pepreciation is based on replacement value and 80% of planned operating time, but they did not included a correction for maintenance	! Depreciation based on replacement, but should also be based on 80% of planned operating time		

Accounting Manual		In reality			
		Belgium	Germany	Netherlands	
	• Total cost of sales have to match with inventory value, each end of the year inventory has to be valued according to IFRS adjustments	 ✓ IFRS is calculated each month to adjust stock value and at the end of the year an overview of total IFRS is comprised 	 ✓ Calculated each month, to value stock according IFRS 	 ✓ IFRS is calculated each month to adjust stock vale and at the end of the year an overview of total IFRS is comprised 	
IFRS Adjustment	 Raw materials adjustment for difference between FIFO value versus actual prices 	 √ FIFO minus – actual prices ! Separate file for FIFO ! All countries have different formats 	✓ FIFO value is compared with price of 31/12 last year	 ✓ FIFO of PVC incorporated and compared with actual prices Separate file for FIFO calculations 	
(commercial cost price)	 Indirect production: production planning, engineering, maintenance, quality assurance, laboratory costs 	Indirect costs are incorporated, but not specified by type of indirect, uploaded from SAP	 ✓ Indirect production costs are incorporated, uploaded from SAP 	Indirect costs are assigned, but not updated based on actual figures each month. Instead a percentage of the beginning of the year is used to determine indirect costs	
	 Indirect storage & distribution: costs to bring products in their current position 	Indirect costs are incorporated, but not specified by type of indirect cost, based on SAP	✓ Is incorporated; storage, based on SAP	! Not included	

	Accounting Manual	Belgium	Germany	Netherlands
	 Adjustment for depreciation: differences between replacement value and historical value 	 Adjustment for depreciation based on replacement value vs. actual. 	 No adjustment for direct depreciation incorporate 	! Adjustment for direct depreciation, this is based on replacement value and budgeted historical value
	Language	! Dutch	! German	! Dutch
IFRS Adjustment	 Not defined in accounting manual A mark-up for finished intercompany products 	 Adjustment for intercompany trade goods. A mark-up of 3.8% over intercompany finished products 	 Adjustment for intercompany trade goods. A mark-up of 3.8% over intercompany finished products 	! Adjustment for intercompany trade goods. A mark-up of 3.8% over intercompany finished products
	Obsolete stock not prescribed in accounting manual	 Not incorporated 	 Not incorporated in the IFRS monthly, but in the year overview 	Obsolete stock is incorporated

Ac	counting manual	Belgium	Germany	Netherlands
	Based on actual costs	 Actuals are based on figures until 30-11 	 ✓ Compares actual costs with the selling price minus rebates (based on lower net realisable value) ! Based on figures until 31-10 	 √ Actual figures are calculated ! Actuals are based on figures until 30-11
Fiscal Cost Price	 Raw materials should be valued at actual prices or lowest value 	✓ Based on actuals, indirect costs are not allowed	✓ Raw materials are valued according to net realisable value, actual prices are compared with average cumulative price raw materials, lowest value is chosen	√ Based on actuals
	Actual direct production costs	 √ Actual costs of depreciation, labour, energy and maintenance, Packaging and other costs are not incorporated 	 ✓ Actual direct production costs ✓ Actual figures are calculated based on standard cost price model DE 	 √ Actual direct production costs (labour, maintenance, packaging, energy, other costs, depreciation No costs allocated to activity type set-up
	 Indirect production costs; Indirect production, indirect storage, indirect depreciation 	! Indirect costs are not specified, probably because of local GAAP which prescribes the exclusion of indirect costs	 ✓ Indirect costs are buildings, fire protection, production planning, water/heating supply, energy maintenance, trainees, and laboratory 	 ✓ Indirect costs are allocated to other costs and consists of Indirect costs of storage, expedition, quality assurance, overhead

	Accounting manual	Belgium	Germany	Netherlands
Fiscal Cost Price	Depreciation shall be based on historical costs	 ✓ Depreciation is not specified, therefore unknown if historical value is used 	✓ Depreciation is based on historical value	 √ Depreciation is based on historical value
	 Type of inventory method, AM prescribes the use of lower of costs and net realisable value (IFRS). Inventory valuation depends on local GAAP 	 √ No lower value or net realisable value, √ Based on Belgian GAAP, is the same as IFRS but indirect costs are prohibited 	 ✓ Based on lower net realisable value, selling price minus rebates. IFRS or GAAP is applied 	 √ Net realisable value principle is not included √ Inventory valuation based on current costs (Dutch GAAP)
	Process of calculation	 Very simplistic model for calculation of Fiscal cost price, only actual cost are incorporated 	 Germany has a sophisticated system of calculation compared to others Time spend on calculation between one and two weeks Many production lines are included, this makes it less organized 	 Less extensive as Germany, blue cells marks the places which have to be filled in One or two days spend on calculation
	• IFRS or GAAP	Based on GAAP, there are no indirect costs incorporated	 Based on IFRS net realisable value and lower cost method are applied 	• Based on GAAP, inventories are valued at current costs

6. Creating harmonisation in accounting practices

The previous chapter has exposed the differences in cost accounting practices between Belgium, Germany and the Netherlands and between the different cost prices. The purpose of this chapter is to find possibilities to create more convergence in the accounting practices of Wavin. Therefore first the distinctive cost prices are reviewed to create convergence between the countries and secondly a proposal for harmonisation between the cost prices is described.

6.1 Standard Cost Price

The standard cost price has already much convergence between the countries, because of the implementation of the standard format for the calculations. Major differences are the allocation of depreciation and energy in Belgium.

Convergence can be created by allocating costs in a harmonised way for all countries. The accounting manual can be used as input for the calculation and should be the leading format. Calculations should be in line with the accounting manual in order to prevent divergence. Depreciation is prescribed in the accounting manual, but the method is not adopted by all countries. Belgium and the Netherlands are not calculating depreciation based on 80% of planned operating time (chapter 5). If the allocation of depreciation would be in accordance with the accounting manual the costs of depreciation of Belgium and the Netherlands would drop considerably which will have impact on the standard cost price. An advantage of harmonisation of the allocation of depreciation costs is that arbitrary allocation will be prevented and differences in financial performance will not be caused by diverging allocation methods.

The allocation of energy costs in Belgium diverges from other countries. Belgium allocates energy costs through the distribution key consumption in contradiction to Germany and the Netherlands who allocates costs through the distribution key production volume. In other to create convergence the allocation of energy costs should be similar for all countries. When analysing the accounting manual there is no allocation method for energy costs. Different interpretations about the allocation method cause discrepancies. Discrepancies should be resolved by creating shared meanings, which can be achieved by making a trade off between the different methods. It is recommended to use the production volume to determine energy costs. The use of the production volume is more precise, because it is based on expected production for this year whereas consumption is based on the consumption of last year. Through the use of one allocation method, understanding of each other practices will be increased and common meanings will be created (Carlile, 2004).

The current format for the standard cost price has been implemented for Belgium and the Netherlands. In order to utilize the benefits of this template it is recommended to implement it for all production processes to further stimulate harmonisation of practices in each country.

6.2 IFRS Adjustment

The IFRS adjustment was the most difficult to grasp, first it was known as the commercial cost price and finally it was the IFRS adjustment. The definition is now clear for everyone, but the calculations of the countries have still major differences. There is limited convergence and therefore the IFRS adjustment has to be harmonised. First of all each country should have incorporated the same cost components in the calculation. In chapter five it was found that Belgium and the Netherlands do incorporate a calculation for direct depreciation based on the difference between replacement value and historical value. The German method does not incorporate this calculation. Germany does not compare FIFO value with actual prices, but with prices of last year December. The Netherlands do not use absolute figures, but bases their figures on average budgeted costs. To create convergence in the calculation of the IFRS adjustment all countries should include the cost components mentioned in the accounting manual. Each country has to deal with the IFRS rules and therefore there should be no differences. This means that the following costs should be incorporated in the calculations (Table 4 IFRS Adjustment). The costs which should be incorporated in the IFRS Adjustment are based on the accounting manual (2010) and discussed with the consolidation and reporting manager of Wavin. Remarkably is the inclusion of an adjustment for intercompany finished products. The accounting manual does not prescribe this cost component, but the head office requires each country to include costs for intercompany products.

Table 4 IFRS Adjustment

IRFS Adjustment
1. FIFO raw material adjustment in cost of sales, which is the differences between FIFO value and actual value
2. Direct depreciation; the difference between depreciation on replacement value and depreciation on historical value
3. Indirect production; costs for production planning, production management, engineering, maintenance management quality assurance and laboratory costs
4. Indirect storage & distribution; costs to bring product in their current condition in the warehouse
5. Indirect depreciation; depreciation of production building, building related installations, silos and assets included in the overhead stock
6. Adjustment Intercompany finished products

The next step to increase convergence is to create an unified format for the calculation of the IFRS adjustment for all countries. The format should increase the transparency for employees and ensures that practices are harmonised. When an unified format is used employees in Germany can perform the calculations for Belgium and the Netherlands or reverse. Another advantage is that the format

can include instructions about which figures where have to be filled in and where data can be retrieved in order to increase efficiency and simplifies the calculation.

The FIFO calculation is part of the IFRS Adjustment. Belgium, Germany and the Netherlands have all their distinctive excel files to perform this calculation. The German method is extremely extensive and the Dutch method is very simplistic. The FIFO calculation could be redesigned in order to create convergence between the countries. Benefits of redesigning the FIFO calculation are efficiency will increase, the calculation will be more comprehensible mainly for Germany and harmonisation will be increased between the countries. The FIFO calculation should include all materials, prices of the last three months and actual month, purchase volumes, stock value and actual volume in stock. The proposal for redesigning the FIFO calculation should stimulate the process of harmonisation within Wavin.

6.3 Fiscal Cost Price

The fiscal cost price has major differences between the countries, Wavin would like to eliminate the differences as much as possible. Through the analysis of the fiscal cost price, it was identified that differences between countries are mainly caused by rules & regulations. This fact does impede the harmonisation of the fiscal cost price, because rules and regulations cannot be changed. Despite the differences in rules and regulations there are still possibilities to increase harmonisation, especially the design of the calculation can be improved.

As we have seen in the analysis of the cost prices certain components of the standard and IFRS adjustment are recurring in the fiscal cost price. Currently those components are not integrated in the fiscal cost price and this can be optimized. Components of other cost prices which can be integrated are the calculation of the standard cost price to calculate actual prices and indirect costs of the IFRS adjustment are recurring in the fiscal cost price.

The fiscal cost price should consist of actual direct production costs, raw materials based on FIFO value, depreciation based on historical value and indirect costs. It was found that each country has different requirements because local GAAP. Despite the diverging requirements, there are common characteristics. Costs which are present in all countries are:

- Actual direct production costs have to be allocated
- Depreciation based on historical value
- Indirect costs have to be included for Germany and the Netherlands in Belgium it is prohibited

The procedure of the fiscal cost price should first consist of allocating actual costs to all cost centres and depreciation based on historical value, secondly allocating indirect costs to the cost centres and finally uploading the costs into SAP to calculate the fiscal cost price. Belgium does not incorporate indirect costs. The first two steps can be simplified by using the model van the standard cost price to calculate actual prices. Instead of budgeted prices actual prices have to be used to perform the calculations. Costs are then finally allocated to activity types for each cost centre. Indirect costs have to be allocated to the different cost centres and production lines and finally added to the activity

types. To calculate depreciation for the fiscal cost price instead of depreciation on replacement value (standard cost price) depreciation on historical value has to be used. After these steps the calculation for Belgium and the Netherlands is finished. The costs are then uploaded into SAP to calculate the definitive fiscal cost price. Germany has to perform additional steps to meet accounting regulations after uploading costs in SAP. The following steps are additional for Germany:

- Raw materials are valued according to lowest value, prices of December are compared with cumulative annually prices and the lowest price will be chosen.
- Selling price has to be determined, this is the price per product minus rebates, cash discount, freight, interest, stock
- Selling prices are compared with actual prices the lower of the two is the net realisable value and used to value inventory.

The additional steps of the German method do increase the complexity of the calculation and causes an increase in the amount of time spend on the calculation. If possible these steps have to be simplified by taking advantage of the benefits of excel and SAP, which saves time and procedures will be less extensive. The German calculation is currently that incomprehensible that it is almost impossible to understand. Therefore it is recommended to redesign the calculation to improve the understand ability. One of the major improvements of the calculation should be the structure. Currently it is not clear what steps are taken and where the information is retrieved. If the steps above described will be chronologically followed the calculations would be more understandable. Thus for each step above mentioned a new sheet has to be designed. The calculation would than consist of the general steps which are applicable for all countries and then the country specific steps. If this structure will be followed the calculation would be more comprehensible.

The calculations of the fiscal cost price have been developed years ago, limited information is stored about which components should be incorporated in the calculations. Therefore it is recommended to store the requirements for each country. Existing calculations are now based on in the past developed practices, but nobody does know if they are still right. The Netherlands for example do incorporate additional indirect costs (indirect constant costs) in comparison to the other countries. Employees could not tell why, because this is the way it is done.

6.4 General recommendations for increasing convergence

The standard, IFRS adjustment and fiscal cost price haven been discussed in order to increase convergence, beside these recommendations there are a few general issues which might increase convergence at Wavin. In chapter two was found through using the framework of Carlile (2004) that managing knowledge can be improved by transferring, translating and transforming knowledge. Now the solutions to improve the management of knowledge according to Carlile (2004) will be presented. Wavin has problems related to the first two stages with transferring and translating knowledge. Problems related to those stages are differences between actors are not known and there are different interpretations between actors. In the case of Wavin differences of the standard, IFRS adjustment and fiscal cost price were not known between Belgium, Germany and the Netherlands. In chapter five differences are analysed, this provided the necessary explanations. The

fiscal cost price has differences mainly because of normative pressures, which was beforehand not know. Employees have now the knowledge why there are differences, which is beneficial to create shared meanings.

Solutions according to Carlile in stage one are the storage of information in order to make it possible to retrieve information when necessary. Convergence can be further created through the storage of the definitions and calculations in the accounting manual. If Wavin improves the storage of the definitions and calculations of the cost prices employees will know what is required to perform the calculation. All employees are then capable to retrieve information and differences are known between countries. Currently the limited storage of information is a risk for the continuity of Wavin, only a few people have the required knowledge of cost price calculations if these employees leave the organisation Wavin might have a problem.

Stage two deals with creating shared meanings by eliminating misinterpretations. Employees within Wavin had different interpretations about the commercial cost price, which was actually the IFRS adjustment. The IFRS adjustment and the cost components which have to be incorporated should be defined in the accounting manual, this could prevent different interpretations. Other possibility to increase convergence internationally is to create interaction between employees. Through the interaction between employees of the different countries employees will know each other practices and differences. This information can be input to make tradeoffs between practices and best practices can be selected or designed. If Wavin would like to create convergence in practices a more centralised information structure is recommended. Employees can then exchange information and best practices can be developed for calculations and implemented. In the next chapter the implementation of a template for the IFRS adjustment will be discussed.

Other general recommendations related to the creation of more harmonisation are the use of one common language. Currently each country has their own native language to perform the calculations and to communicate. If convergence in international accounting practices is the objective a common language should be used. The accounting manual is written in English therefore it should be logic if all calculations are in the English language. When the calculations are written and described in English all employees are enable to share knowledge which stimulates convergence across all countries.

Excel is an important tool for employees of the controlling department. You might expect that employees have all the same level of knowledge of Excel, but this is not the case. Employees have different levels of experience and knowledge. If employees knew all functions and benefits of excel they would probably have improved the calculations and efficiency would have increased. Currently employees are using complex formula's e.g. the calculation of net realisable value can be done more efficiently with the newest versions of excel. Therefore it is recommended to review existing practices to increase efficiency.

6.5 Conclusion

Convergence in cost accounting practices can be achieved by creating convergence in the calculations and procedures for Belgium, Germany and the Netherlands. The standard cost price has already much convergence, the IFRS adjustment has to be redesigned to create convergence and the fiscal cost price has limited possibilities to create convergence due to rules & regulations. The most important recommendations for improving convergence in cost accounting practices across Wavin will be briefly summarized.

Harmonisation of the standard cost price could be created trough implementing the template for all countries and production processes. To increase convergence between the countries a few minor adjustments should be made;

- Allocation of deprecation in Belgium and the Netherlands should be according to the accounting manual
- Allocation of energy in Belgium is based on consumption instead of production volume

The IFRS adjustment needs the most adaption. To increase harmonisation of the IFRS adjustment the following recommendations should be applied in all countries;

- An unified format for all countries
- Each country should incorporate the same cost components in the calculations
- The FIFO calculations should be redesigned in order to create convergence and increase efficiency

The fiscal cost price has international differences, mainly because of rules and regulations. To increase harmonisation the calculations should be reviewed. This can be achieved by creating a standard format for the calculations which can be implemented for all countries. The first step to calculate the fiscal cost price is for all countries similar, namely the allocation of actual costs and indirect costs (Germany and the Netherlands). The model of the standard cost price can be used, but instead of budgeted costs actual costs plus indirect costs should be incorporated. After the first step Germany has to do additional steps to be in line with the requirements of GAAP. Other recommendations are;

- Simplify the excel files of the fiscal cost price
- Integrate the model of the standard cost price in the fiscal cost price to calculate actual prices and add indirect costs
- Perform the fiscal cost price according to the steps before mentioned (chronologically structure)
- Redesign the excel files which are used to perform the calculations

General recommendations are to improve the storage of information, definitions have to be defined in the accounting without leaving room for interpretations. Cost components of the calculations should be stored to provide the employees the necessary information to perform calculations. All countries have to use the English language, this improves communications and prevents different interpretations. The last point of interest is to review current practices, because current practices have been developed in the past and are out dated. New technologies and functions in e.g. excel and SAP could improve efficiency and the quality of work. Formulas could be simplified through new functions in Excel files which increases efficiency.

Recommendations are done for all cost prices to create harmonisation between the countries. In order to create harmonisation the recommendations have to be implemented. In accordance with the supervisor of Wavin has been decided to create a redesign for the IFRS adjustment. The next chapter will further elaborate on the process of redesigning the IFRS adjustment.

7. Redesign of IFRS Adjustment

This chapter presents a redesign of the IFRS adjustment for Belgium, Germany and the Netherlands. The IFRS adjustment is redesigned, because as mentioned before currently the IFRS adjustment has limited harmonisation between the countries. The standard cost price has already a standard template for all countries and needs only a few small changes to achieve full harmonisation. The fiscal cost price has differences because of local accepted accounting principles, which impede the harmonisation. The fiscal cost price will therefore still have differences between the countries. In collaboration with the supervisor of Wavin is decided to redesign the IFRS adjustment. The redesign is based on specific requirements, which are determined in collaboration with the stakeholders and according to the prescribed rules and regulations. Requirements are that the IFRS adjustment should be applicable for Belgium, Germany and the Netherlands, has the same cost components according to the IFRS, increases efficiency and should be transparent. Costs which have to be incorporated are an adjustment for raw materials, direct depreciation, indirect production, indirect storage & distribution, indirect depreciation and an adjustment for intercompany products (chapter 6, Table 4 IFRS Adjustment).

In order to design a new format for the IFRS adjustment, first the existing calculations were reviewed to determine if one of the calculation spreadsheets would be suitable as redesign. After analysing all calculation models it was decided that the Belgian method is the most suitable format to use as input for the redesign. The format incorporates all cost components and is the most transparent and efficient format. The model will not be fully implemented, because certain components are not suitable for an unified format. The redesign has led to the following format see appendix iii. The format consists of a part were the data have to be entered and contains information where the necessary data can be found (Table 5 Data IFRS Adjustment). When the data is entered all costs components will be automatically calculated. The format consists of five steps where all costs will be calculated namely the FIFO calculation, adjustment direct depreciation, indirect costs, adjustment intercompany products and an overview with all costs. For a complete overview of the proposed format see appendix ^{III}. Fictitious figures are used to present the calculations.

		SAP CODE		
GENERAL DATA		BELGIUM	GERMANY	NETHERLANDS
Production Volume	Cumulative to current mon	th SAP BW	SAP BW	SAP BW
Value Finished Products in Stock (KG)	Current month	SAP BW	SAP BW	SAP BW
Value Intercompany Products (€)	Current month	SAP (S_ALR_870122	8SAP (S_ALR_87012284)	SAP (S_ALR_87012284)
Total Indirect cost; Sum total Indirect costs				
Indirect Production; Production planning,	Cumulative to current mon	th BE_IndProdi	DE_Indprod	SAP NL_INDPROD
production management, engineering,				
maintenance management, quality assurance				
and laboratory costs		(S_ALR_07013611)		(S_ALR_07013611)
Indirect storage & Distribution; costs to bring	Cumulative to current mon	th		
products in their current condition in the				
warehouse or stock transfer from production to				
warehouse				
Indirect Depreciation; production buildings,	Cumulative to current mon	th SAP	SAP	SAP
building related installations, silo's and assets				
used by the departments				
Direct depreciation Replacement (actual) value	Cumulative to current mon	th 28598000	28598000	28598000
Direct depreciation Historical value	Cumulative to current mon	th Depr_hist	Depr_hist	Depr_hist

Table 5 Data IFRS Adjustment

The first step comprises the adjustment for raw materials, which is the difference between FIFO value and actual price. Currently all countries are using a separate file for the calculation of the FIFO, because of the extensiveness. The adjustment for raw materials has to be uploaded from the separate FIFO file. The FIFO files of Belgium, Germany and the Netherlands have major differences as before is discussed. When harmonising the IFRS adjustment it is also recommended to redesign the FIFO adjustment to create convergence in this calculation. Therefore a redesign for the adjustment of raw materials has to be developed, but first the IFRS adjustment is presented.

The second step comprises the difference between depreciation on replacement value and depreciation on historical value (Table 6 Adjustment direct depreciation). The formula for the adjustment of direct depreciation is:

(Historical value / Production Volume) – (Replacement Value / Production Volume) * Value Finished Products in stock (KG) = Adjustment Direct Depreciation

Table 6 Adjustment direct depreciation

2. Adjustment Direct Depreciation Adjustment for difference between depreciation on replacement value (actual value) and depreciation on historical value (IFRS)				
	Direct depreciation based on	Value	Production Volume	Total per kg
	Historical value	700.000,00	10.000,00	70,00
	Replacement value	750.000,00	10.000,00	75,00
	Difference	750.000,00		5,00-
	Plant	Finished products in stock (KG)	Difference	Adjustment
	Plant X	1.000.000,00	5,00-	5.000.000,00-
	Plant X		5,00-	-
	Plant x		5,00-	-
Total Adjustment	Total			5.000.000,00-

The third step is the calculation of the adjustment for indirect costs (Table 7 Indirect Costs). Indirect costs are calculated through:

(Total Indirect Costs / Production Volume) * Finished Products in Stock (KG)

The blue cell presents the total adjustment for indirect costs.

Table 7 Indirect Costs

3. Indirect Costs Adjustment for Indirect costs; Indirect production,				
Indirect storage & distribution, Indirect				
Depreciation	Indirect costs	Costs		
	Indirect Production	80.000,00		
	Indirect storage & Distribution	80.000,00		
	Indirect Depreciation	80.000,00		
	Total Indirect Costs	240.000,00	240000	WAAR
Indirect Cost per KG = Total Indirect Costs / production volume	Indirect cost per KG	24		
		Finished Products in KG	Difference	Adjustment
	Plant X	1.000.000,00	24,00	24.000.000,00
Total Adjustment Indirect Costs	Total	1.000.000,00	24,00	24.000.000,00

Step four is the calculation of intercompany products, which is calculated through the total value of finished intercompany products (\in) multiplied with 3.8%. The 3.8 per cent is determined by the head office and is applicable for Belgium, Germany and the Netherlands.

Table 8 Adjustment Intercompany products

4. Adjustment Intercompany Finished Products <i>Adjustment for Intercompany products 3,8% of total</i> <i>value intercompany products</i>			
	Adjustment ICT		Value
	Value Finished Products Intercompany		200.000,00
	3	3,80%	7.600,00
Total Adjustment Intercompany Products			7.600,00

The final step (step five) consists of an overview of all adjustments and the differences between the current month and last month (Table 9 Total IFRS Adjustment). The differences between the months will be booked on the ledger account.

5. Total IFRS Adjustment			
	Last Month	Current Month	Differences with last
Adjustment			month
1. FIFO Adjustment			
2. Adjustment direct depreciation		5.0	000.000,00-
3. Adjustment Indirect Costs		24.0	000.000,00
4. Adjustment Intercompany products			7.600,00
Total IFRS Adjustment		19.0	007.600,00

Table 9 Total IFRS Adjustment

7.1 Impact of redesign IFRS

The redesign of the IFRS adjustment is completed and should be tested, before it can be implemented. Therefore data have to be gathered to compare the current situation with the proposed redesign to determine the impact for all countries. To find the right data first it should be known where the data can be retrieved. Therefore a table is designed with information about where the data can be retrieved (appendix ^{iv}). After gathering and analysing the data which was an extremely time consuming job, it was identified that each country retrieves remarkably their data differently. The information source of the data of intercompany stocks is differently in each country, Belgium retrieves there data from SAP BW (reporting and consolidation tool for management information), Germany has developed an abap code to retrieve the value of finished products and the Netherlands use using SAP to retrieve the data. An abap code is a code which is especially developed by ICT to calculate the value of finished products intercompany and is a very expensive way. Instead of using an abap code Germany could have used SAP or SAP BW to calculate the value of intercompany products, because it should provide the same information. Another finding is that Belgium has not incorporated the data of all plants in the calculation of direct depreciation, which is remarkable. It was expected that the data used to perform the calculations can only be retrieved from one source, but apparently different sources can be used. Another remarkable finding is that all those sources have different values. The different data collection methods for the IFRS adjustment do not make the calculation easier, therefore it is recommended to harmonise the method of data collection. In collaboration with the stakeholders of Wavin is determined which data collection method should be applied. Criteria for the selection were quality, efficiency and the method have to be applicable for all countries. With quality is meant the precision and completeness of the data collection method and efficiency is about how fast data can be collected. A proposal to collect data is incorporated in the table in appendix iv.

The next step is to measure the impact of the redesign for Belgium, Germany and the Netherlands. The current situation is compared with the proposed situation. First the data to perform the calculations is compared with the proposed situation. Secondly a comparison is executed between the current and proposed situation of the adjustment for depreciation, indirect costs, intercompany products and total adjustment.

The redesign has limited impact on the IFRS adjustment in Belgium, overall are there small deviations with the current situation. Differences between the current and proposed method can be explained by the figures of depreciation, production volume and indirect costs. These figures are composed differently in comparison with the current method. These different figures leads to a change in variables in the formulas and finally to a different IFRS adjustment. An example is the calculation of direct depreciation, costs are calculated per kg and multiplied with finished products in stock in KG. In the proposed situation another value is used as production volume this affected immediately the adjustment for direct depreciation. The adjustment for direct depreciation has a small deviation, because currently the costs of only the plant Aalter are incorporated instead of all plants (Aalter and Sint-Niklaas). The adjustment for indirect costs diverges, because currently there are no indirect costs for depreciation allocated and the figure for indirect production is diverging through a correction in the current situation. The impact of the redesign has affected the adjustment for intercompany products the most. Currently the value of intercompany is retrieved from SAP BPC and in the proposed from SAP. SAP has as advantage that information can be easily retrieved in comparison to SAP BPC, where all kinds of variables have to be filled in order to get the right figure.

The redesign has a bigger impact on the practices of Germany in comparison to Belgium. Differences are again caused because the values of the variables in the formulas are differently. The value of finished products is diverging, because in the redesign the figures of SAP BPC are used and in the current situation a correction is made. The total adjustment would decrease, this is mainly caused through the difference in value of finished products (KG) which caused a decrease in the adjustment for indirect production. Another important fact is that currently there are no costs assigned for direct depreciation.

The Dutch IFRS adjustment will increase in comparison with the current situation. Important differences between the proposed situation and current situation are the formulas. The current situation calculates the adjustment based on average budgeted costs and the proposed situation bases costs on actual figures which explains the differences. The proposed solution calculates the adjustment through costs per kg multiplying with the current stock value in KG. The current situation as analysed in chapter five calculates the IFRS adjustment according to a different method and do not incorporate production volume and value finished products. The contradiction in indirect costs and

depreciation costs are caused through the use of budgeted costs in the current situation and actual costs in the proposed situation.

The allocation of indirect storage & distribution is a point of discussion, no costs are in the current and proposed situation allocated. To determine these costs it should be clear which costs have to be incorporated, but remarkably this is not known. According to the accounting manual indirect storage & distribution are costs to bring the products in their current condition in the warehouse or stock transfer location from production to the warehouse (accounting manual, 2010). The question how to determine those costs has been asked at the head quarter, but they could not give a decisive answer and caused some interesting conversations. Therefore further steps have to be taken to create understanding about which costs should be incorporated. The head quarter has already announced to give a decisive answer about the problems with the allocation of indirect storage and distribution.

Overall the redesign has more impact in Germany and the Netherlands than in Belgium. The impact for Germany can be explained by the fact that cost components which should be incorporated according to the accounting manual are currently not incorporated (depreciation, indirect storage & distribution). The Dutch method was first based on average budgeted costs and the proposed situation incorporates actual costs.

7.2 Benefits of the redesign

Wavin would like to harmonise practices this has consequences for the IFRS adjustment. Therefore the benefits of the redesign should overweight the doubts. The most important benefits of the proposed design are practices will be harmonised, the quality improves, employees can be exchanged and calculations are simplified.

The purpose of thesis is to create harmonisation between accounting practices, the proposed redesign of the IFRS adjustment can contribute to this process. Each country will have a harmonised format, calculations and data collection method. The format incorporates all cost components according to the accounting manual and head quarter which eliminates differences between the countries and prevents misinterpretations. The quality of the calculations will be improved, because all costs are now incorporated and figures are based on actual costs instead of budgeted average figures (Netherlands). Benefits for employees are that all employees can perform the calculations for each other when necessary. Finally calculations are simplified, employees only have to enter the correct data in excel and the calculations will be performed. In comparison with the current situation the calculations will be more efficient, because limited steps have to be taken and it is prescribed where employees can find the data and where they have to enter the data. This will lead to harmonised and standardized working procedures and thus reduces the chance on errors.

8. Conclusions

This research focuses on analysing differences between Belgium, Germany and the Netherlands for the standard cost price, IFRS adjustment and fiscal cost price and to explore possibilities to increase harmonisation between the countries. In the past Wavin had a decentralised organisation structure each country has designed independently its own calculations and procedures, which caused differences in accounting practices. Wavin would like to harmonise their practices of the standard cost price, IFRS adjustment and fiscal cost price. The harmonisation should create harmonisation between cost accounting practices, which should lead to higher efficiency, transparency and finally a reduction of costs. Problems which are identified and could impede the process of harmonisation are different interpretations about the IFRS adjustment, differences in allocation of costs, limited information is stored (IFRS adjustment and fiscal cost price), there is limited integration between the different cost prices and the efficiency of the calculations could be improved. To arrive at a proposal for harmonisation first the research questions have been answered and finally a proposal for creating harmonisation is designed. The problem definition is:

Analysing differences in cost accounting practices and a proposition for the harmonisation of the cost accounting system

Sub questions are;

- 1. What is the definition and function of the commercial, fiscal and standard cost price at Wavin?
- 2. How are the standard, commercial and fiscal cost price calculated and how should they be calculated according to the accounting manual?
- 3. What describes the theory about harmonisation, theoretical concepts of cost accounting, convergence and divergence of cost accounting practices?
- 4. What are differences and similarities in the calculation of the standard, commercial and fiscal cost price between Wavin Belgium, Germany, the Netherlands and the accounting manual and why?
- 5. How can the system of cost price calculation improved or redesigned in order to create more convergence and increase efficiency?
- 6. How can the IFRS adjustment redesigned?

The first section of the research focuses on the exploration of the standard, IFRS adjustment and fiscal cost price the most important findings will be briefly discussed. These findings are related to research question one, two and three. The standard cost price is the price for a product which is determined on forecasted raw materials, the budgeted direct production costs and depreciation costs (Accounting Manual Wavin, 2008). Raw materials are PCV and PE, the prices of those materials are determined based on the expected price for the upcoming month. The function of the standard cost price is for profit measurement, inventory valuation, support managerial decision making and is input for the selling price. The IFRS is for revaluation of inventory. The IFRS adjustment updates the value of finished products, because the total cost of sales value have to match with the inventory value. The IFRS adjustment consists of a revaluation/devaluation of raw materials based on FIFO

correction, indirect production in cost of sales, indirect storage in cost of sales, indirect depreciation in cost of sales, an adjustment for direct depreciation and an adjustment for intercompany products. The head quarters requires including an adjustment for intercompany products. The fiscal cost price is calculated for external financial reporting to value inventory based on the international financial reporting standards (IFRS) and general accepted accounting principles (GAAP). The IFRS requires finished products to be valued at the absorption price. Absorption costing comprises the costs of the raw materials, the actual direct production costs the actual direct depreciation based on historical costs and the actual indirect production or logistical costs in order to bring the products in their current location and condition in the warehouse or stock transfer point from production to the warehouse.

Wavin has problems related to the management of knowledge, which impede the process of harmonisation. There are different interpretations among employees about the IFRS adjustment and limited information is stored of the cost prices. The accounting manual failed to prescribe a decisive definition and calculation of the cost prices. Remarkably there were even mistakes in the accounting manual about the composition of the IFRS adjustment. In order to solve these problems the framework of Carlile (2004) has been applied. Carlile states that management of knowledge can be improved by creating shared meanings through explaining differences, sharing and storing of knowledge. Knowledge of the cost prices can be stored through definitions functions and calculations. Employees have now the access to information of cost price calculations, which prevents different interpretations and improves the communication. Table 10 Cost components cost prices provides an overview of the cost components of the three cost prices.

Standard cost price	IFRS Adjustment	Fiscal cost price
 Direct production costs Direct labour Direct energy Direct packaging Direct maintenance Other costs 	 Adjustment for FIFO Adjustment for direct depreciation Adjustment for intercompany products 	 Actual direct production costs Direct labour Direct energy Direct packaging Direct maintenance Other costs
 Direct materials Depreciation (replacement value) Mark up 	 Indirect storage & distribution Indirect production Indirect depreciation 	 Raw materials Direct depreciation (historical value) Indirect storage & distribution Indirect production Indirect depreciation

Table 10 Cost components cost prices

Shared meanings can be created by indentifying differences between Belgium, Germany and the Netherlands. The framework of Granlund & Lukka (1999) has been used to explain convergence and divergence in cost accounting practices between Belgium, Germany and the Netherlands at Wavin. The framework incorporates economic, coercive, normative and mimetic pressures to explain convergence and divergence in accounting practices. An important finding is that coercive pressures have a major impact on the practices of the fiscal cost prices, because each country has to deal with local legislation about inventory valuation. The exploration of coercive pressures has led to better insight in the rules and regulations of each country and explains partially the differences in calculations, which were first not known. Normative pressures are affecting Wavin through culture and have probably the most impact on current cost accounting practices. Culture affected Wavin through the decentralised organisation structure in the past which caused diverging cost accounting practices.

Differences between the countries are extensively described in chapter five. The standard cost price has differences, because of allocation of costs.

- Energy in Belgium is differently allocated
- Depreciation in Germany, Belgium and the Netherlands is not calculated according to the accounting manual

In Belgium energy costs are allocated based on consumption of last year, in comparison in Germany and the Netherlands costs are allocated based on production volume. Allocation based on production volume is more precise, because energy costs are then depending of expected volume. In the case of Belgium energy costs will not change if volume will increase or decrease.

Depreciation is another point of interest, according to the accounting manual depreciation should be based on 80% of planned operating time. Belgium and the Netherlands do not calculate depreciation according to the accounting manual, they bases deprecation on replacement value. Germany applies the 80% rule, but failed to incorporate a mark up for maintenance. This method makes that currently more costs are incorporated in the standard cost price than when applying the method of the accounting manual. If practices have to be harmonised than rules and requirements of the accounting manual should be followed.

The IFRS adjustment caused the most ambiguity. The adjustment should consist of an adjustment for raw materials, direct depreciation, indirect production, indirect storage & distribution, indirect depreciation and an adjustment for intercompany products. The analysis of the IFRS adjustment revealed many differences namely:

- Currently each country has a different format, incorporates different cost components and uses different calculations to calculate the adjustment
- Belgium and the Netherlands do not incorporate costs for storage and distribution, because it is not clear which costs should be incorporated
- Germany does not perform a calculation for an adjustment for direct depreciation.
- The Dutch method to calculate the IFRS is based on average budgeted costs, in comparison the German and Belgian method are based on actual figures

Differences are caused because each country has developed independently its own calculation in the past and the accounting manual failed to prescribes the cost components which should be incorporated or contained mistakes. This lack of clarity caused the diverging methods.

The fiscal cost price was an extremely time consuming process to analyse, because it is comprised of extensive excel files with limited structure. Mainly the German method caused difficulties to analyse because of the complexity. International differences are mainly caused through coercive factors as local rules and regulations. Rules and regulations require that:

- The German method should based on the net realisable value, which is a comparison between the actual value and selling prices minus rebates, the lower of the two will be used to value inventory.
- The Dutch method consists of the calculation of actual direct production costs and indirect costs.
- The Belgian method incorporates direct production costs and it prohibits the inclusion of indirect costs.

When analysing the fiscal cost price it is noticed that there is no convergence between the countries. Germany uses the model of the standard cost price to calculate actual costs, instead of budgeted costs actual costs are used. The Netherlands have developed their own distinctive model with no integration with the standard cost price. The Belgian method is a very simple model in comparison to the other countries, it is comprised of only one table with actual costs.

Most research have analysed differences in cost accounting practices between Anglophone countries and Japan or Germany (Krumwiede, 1998 and Aust, 1999). This study advances the literature by analysing differences on a small scale between Belgium, Germany and the Netherlands. It is noticed that there are even differences in cost accounting practices on a small scale between European countries. According to many researchers those differences in accounting systems can be explained by Hofstede (1980) cultural dimensions, institutional variables (Powell & DiMaggio, 1983), contextual and economic variables (Granlund & Lukka, 1999). At Wavin differences in practices are mainly caused through culture, each country has its own methods and procedures. Germany has a very complex cost accounting system in comparison to Belgium and the Netherlands. Ahrens & Chapman (1999) also found that German companies run more complex cost accounting system. Other differences can be explained by the framework of Granlund & Lukka (1999), coercive pressures do affect cost accounting practices through rules and regulations. Despite international rules to harmonise reporting standards, it was found that for inventory valuation (fiscal cost price) still local accepted accounting principles are applied. Those rules and regulations explain partially the complexity of the Germany cost accounting system (fiscal cost price). Through the globalization and increased competition practices have to be harmonised and thus differences will be reduced as much as possible. Wavin has started this process by implementing the redesign of the IFRS adjustment and will further continue to increase harmonisation between countries.

8.1 Recommendations for harmonisation

The harmonisation of cost accounting practices should lead to convergence between standard cost price, IFRS adjustment and fiscal cost price. The standard cost price has already much convergence between the countries. The allocation of depreciation and energy can be improved to increase the harmonisation. Depreciation should be based on 80% of planned operating time, when this will be implemented arbitrary allocation will be prevented. Another recommendation for the standard cost price is to allocate energy costs based on production volume instead of consumption of last year for Belgium. This would increase the harmonisation and the calculation will be more precise. The existing template for the standard cost price is recommended to implement for all countries to further stimulate harmonisation in practices. The process of implementation of the standard template has already started and will be continued in the next months.

For the IFRS adjustment it is recommended to implement the proposed redesign. The proposed redesign stimulates the process of harmonisation, all countries will have similar cost components and perform the calculation in the same way. Through the redesign practices will be more transparent and efficiency will be increased. The current FIFO calculation of Germany has to be reviewed, because it is an inefficient and complex calculation in comparison to Belgium and the Netherlands. The German FIFO calculation can be improved through by formulas which reduce the size of the excel file. The redesign of the IFRS adjustment has already been operational in Germany and the Netherlands.

The fiscal cost price has differences mainly because of rules and regulations. Still there are possibilities to create more harmonisation between the countries. The first step the allocation of actual costs and indirect costs are similar for all countries, except that is it prohibited to incorporate indirect costs in Belgium. This step can be harmonised through the use of the model of the standard cost price. Instead of using budgeted costs actual costs can be used and indirect costs should be added. After this step Belgium and the Netherlands are finished, but Germany has to perform additional steps to calculate the net realisable value. To achieve integration between the standard cost price and fiscal cost price a new format has to be designed.

Other possibilities to increase harmonisation are to improve the management of knowledge. This can be achieved by storage of information of cost prices, use the English language and increase knowledge of excel. Employees should have the possibility to find the necessary information in the accounting manual, definitions should be clear and cost components in the calculations should be known. Misinterpretations and confusion have to be eliminated, these problems can be solved through the storage of information and interaction between employees this will prevents different interpretations and creates common meanings and differences will be revealed. Costs for indirect storage & distribution in the IFRS adjustment are still not clarified, this have to be further explored. The head quarter has already announced to start with this process end of January 2012.

The IFRS adjustment has been further explored and a redesign is developed. The design consists of the following cost components: FIFO adjustment, direct depreciation, indirect production, indirect storage & distribution, indirect depreciation and an adjustment for intercompany products. In excel a

format is developed which consists of a part where the data can be entered and where the calculations are performed. The new format is in comparison with the current formats simpler for the employees, they only have to enter the correct data and then the calculation will be performed. Another advantage is that it is prescribed where the data can be found and which cost components should be incorporated. Advantages of the redesign are:

- Quality will improves, figures will be based on actuals instead of budgeted average figures
- Efficiency increases, calculation is standardized and instructions are incorporated
- Harmonised and transparent format, unified format for all countries
- Employees can be exchanged, Germans can perform Dutch or Belgian calculations or reverse

The proposed design will affect the total IFRS adjustment. The impact on the IFRS adjustment for Belgium is limited. The impact for Germany and the Netherlands is considerably. Differences are caused through the calculation method especially the allocation of costs. Part of the IFRS Adjustment is the FIFO calculation which is performed in a separate file because of the extensiveness. The redesign of FIFO adjustment has already been started, but has not yet finished.

Stakeholders involved in the project are enthusiastic about the redesign and therefore is decided to implement the redesign. In January 2012 will be started with the implementation of the IFRS redesign for the Netherlands, Belgium and Germany. The recommendations for the standard cost price will be implemented, except for depreciation in the Netherlands.

8.2 Reflection of objectives

The objectives determined at the start of the research are achieved. The cost prices are extensively described, definitions, functions and calculations are now known. One remark the costs of storage and distribution for the IFRS adjustment needs stills to be clarified. International differences and the causes and consequences are analysed and compared with the accounting manual. A proposal for creating harmonisation for the standard cost price, IFRS adjustment en fiscal cost price has been elaborated for all countries. Finally a redesign is elaborated for the IFRS adjustment. The redesign is presented and discussed with stakeholders of Wavin (reporting manager, financial director, and controller) and they are satisfied with the proposal. The redesign shall be implemented in Germany, Belgium and the Netherlands in the next months.

The thesis has contributed to the harmonisation of cost accounting practices at Wavin. The standard, IFRS adjustment and fiscal cost price are more harmonised. First there was no overview of all cost prices and no insight in the international differences. Employees did not even know that practices were that diverging. The recommendations for the standard cost price, fiscal cost price and redesign of the IFRS adjustment have stimulated the harmonisation of the finance and controlling department. The Dutch assistant controller could now even perform the IFRS adjustment for all countries.

8.3 Future Research

This research has presented several recommendations for creating harmonisation in cost accounting practices for Belgium, Germany and the Netherlands. The Wavin group has many plants across Europe. The recommendations might be suitable for Wavin plants in other European countries, this might advance the harmonisation of cost accounting practices. Besides creating harmonisation in cost accounting practices there are other fields of research which could be further explored to increase convergence between Wavin plants. The process of redesigning the FIFO calculation part of the IFRS adjustment is in progress, but has not yet finished. The FIFO redesign needs some further adjustments and tests to make it applicable for Germany. The costs of storage and distribution incorporate in the IFRS adjustment have to be clarified.

The fiscal cost price needs further research in order create more harmonisation between the countries. Excel files have to be reviewed to increase convergence. Besides most practices within Wavin are performed according to the rules of the IFRS, but for inventory valuation it is still necessary to follow to rules and regulation of local general accepted accounting principles. It would make sense if future practices are all according to the IFRS regulations in order to increase convergence.

The last point of interest is Excel, which is an important tool for calculations within Wavin, but it is susceptible for mistakes. It is recommended to perform the calculation in SAP or SAP BW in the future if possible, to increase the quality and efficiency.

The thesis has contributed to the process of harmonisation. Recommendations for the standard, IFRS adjustment and fiscal cost price have improved the efficiency, transparency and harmonisation. In order to reap the benefits of the harmonisation Wavin should continue the process and should review other practices within Wavin.

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Appendix

Overview Standard cost price, IFRS adjustment and fiscal cost price for Belgium, Germany and the Netherlands

Belgium	Germany	Netherlands
Standard cost price	Standard cost price	Standard cost price
Budgeted Costs	Budgeted Costs	Budgeted Costs
Direct labour	Direct labour	Direct labour
Direct energy	Direct energy Direct packaging	Direct energy Direct packaging
Direct packaging	Direct packaging Direct maintenance	Direct packaging Direct maintenance
Direct maintenance	Direct maintenance Other costs	Direct maintenance Other costs
Other costs	Other costs	Other costs
 Direct materials Depreciation (replacement value) Mark up 	 Direct materials Depreciation (replacement value) Mark up 	 Direct materials Depreciation (replacement value) Mark up
IFRS Adjustment	IFRS Adjustment	IFRS Adjustment
 Adjustment for FIFO actual vs. FIFO Adjustment for direct depreciation, replacement vs. historical 	 Adjustment for FIFO actual vs. FIFO Adjustment for direct depreciation, replacement vs. historical 	 Adjustment for FIFO actual vs. FIFO Adjustment for direct depreciation, replacement vs. historical
 Indirect storage & distribution; indirect logistical costs, to bring the products in 	 Indirect storage & distribution; indirect logistical costs, to bring the products in 	 Indirect storage & distribution; indirect logistical costs, to bring the products in

their current condition in the warehouse or stock transfer location from production to the warehouse	their current condition in the warehouse or stock transfer location from production to the warehouse	their current condition in the warehouse or stock transfer location from production to the warehouse
 Indirect production, production planning, production management, engineering, maintenance management quality assurance and laboratory costs Indirect depreciation; production building, building related installations, silos and assets included in the overhead stock Adjustment for intercompany products; 	 Indirect production, production planning, production management, engineering, maintenance management quality assurance and laboratory costs Indirect depreciation; production building, building related installations, silos and assets included in the overhead stock Adjustment for intercompany products; 	 Indirect production, production planning, production management, engineering, maintenance management quality assurance and laboratory costs Indirect depreciation; production building, building related installations, silos and assets included in the overhead stock Adjustment for intercompany products;
3.8% of intercompany products	3.8% of intercompany products	3.8% of intercompany products
Fiscal cost price	Fiscal cost price	Fiscal cost price
		•
Actual costs	Actual costs	Actual costs
Actual costs • Direct labour	Actual costs • Direct labour	Actual costs • Direct labour
Actual costs Direct labour Direct energy 	Actual costs Direct labour Direct energy 	Actual costs Direct labour Direct energy
Actual costs Direct labour Direct energy Direct packaging 	Actual costs Direct labour Direct energy Direct packaging 	Actual costs Direct labour Direct energy Direct packaging
Actual costs Direct labour Direct energy Direct packaging Direct maintenance 	Actual costs Direct labour Direct energy Direct packaging Direct maintenance 	Actual costs Direct labour Direct energy Direct packaging Direct maintenance
Actual costs Direct labour Direct energy Direct packaging Direct maintenance Other costs 	Actual costs Direct labour Direct energy Direct packaging Direct maintenance Other costs 	Actual costs Direct labour Direct energy Direct packaging Direct maintenance Other costs
Actual costs Direct labour Direct energy Direct packaging Direct maintenance Other costs Indirect costs are prohibited	Actual costs Direct labour Direct energy Direct packaging Direct maintenance Other costs Indirect storage & distribution Indirect production Indirect depreciation	Actual costs Direct labour Direct energy Direct packaging Direct maintenance Other costs Indirect storage & distribution Indirect production Indirect depreciation

Upload to SAP, this is the fiscal cost price	Upload to SAP	Upload to SAP, this is the fiscal cost price
	 Raw materials are valued according to lowest value, prices of December are compared with cumulative annually price and the lowest price will be chosen. 	
	• Selling price has to be determined, this is to price per product minus rebates, cash discount, freight, interest, stock	
	 Selling prices are compared with actual price the lower of the two is the net realisable value and used to value inventory. Actual value are uploaded figures in SAP 	

Appendix i,ii,iii,iv

i

Level 0	Level 1	Level 2	Description	Level 0	Level 1	Level 2	Description
DCC			Direct Costs	ICC			Indirect Costs
	1 DP		Direct Production]]	7 ADM		Administration
		1 DP.RAW	DP Raw Material Management	11		1 ADM.GM	ADM General Management
		2 DP.CRU	DP Crushing]		2 ADM.LEG	ADM Legal
		3 DP.GRI	DP Grinding	II		3 ADM.FIN	ADM Finance/Admin./Credit Control
		4 DP.IJM	DP Injection Moulding]		4 ADM.HRM	ADM HRM
		5 DP.FIN	DP Finishing			5 ADM.HSE	ADM Health, Safety and Environment
		6 DP.EXT	DP Extrusion]		6 ADM.IT	ADM IT
		7 DP.RM	DP Rotation Moulding	וד		7 ADM.PUR	ADM Purchase
		8 DP.HM	DP Handmade	11		8 ADM.OTH	ADM Other
		9 DP.OTH	DP Other	11	8 IP		Indirect Production
	2 DP		Direct Production	11		1 IP.MAI	IP Maintenance
		1 DP.COM	DP Composite	11		2 IP.R&D	IP R&D
		2 DP.CRL	DP Cross-linking	11		3 IP.PLA	IP Planning
	3 VS		Variable Storage and Dispatch	11		4 IP.QC	IP Quality Control
		1 VS.STO	O VS Storage]		5 IP.QA	IP Quality Assurance
		2 VS.DIS	VS Dispatch]		6 IP.PM	IP Production Management
	4 TP		Transport	וד		7 IP.LAB	IP Laboratories
		1 TP.FR	TP Freight Costs Thirds	TI		8 IP.OTH	IP Other
		2 TP.TR	TP Transport Own Trucks	OTH			Other
ICC			Indirect Costs	וד	9 OTH		Other
	5 FS		Fixed Storage & Distribution]		1 OTH.IC	OTH Charged IC
		1 FS.SCO	FS SCO	11		2 OTH.OTH	OTH Others
		2 FS.STO	FS Storage	11		3 OTH.INT	OTH Finance results and Income tax
		3 FS.DIS	FS Dispatch	11		4 OTH.NOC	OTH Non Operational Costs
	6 COM		Commercial	11		5 OTH.FEE	OTH Head Office fee
		1 COM.MAR	COM Marketing	11		6 OTH.NTO	OTH Net Turnover
		2 COM.BUM	COM Business Unit Management	11		7 OTH.COS	OTH Standard Cost of Sales
		3 COM.SM	COM Sales Management		• •		•
		4 COM.SR	COM Sales Representatives	1			
		5 COM.AM	COM Accountmanagement	1			
		6 COM.BO	COM Backoffice	Ì			
		7 COM.PM	COM Productmanagement	1 I			
		8 COM.OTH	COM Other	1			

ⁱⁱ IFRS Adjustment Belgium

A Aannaco	ing voorraden	tengeuolge uan u	erschil in afschrijvingen				
n. naiipass	ing voonaden	tengevoige van v	ersenn in arsennjønigen				
Depreciation i	n uurtarieven			644,233,33	Direct depreciation -	zie overzicht per maand AV	/B
					DECEMBER : NIHIL	-	
Actuals per	31-aug	AALTER	Direct production AAL	439.075.33			
			- · ·	205.158.00			
Uurtarief totaa	l op basis van verv	vangingswaarde					
Conversiekos	ten	AALTER	Direct labour				
			Energy				
			Packaging				
			Maintenance				
			Direct depreciation	644.233,33			
			Totaal	644.233,33			
					_		
			Productievolume totaal	9.456.833,00			
			Conversiekosten/kg	0,0681			
Uurtarief totaa	l op basis van actu	Jals					
Conversiekos	ten		Direct labour	•			
			Energy	•			
			Packaging	•			
			Maintenance				
			Direct depreciation	439.075,33			
			Totaal	439.075,33			
			Productievolume totaal	9.456.833,00			
			Conversiekosten/kg	0,0464			
. .			~				
I onnage eige	n fabrikaat in stock	per	31-aug	KLa	verschil	<u>Mutatie</u>	
wavin Belgiun	1		piant 1260	1.432.161,62	0,0217	- 32.371,18	
			andere plants	302.033,12	- 0,0217	. 0.303,20	
.				4 074 000 74	. 0,0217		
Totaal				1.874.996,74	- 0,0217	- 40.676,47	
B. Aanpass	ing voorraden	tengevolge van o	verheadkosten				
Indirecte prod	uctiek.osten per	31-aug	AALTER	411.506.20			
Productievolu	me totaal	- 2		9,456,833,00			
Indirecte prod	uctiekosten per ka			0.0435			
				0,0100			
Tonnage eige	n fabrikaat in stock	per	31-aug	KG	Verschil	Mutatie	
Wavin Belgiun	1	•	- plant 1260	1.492.161.62	0,0435	64.930,17	
			andere plants	382.835,12	0,0435	16.658,75	
					0,0435		
Totaal				1.874.996,74		81.588,92	

C. Aanpassin	g voorraden tengevolge	van FIFO (maz. 3 maanden) "Raw п	naterials"	N	ET MEER TOEPASSEN	
Herwaardering op	p basis van FIFO integraal per					
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		Fille	wiaalgoed	On spec	TUtaal	
_		-				
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<u>-</u>		-			•	
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		Prime	Maalgoed	Off spec	Totaal	
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Totaal						
/erschil					-	
D. Aanpassin	g voorraden handelsgoe	deren tengevolge van FIFO			ZIE FIFO	
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reragaraalerriter	waardeningen per	Crame	BE01	MSC	Totaal	
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Totaal					-	
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c. nanpassing	, increasing rearran	n nanaciogocacien (- ingekoone o	fut tustersj.			
		Voorraad per	3,80%			
		31-aug				
Belgium totaa	ICIE	1.283.189,70	48.761,21			
		-				
Totaal		1,283,189,70	48,761,21			
Algeme	en totaal		31-jul	31-aug	mutatie	
- T						
wavin Belgium			89.383,77	89.673,66	289,89	
A. Aanpassing v	oorraden tengevolge van vers	chil in afschrijvingen -	37.483,48	- 40.676,47	- 3.192,99	
B. Aanpassing v	oorraden tengevolge van over	headkosten 2 (mar 2 maardan) "Davi mataista"	77.399,68	81.588,92	4.189,23	
	oon agen tengevolge van FIFU oorraden handelsgoedorop to	o (max, o maanden) Haw materials"		-	-	
2. Aanpassing V 2. Aanpassing In	tercompany voorraden hande	Isqoederen	49.467,57	48.761,21	- 706,36	
		-				
lotaal			89.383,77	89.673,66	289,89	
Belastingen à rat	o van 33,99%		30.381,54	30.480,08	98,53	
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vecco na pela	sungen		53.002,23	53,133,58	131,35	

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	* Directe produktiekosten	í.	Budget	18,104			NL PROD	DDIR - Kos	tenoverzicht	t		
	Totaal			62.755			_					
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	*Directe produktiekosten			18,104								
	Totaal			23 355								
	1 OKBAI			20.000								
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	* Indirecte kosten	IFBS	Budget	2,929			NL01 IFR	: S - Kostenr	overzicht			
	* Indirecte afschrijuing	IFBS	Budget	263			BPC	- nooveni				
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					Vorige ma	and		3,8%	16			
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				257	263	-6						
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IFRS Adjustment Netherlands

IFRS Adjustment Germany

Bewertung der Vorräte	RS												
	n- 11	Mrz- 11	Apr- 11	Mai- 11	Jun- 11	Jul- 11	Aug- 11	Sep- 11	<u>Okt- 11</u>	Nov- 11	Dez- 11	summe 2011	2010 YEC
Ind. Prod.k. "Var. DE IFRS INDPR." (inkl. 12028622 K1 Team, ohne AFA, OHNE 12028620412025500 337	473 34 1 307 378 (8 397 275 35	272 023 47	325 933 18								1 640 083 42	3,726,868,41
Ind. Prod.k. siehe oben abzügl. 12028622 328.	.998,94 289.331,2	2 381.161,18	263.844,56	315.475,81	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1.578.811,71	3.635.451,25
Kostenst 12028622 KUK2 Team ohne öfa	474 40 1 18 046 5	6 16 114 17	8 178 91	10 457 37								61 271 71	91 417 16
Produktionsplanung entfällt	0.001 0.00	0.001	0.00 1	0.00 1	0.001	0.001	0.00 1	0.00 (0.00 1	0.00 1	0.00 1	0.00	70.116.43
indirekte Abschreibung in stock 47	049.001 46.266.5	8 46 603 24	46 593 00	46 857 90								233 369 72	573.357.10
Vareneingang Twist (130050) in Lage	er enthalt in Lager ent	ha in Lager entha	in Lager enth	in Lager entha	in Lager ent	in Lager ent	in Lager ent	in Lager ent	in Lager ent	in Lager ent	in Lager enth	0.00	
1 MA x 4 Sch. = 4 MA für Einlagerung Produktion • 3,5 Pers. Vareneingang It. Hr. A. Aehlen. 7,5 /25 MA (Aufteilung der Lobestunden) der Ko st				in Euger entite	in Euger en		in Euger en	in Euger ene	in Euger ene	in Luger en		0.00	
12025200+12023100 (Lager Twist) = 30% 32.	.289,59 36.057,9	40.463,51	39.156,80	38.375,89								186.343,73	443.316,64
1 MA v. 6,0 (Aufteilung d. Lohnstunden) aus VE (12025251 +													
12023151) = 16,67 % seit 01.05.2008 5.	.540,281 6.735,73	1 6.096,09	7.702,62	6.636,22								32.710,94	87.201,82
Indirekte Produktionskosten Total 422	2.352,201 396.438,3	490.438,19	365.475,89	417.803,19	0,001	0,001	0,001	0.001	0,001	0,001	0,001	2.092.507,81	4.900.860,40€
Produktion in kg 2011 Vavin GmbH Total 3.	.235.400 3.868.9	4 4.501.001	4.981.667	5.924.230								22.511.252	48.092.985
Indirekte Produktionskosten per kg	0,131 0,10	2 0,109	0,073	0,071	#DEEL/0!	#DEEL/0!	#DEEL/0!	#DEEL/0!	#DEEL/0!	#DEEL/0!	#DEEL/0!	0,0931	0,102€
Bestandsänd, ohne Zukauf (+Pr Abl.)													
F¥ / Hf¥ Bestand in kg per Mon.													
Eigengefertigte Bestände /FW/HFW) (aus Bestaende/2011MF in kg) 6.745	8 159 216	6 282 361 772		6 725 308 140								6 725 308	5,792,101
Aufwertung IFRS Fertigerzeugnisse 884	1.008,861 754.882,0	684.777,43	461.197,11	477.496,88	#DEEL/0!	#DEEL/0!	#DEEL/0!	#DEEL/0!	#DEEL/0!	#DEEL/0!	#DEEL/0!	625.453,661	590.794,30€
			2 200 401 00									2 4 4 9 9 6 10	3 373 340 37
10 1 Destande Lostprice (ZFLUUII) 3.437	7.421,011	3.132.150,04	3.230.461,68	3.111.306,10								3.111.306,10	3.373.318,37
Aufwertung It. Vorg. Zwolle 3,8% 132	2.902,001 135.422,6	1 132.713,48	125.037,54	130.906,431	0,001	0,001	0,001	0,001	0,001	0,001	0,001	130.906,431	128.186,14€
Zeile 17 •	• 19 - Wert is Zeile 17 • 19 - \	er Zeile 17 + 19 - Wer	Zeile 17 + 19 - Wer	Zeile 17 + 19 - Wert	Zeile 17 + 19 - \v	Zeile 17 + 19 - W	Zeile 17 + 19 - \v	Zeile 17 + 19 - W	Zeile 17 + 19 - W	Zeile 17 + 19 - W	Zeile 17 + 19 - Wei	Zeile 17 + 19 - Wert	in
Spalte O) kopieren Spalte O kopie	rei Spalte O kopierer	Spalte O kopiere	Spalte O kopierer	Spalte O kopie	Spalte O kopie	Spalte O kopie	Spalte O kopie	Spalte O kopie	Spalte O kopie	Spalte O kopiere	Spalte O kopieren	

Format IFRS Adjustment

IFRS Adjustment					
Month	Country				
			SAP CODE		
GENERAL DATA			BELGIUM	GERMANY	NETHERLANDS
Production Volume		SAP BW (production volume)			
Value Finished Products in Stock (KG)		SAP BW			
Value Intercompany Products (€)		SAP			
Total Indirect cost		Sum total indirect costs			
		Indirect production are costs for			
		production planning, production			
		management, engineering,			
		maintenance management,			
		quality assurance and laborator	/		
Indirect Production		costs.			
		Indirect logistical costs to bring			
		products in their current			
		condition in the warehouse or			
Indirect storage & Distribution		stock transfer from production to	0		
indirect storage a Distribution		Indirect depreciation are			
		production buildings, building			
		related installations, silo's and			
Indirect Depreciation		assets used by the departments	8		
Direct depreciation Replacement value		SAP			
Direct depreciation Historical value		SAP			

1. FIFO Adjustment					
The FIFO adjustment is based on the differen	ce				
between FIFO value versus the actual pri	ce				
(replacement valu	e)				
	h		1		
	Month	Volur -	Price Materi	Current stock valu -	FIFO last three mon
	January				
	February				
	March				
	April				
	May				
	June				
	July				
	August				
	September				
	October				
	November				
	December				
	Total	-			
			1		
Differences between FIFO and current stor					
2. Adjustment Direct Depreciation					
Adjustment for difference between depreciation	1				
on replacement value and depreciation on					
historical value (IFRS)					
	Direct depreciation based	Value	Production Volume	Total per ka	
	on	Value	r roudclion volume	iotal per kg	
	Historical value	-	-	#DEEL/0!	
	Replacement value	-	-	#DEEL/0!	
	Difference	-		#DEEL/0!	
		Finished products in stock			
	Plant	(KG)	Difference	Adjustment	
	Plant X	(10)	#DEEL /01	#DEEL /01	
	Plant Y		#DEEL/0	#DEEL/0	
			#DEEL/U	#DEEL/0!	
	Plant x		#DEEL/0!	#DEEL/0!	
Fotal Adjustment	Total			#DEEL/0!	
3. Indirect Costs					
Adjustment for Indirect costs; Indirect					
production, Indirect storage & distribution.					
Indirect Depreciation	Indirect costs	Costs			
	Indirect Production	0000			
	Indirect storage & Distribution				
	Indirect Storage & Distribution				
	indirect Depreciation	-	-		
	Iotal Indirect Costs	-	. 0	WAAR	
Indiront Cont nor KC - Total Indiront Conto /					
nullect cost per KG = Total mullect costs /					
production volume	Indirect cost per KG	#DEEL/0!			
production volume	Indirect cost per KG	#DEEL/0!			
production volume	Indirect cost per KG	#DEEL/0! Finished Products in KG	Difference	Adjustment	

4. Adjustment Intercompany Finished Produ	icts			
Adjustment for Intercompany products 3,8% of				
total value intercompany products				
	Adjustment ICT	Value	1	
	Value Finished Products			
	Intercompany	-		
	3,80%	-		
Total Adjustment Intercompany Products		_		
rotar Aujustitent mercompany Products	L			
E Tatal IEBS Adjustment				
5. Total IFRS Adjustment				
4	Last Month	Current Month	Adjustment with last	
Adjustment			month	
1. FIFO Adjustment				
2. Adjustment direct depreciation				
3. Adjustment Indirect Costs				
4 Adjustment Intercompany products				
in Adjustition interestingarily products				

Total IFRS Adjustment

^{iv} Table DATA IFRS Belgium, Germany and the Netherlands

Data	Belgium	Netherlands	Germany	Proposed
Production volume	Tonnes are based on information Gert Kamphuis There is a difference between SAP BW and information Gert Kamphuis SAP BW (9.444 ton en 9.456)	Currently not used, SAP BW recommended	SAP BW is not in accordance with method Germany Production volume SAP BW is loaded into excel and then a certain correction is made which is the production volume	SAP BW
Finished products in stock (KG)	 SAP BW Stock en GM analysis Variant: BE IFRS Own finished prod in stock 	 S_ALR_87012284 Variant: NL_IFRS 12031000 finished products + 12032000 semi- finished This is value in € and not KG 	Based on calculation excel Georg, probably better to use SAP.	SAP BW Stock value KG
Direct depreciation on replacement value (actual)	BE 28598000	NL 28598000	DE 28598000	replacement value NWE (28598000)
Direct depreciation on historical value depreciation	BE_ext_dir Depr_hist	Cannot be found, therefore SAP use.	DE_Proddir DEPR_HIST	Depr_hist
Indirect costs (sum all indirect costs)	Total indirect	Total indirect	Total indirect	Total indirect = indirect production + storage & distribution + indirect depreciation

	1	1		
Indirect production	1. S_ALR_07013611 - Cost	1. S_ALR_07013611	1. S_ALR_07013611	BE_extindi
	Centres	NL_INDPROD	Var DE_IFRS	NL_Indprod
	Cost Centre BE_extindi /		(diverge with	
	BE01_prodi		DE_Indprod)	DE_Inprod??
	3. GRP_FE			
	 Settings → level 3 		Totaal minus indirect	
			depreciation (zie	
			hieronder)	
			28412100	
			28421100	
			28423100	
			28431100	
			28455100	
			28456100	
			28459110	
			38412100	
			38421100	
			38423100	
			38421100	
			28455100	
			28455100	
			30430100	
			minus USC wordt anart	
			- minus nac wordt apart	
			регекена (stap 2),	
			12028622	
Indirect storage &	Not inserted	Not inserted	Step 4: S_ALR_87013611	Which method can be used?
Distribution			→ *30%	
			Step 5	
			S_ALR_07013611	
			12023151	
			Divide by 6 (16,6667)	

•

	1			
Indirect Depreciation	Not inserted	BPC no access	1. S_ALR_07013611	28412100
			Var DE_IFRS	28421100
			Sum of:	28423100
			28412100	28431100
			28421100	28455100
			28423100	28456100
			28431100	28459110
			28455100	38412100
			28456100	38421100
			28459110	38423100
			38412100	38431100
			38421100	38455100
			38423100	38456100
			38431100	
			38455100	The cost element groups are
			38456100	applicable for all countries
Value intercompany	SAP BW	1. S_ALR_87012284	ZFCO011	SAP S_ALR_87012284
products		Variant: NL_IFRS	Variant: DE IC Stocks	: Net value intercompany
		121221 finished products		products = intercompany
		i/c		products – obsolescence stock