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Cash Flow Forecasting

Proposal for New Long-Term Cash Flow Forecast
in the Case Company

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The purpose of this study was to develop a cash flow forecast model for the case company. The case company in this thesis was a Finnish building construction company. The group controlling set a target to improve the corporate treasury's current long-term cash flow forecast because it was inaccurate and it often had outstanding deficiencies between actual and forecasted figures. A project team was set up to investigate on this issue and this research and development project is documented in this thesis. The outcome of this research was a cash flow forecast proposal that included most the necessary attributes in order to implement the report of future cash flows.

This study was conducted as an action research. The theoretical framework of this study focused on cash flows in general and cash flow forecasting tools. Both qualitative and quantitative research methodology was used in this study. The qualitative data was collected in workshop meetings with the company's key personnel concerning the cash flow forecasting and technical implementation. The quantitative research took place when analysing the company's current cash flow forecast and different forecasting alternatives.

The results of the study showed that the case company's current cash flow forecast model was not sufficient and, instead of improving the current forecast model, the project team formed a proposal for a new, long-term cash flow forecast. The project team ended up supporting a direct method of cash flow forecasting and defined most of the necessary attributes around this model.

It is recommended that the case company will continue improving its cash flow forecasting accuracy and will consider implementing the proposed cash flow forecast. Successful cash flow forecasting helps to avoid unexpected deficits and in a long run it can improve the company's financial performance.

Keywords	Cash flow forecasting, Cash Flow, The Direct Method of Cash Flow Forecasting, Receipts and Disbursement Method

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Contents

Appendices

1   Introduction

Cash flow forecasting is vital for every business. With the help of the cash flow forecast an organisation gets an overall picture of incoming and outgoing cash flows and the advantage is to know when the expenses must be covered and there is no need for unexpected borrowing to cover the cash needs. According to Chen (2007) in construction business the contractor's cash flow forecast must be accurate and realistic in order to maintain competitiveness. Therefore, corporations most often include multiannual cash flow forecasts in their business plans. If cash flow forecast has been created weakly the company may face great financial losses and lose its business opportunities. Odeyinka et. al. (2008) note that in any construction company financial planning is the key to survive. It has been identified that lack of money is a leading cause of business failure and may crash even successful companies.

In construction business it is important for both owner and contractor parties to manage cash flow forecasts successfully. Prior to the delivery the project goes through several stages. From the contractor point of view the company often gets the payment from the owner after certain milestones. It takes some time while the owner reviews the invoices and makes the payments. Therefore, it is possible that the contractor receives the payments from 30 to 60 days after the expenses had incurred. The contractor needs to plan how to cover its costs in a short-term basis. (Chen, 2007.)

In case of major deviation between actual and forecasted cash flow figures it is crucial to make corrections immediately to the estimated situation (Zayed & Liu 2014). Ng and Tiong (2002) state that, "*when a construction project is in progress, its cash flow is the most important factor that can affect the profitability*". There are several cash flow tools to help to manage cash flow forecasts. The purpose of this master's thesis is to explore one building construction company's cash flow forecast deficiencies and form proposal together with the project team to improve the company's cash flow forecasting.

1.1 Background

The case company in this thesis research is a Finnish building construction company that preferred to stay anonymous. This building construction company is a part of larger construction group. The group controlling set a target to improve the corporate treasury's current long-term cash flow forecast because it was inaccurate and it often had outstanding deficiencies between actual and forecasted figures. The business operations including the case company committed to clarify and to improve the group's long-term cash flow forecast accuracy. The case company set up a project team that investigated their own operations' figures and made an improvement proposal that is presented in this thesis.

1.2 Business Problem

In the case company the group treasury maintains the group level cash flow forecast that covers all the business operations. Because of inaccurate cash flow forecast the group treasury department needed business operations' help to get the necessary information to balance the cash flow forecast situation and to avoid inaccuracy in the long-term, monthly updated cash flow forecasts.

1.3 Objective and Intended Outcome

The objective of this study is to develop a cash flow forecast model for the case company. The outcome of this research is a cash flow forecast proposal that includes the necessary attributes in order to implement the report of future cash flows.

This thesis aims to answer to the following questions:
- o How should the case company forecast cash flows?
- o Which components does the cash flow forecast consist of?
- o How is the information generated from the current reporting system and how can it be automated?

2   Research Methods and Material

2.1   Research Process Overview

As shown in **Figure 1** the thesis research process starts with scoping the thesis and identifying the business problem. This stage includes the research and development (R&D) project objective and outcome definitions. After the business problem has been identified the next step is a current state analysis that will be carried out through GAP analysis method. GAP analysis method explores the gap between current state and desired future state. The outcome of the analysis is to identify the steps towards the desired state and the analysis implies both internal and external operation assessment.

Figure 1. The research process.

The literature review is about setting a theoretical framework around the research and finding the best practices to solve the business problem. The following step is to build a solution for the case company. This stage includes data collection and data analysis. Since the primary focus is to solve a real business problem the research is conducted as an action research. As mentioned earlier the objective of this action research to develop a cash flow forecast model for the case company and the outcome of this research is a cash flow forecast proposal that includes the necessary attributes in order to implement the report of future cash flows. In the final stage based on the feedback the thesis discusses whether the suggested components are sufficient for building a new forecasting model and what are the next steps required to reach the desired stage.

2.2   Data Collection and Analysis

As a research method it was reasonable to choose action research due to the nature of this R&D project. As a member of the project team the author of this thesis was able to participate in the data collection and data analysis together with the other team members and report the research findings. In this research the data was collected through qualitative research method in project workshops and a quantitative research took

place when analysing the company's current cash flow forecast and different forecasting alternatives.

Coghlan and Brannick (2010, p. 5) state that, *"action research focuses on research in action, rather than research about action. The central idea is that action research uses scientific approach to study the resolution of important social or organizational issues together with those who experience these issues directly."* Action research (AR) is carried out through a cyclical, continuous four-step process 1. Planning the action, 2. Taking the action, 3. Evaluating the action and 4. Leading to further planning (Coghlan and Brannick, 2010.)

Action research is based on collaborative and democratic partnership. It involves the members of the system that is being studied. The research is concurrent with action, it is sequence of events and its goal is to solve a problem. The AR process comprises cycles of data collection and data analysis, and those who are concerned continuously work with the data: jointly analysing the data, planning the action, evaluating the action and so on. (Coghlan and Brannick 2010.) Figure 2 illustrates the cyclical and continuous process of AR.
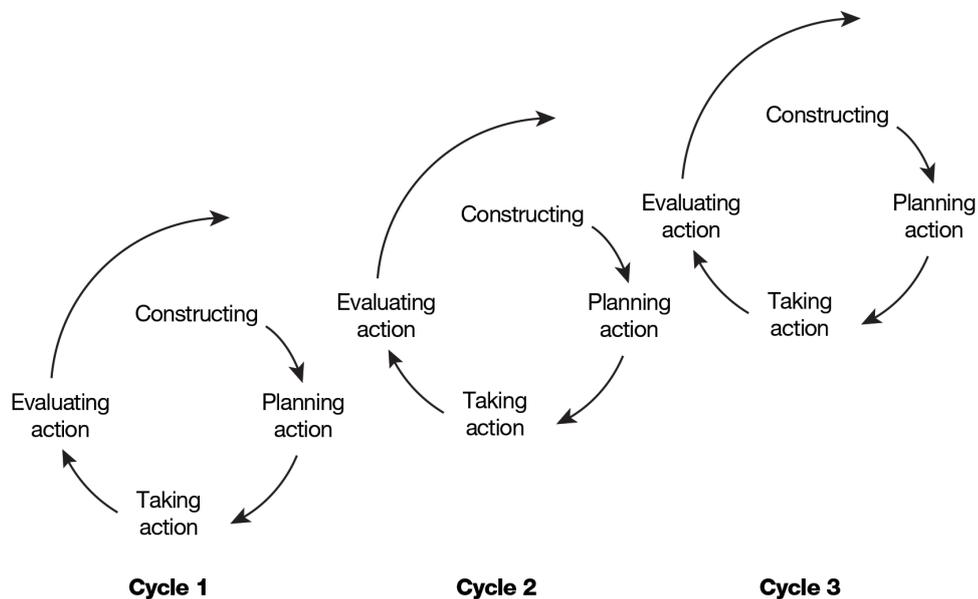

Figure 2. Spiral of action research cycles (Paraphrasing Coghlan and Brannick 2010, 10.)

In action research the data is generated together with other members of the AR in the research cycles. In action research the data gathering is not only collecting data, it is also learning data. Therefore, in action research the data gathering is more like data generation. The data is being generated through participation and in the teams at work. The observations and interventions take place in formal settings such as team meetings and interviews but also in informal situations in a coffee beak or by a lunch. In action research every action is an intervention and it must be kept in mind to be sensitive and democratic while observing and asking the question in the organization. (Coghlan and Brannick 2010.)

2.2.1 Project Team Work and Collecting Data

The project team members worked both individually and together for trying to build up the best solution for the case company's business problem. The team set up several meetings where they discussed about the needed changes and invited other key members of the organization, such as IT specialist on financial reporting system, the treasury controller and group controlling team, who gave their own input and opinions about how to generate the necessary information for the new system. The team members also carried out research work individually in their own field. The data was collected in project memos and shared via email so that the members had a chance to discuss about it and challenge it if needed. The project team then considered the cash flow reporting options and formed their proposal for new cash flow forecasting.

The first step in the research was to compare the different alternatives for implementing the forecast report. The research team used data from previous reporting system's cash flow forecast model and noted that it had a lot good qualities in it. They decided to take advantage of the previous reporting system when defining the attributes for the new cash flow forecast.

In the second stage of research the project team invited the group treasury controller for a discussion about whether the model draft would have development capacities. The meeting also included discussion about how to generate the necessary data from the current reporting system and what gray zones there were to be further investigated. This meeting was followed by another workshop with the group controlling team. In the discussion the members went through what weaknesses the current cash flow forecast had and whether the group controlling team would support the new cash flow forecast

model proposal. This discussion was extremely important because the group controlling team owns the current reporting system and all the change requests will float through them. The group controlling team gave their approval to continue with the proposal.

When most of the attributes were defined the project team had a discussion with IT reporting specialist about specifications and implementation possibilities from technical perspective. The outcome was good because it was found that it is technically possible to generate the cash flow data of projects' financial planning templates. The team continued with the definitions and when the proposal was almost complete and the background investigations were carried out successfully the project manager presented the proposal for the SVP of business controlling in building construction. The next step was to prepare the proposal for approval of Group CFO.

During the action research existing theory and best practices were utilized in order to achieve the best outcome. **Figure 3** illustrates the research model of this master's thesis.
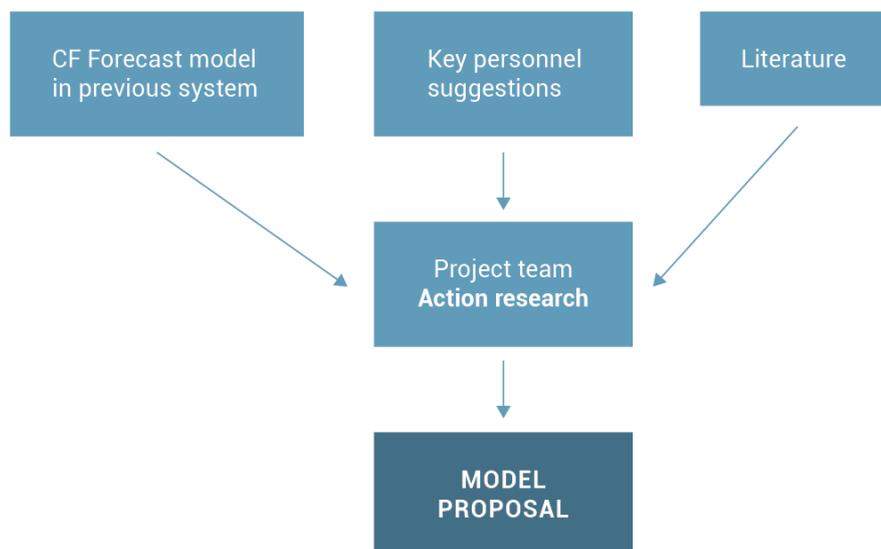
Figure 3. The research model of the thesis.

3   Current State Analysis

3.1   GAP Analysis

Gap analysis, also known as delta (Δ) analysis reflects the change that needs to be made in order to reach the desired state: *the way we want things to be*. The process includes definition of difference between the two states, identifying the steps necessary to get from the current state to the desired state and the implementation of needed steps, in other words, the change. Sometimes there are also positive aspects in the current state, in *the way things are now*, therefore, it is possible to reserve some of the present into what we *want things to be*. (Fossum 1989, 19.) The **Figure 4** illustrates the change process.
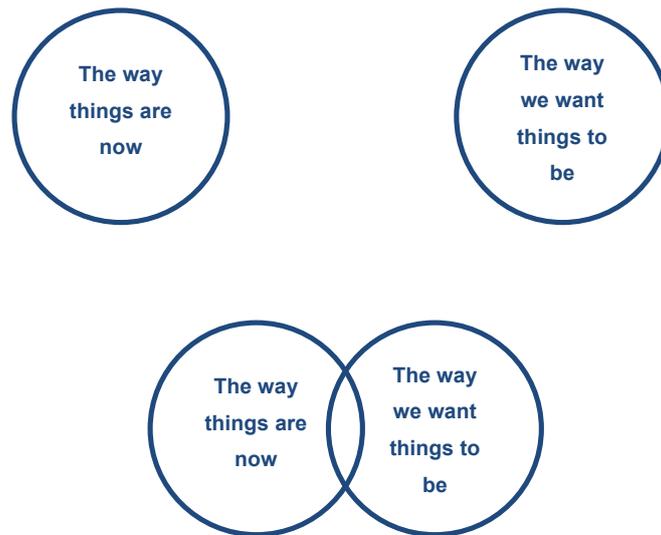
Figure 4. GAP Analysis - The change process. (Paraphrasing Fossum 1989, 19.)

According to Fossum (1989) the technique behind Gap analysis method is quite simple. It includes a list of three main issues: 1. The way things are, 2. The way we want things to be, and 3. Steps to get there.

3.1.1 Cash Flow Forecasting Overview and Challenges in Current System

The case company's current long-term cash flow forecast is based on indirect, operative cash flow model. This model calculates the cash flow of monthly forecasted EBITDA (earnings before interests, taxes, depreciation, and amortization), CAPEX (capital expenditure) and the change in working capital. Example of the current cash flow forecast model is shown in **Table 1**.

Table 1. Case company's current operating cash flow forecast model.

	JAN	FEB	MAR	APR
EBITDA*	500	2 000	2 000	800
Finance leasing fees*	0	0	0	0
CAPEX*	0	0	0	0
Purchases of assets*	0	0	0	0
Sales of assets at sales price*	0	0	0	0
Changes in working capital*	-1 900	7 500	-3 000	550
Inventories*	100	6 000	-2 000	50
Trade receivables and other receivables*	-6 000	5 500	-5 000	7 000
Trade payables and other payables*	4 000	-4 000	4 000	-6 500
OPERATIVE CASH FLOW*	**-1 400**	**9 500**	**-1 000**	**1 350**

*) All the figures are fictitious

The problem in this current operating cash flow model is that the company's working capital forecast has inaccuracy on the receivables and payables. The company does not have sufficient tools for forecasting these accruals at the moment. Therefore, it is not advisable to base the cash flow forecasts on this information.

The company finances own residential development and construction projects mostly with project loans also known as housing company loans obtained from banks. The project loan share of the project net sales varies by region. When there is a solid financial plan on the project and operating permits the company starts raising a project loan in accordance with the completion ratio. The project loan will be transmitted to the shareholders of the apartment house company (Fin. As Oy) after the delivery. In residential building construction projects the unsold residential units accounted for raised project loans are recognized in interest-bearing liabilities. The second shortage in the working capital forecast is that the interest-bearing debt is eliminated from the working

capital forecast. The company has defined that the receivables in working capital in-
cludes only basic trade receivables and other operative interest-free receivables. How-
ever, all the incoming project loans should be included in the forecast despite the fact
whether they are recognized as accounts interest-free or interest-bearing debt. The
company has also defined that working capital forecast excludes accounts of VAT re-
ceivables and VAT payables, yet they are significant cash flow items.

3.2   Summary of Current State Analysis

Implementing a new report into a system requires a major amount of resources,
money, time and testing. Because it is such a large project the company will need
technical resources from outsourced party and that will significantly increase the project
price tag. The following explains what things must at least be taken into account when
defining the needed attributes.

3.2.1   Current State and Desired Future State

The current cash flow forecast has the following problems:

- The indirect method of forecasting cash flows uses working capital forecast but
  the forecasted accounts payable and receivable have inaccuracies because
  there are not sufficient tools forecasting them at the moment
- The working capital forecast excludes interest-bearing dept, yet it is inflowing
  cash
- The VAT payables and receivables are excluded from working capital
- There are often inconsistencies between forecasted and actual cash flow fig-
  ures

The project team noted that there was no reason to base the cash flow forecast on
insufficient information. The team analysed how to upgrade the cash flow forecast and
decided that instead of improving the current cash flow forecast model it was more rea-
sonable to implement a new, direct cash flow forecast. The team analyzed that the di-
rect statement of cash flows would give more accurate forecasts as long as all of the
attributes have been defined thoroughly. The direct cash flow forecast would allow to
test and emphasize project-level cash flows and it would be a useful tool for the man-

agement and the treasury to analyse company-level forecasts and really identify what is behind the figures. This model was also found to be effective and informative in the previous reporting system.

3.2.2 The Steps to Get There

Implementing a totally new report into the reporting system requires many stages:
- Definition of the desired report items
- Definition of all of the cash flow attributes
    - What are the possibilities to automate information from the current data in the system?
    - What kind of data is needed to input to the system manually?
- Technical survey: is it technically possible to implement a new report into the system with predetermined attributes?

3.2.3 Identifying Challenges and Needed Changes

Because the building construction business is quite complex and it consists of numerous multi-year projects alone the cash flows from operating activities are major and there are several issues that need to be identified when defining the cash flow attributes. All of the projects are not identical to each other. There are mostly two types of projects. The own building construction projects are always financed by project loans up to a certain percentage of the total net sales. There are also projects where the company is the contractor and disbursements depend on the contract agreement. Hereby, the own building construction projects' financial planning templates differ from the contact projects' planning templates. The project-related financial information is obtained from these planning templates. Because the calculation behind these templates is used for accrual-based accounting they need to be redefined to generate also the cash flow information.

There are regional differences that need to be taken into account when creating the calculation of project cash flows. The project loan share may vary regionally. Also the prepayments of apartments have regional differences. Therefore, the cash flow calculation in own residential construction projects has to be defined by region.

In accrual-based accounting construction project sales and expenditures are reported excluding VAT. Adding VAT payables and receivables into the forecast is a real challenge. Nor should forget that in both fixed and variable costs the net salary is paid out during the actual month when the cost is incurred but the withholding of payroll is paid out in the following month. However, it might be too challenging to itemize these payroll instalments in the forecast that it would make sense to make presumptions of realizations of the whole expenditures.

The cash flow forecast cannot be totally automated and there will be some manual work in order to create a reliable, all-inclusive forecast. The forecast will need an adjustment option because the business controller may have better knowledge of how the forecasted figures should look like in the following months.

In order to test the new report and adjust the forecasts the actual figures should also be included. However, the definition of the attributes of actual figures takes a lot of time and resources so it is possible that it cannot be implemented at once and it will need further investigation.

3.3 Summary

In the early stage of the research the project team noticed that there were some critical elements in the proposed model that needed to be resolved in order to reach the desired stage. The management commitment and support play a major role in business development operations. Without strong management support implementing financial reporting improvements will challenge the process even further, therefore the project team felt it was important to keep the management up to date concerning the project progress.

4   Theoretical framework

Construction companies have become increasingly interested in the advantages of good cash flow management. A proper cash flow management is crucial for every construction company's survival because cash is needed to maintain everyday activities. As a matter of fact it has been acknowledged that construction industry suffers a great number of bankruptcy caused by companies' financial planning failures and especially lack of good cash flow management. A good cash flow forecast could be seen as an alarm system that helps the company to predict any possible payment difficulties. (Aziz, 2013.)

In order to form a cash flow forecast one must first understand the basic concepts of cash flows. When measuring cash flows it is important to note that accrual-based accounting does not reflect when the revenue has been received in cash or costs have been paid out. It only shows when the accruals have been recorded. Also, an investment on equipment that will last more than one year will not show as a payment in the income statement. The investment will appear to the assets in balance sheet and then will be expensed as depreciation during its useful life but the depreciation expense is not a cash flow. (Keown et. al. 2008.)

According to Cooke and Jepson (1986) money flowing into the business is called positive cash flow and outflowing negative cash flow. In other words positive cash flow is cash received and negative is the money paid out. Net cash flow is the difference between positive and negative cash flows. The positive cash flows are derived from the received money from monthly payments. The negative cash flows consist of a variety of payment obligations for example labour wages, materials and sub contracting. In case of cash deficit the construction project requires funding and in case of cash surplus the project is self-financing. These cash flows are illustrated in **Figure 5** by Odeyinka and Lowe (2001). (Cited in Aziz, 2013.)
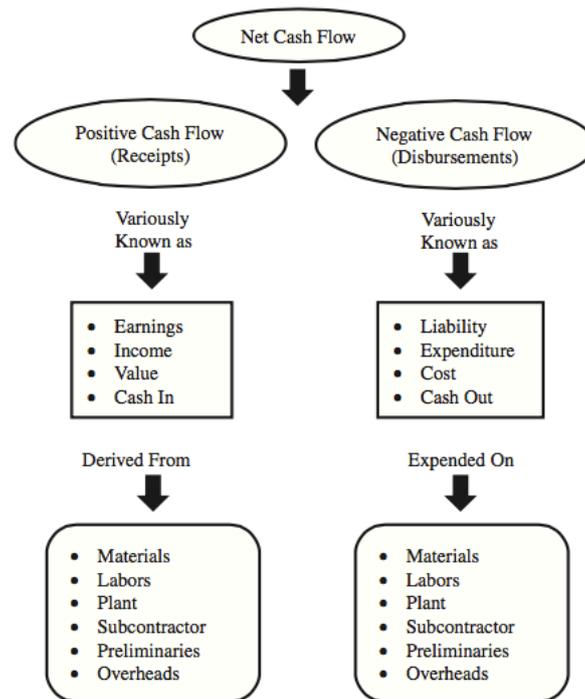
Figure 5. Construction cash flow concept by Odeyinka and Lowe (2001). (Cited in Aziz, 2013, 68.)

Jury (2012) explains the cash flow items via the manufacturing business example. The manufacturer purchases raw materials that will be transformed to the inventory: first into work in progress and finally into finished goods. The money that the manufacturer receives of the sold finished goods will be more than the cost for producing the items. Typically there will always be some overheads as well in this conversion process, these being purchasing, manufacturing, premises, and selling costs.

Labour will be then added into the overheads as a purchased value-adding element that will be consumed by the business in the process. In manufacturing business besides the machines (fixed assets) the operations require lots of resources such as electricity, maintenance and gas. To be able to deliver finished goods all of these variable costs need to be covered as well. Normally the fixed assets will be in use during the their useful lives but when they are no longer considered as operational assets they may be sold if possible. However, it goes without saying that selling useless fixed assets is relatively small part of the business cash flows. (Jury, 2012.)

The shareholders' equity is the value of an ownership interest and it is considered as a part of the capital of the company. The company may have borrowed money from

banks to cover its expenses. These borrowings are recognized as debt. Debt may be in form of loans or leases and it may also provide working capital for example via the use of factoring. Because the banks do not lend money for free, the company as a borrower will pay interests. Dividends will be paid for the shareholders if the company has been successful. Companies are also obligated to pay taxes of their operations for the government. Dividends and interests are regarded as rewards paid to the financing parties as a result of successful investment. Though, the interests, taxes and dividends are outflowing cash they do not represent the operational cash flows. (Jury, 2012.)

In today's business world the raw materials are not paid instantly when the company receives them and a creditor or payable is created at this delivery point. The purchased items are paid for example month to three moths later. The same goes when the manufacturer delivers finished goods to a customer and a debtor or receivable is created. The money does not inflow in this point but will eventually according to the terms of payment. (Jury, 2012.)

The cash movements around the business are considered as the working capital cycle. The most important cash flows come from operating the business. These items are presented in **Figure 6**. Every time the business goes round the inner circle the money is generated. (Jury, 2012.)
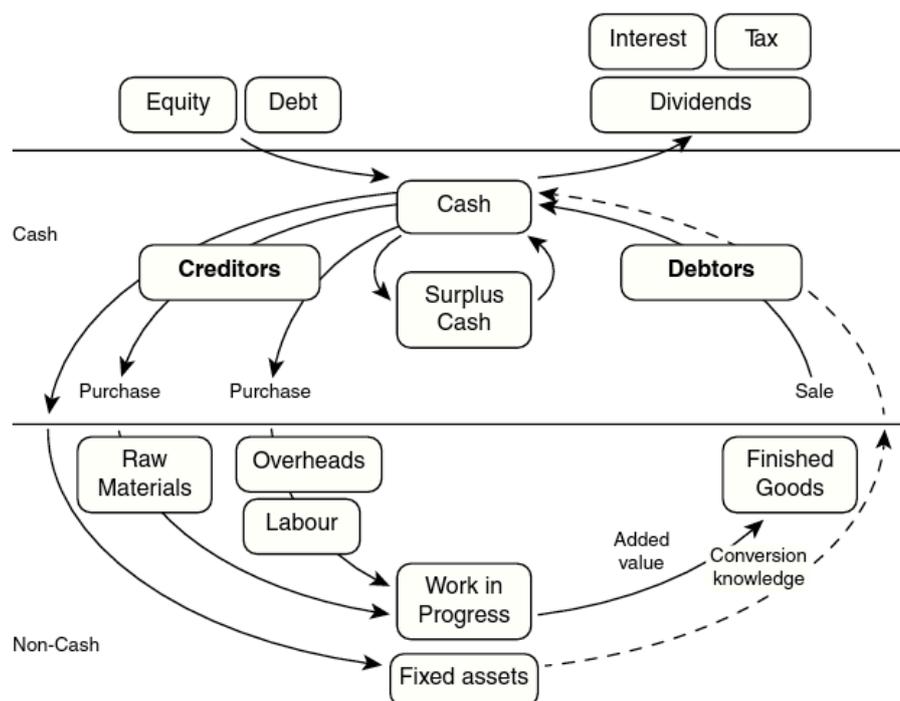

Figure 6. Diagram seven of the cash flows of a manufacturing business. (Jury 2012, 18.)

Epstein (2011) notes that cash flows can be divided into three different categories: operating activities, investing activities and financing activities. Operating activities include incoming and outgoing cash flows from company's operating activities during the statement period. Investment activities may include purchase or sales of investments, long-term assets and short-term investments or paid capital improvements. Financing activities consists of debt-interests and other debt-transactions.

4.1 Cash Flow Forecasting

The purpose of cash flow forecasting is to create visibility into company's cash and liquidity position by simulating and locating cash inflows and outflows in advance. The goal in the cash flow forecasting is to find out whether there will be any funding requirements and to make sure that the company's cash funds are in the maximum utilization and there are no extra borrowings. This has also another advantage, more specifically; successful cash flow forecasting reduces the cost of capital and increases the returns of excess cash. (Rajendra, 2013.)

According to Rajendra (2013) well conducted forecasting supports managerial decision-making and enables risk management. The basic component of risk management is to be aware of future cash flows and manage those effectively. This again has a direct effect on company's financial value. Figure 7 presents the basic forecasting process and its role in company's financial management.
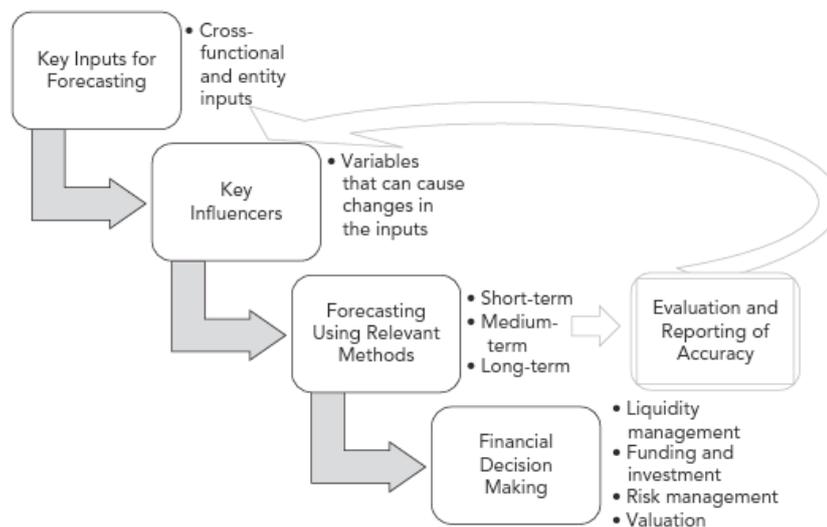
Figure 7. Basic forecasting process. (Rajendra, 2013.)

The cash flow forecast is useless if it is based on inaccurate information. By comparing the past forecast to actual figures and correcting the system a company can improve its cash flow forecast. This is to ensure better information provided in the future forecasts. In order to keep the forecasting process as fluent and not too hard to maintain it process should be automated if possible. (Bragg, 2010.) Rajendra (2013) notes that there are several cash flow forecasting methods. The forecasting method implementation depends on the actual needs. Figure 8 shows two classical types of cash flow forecasting, direct and indirect. This thesis focuses on the direct, Receipts and Disbursement Method and the indirect, Adjusted Net-income method.
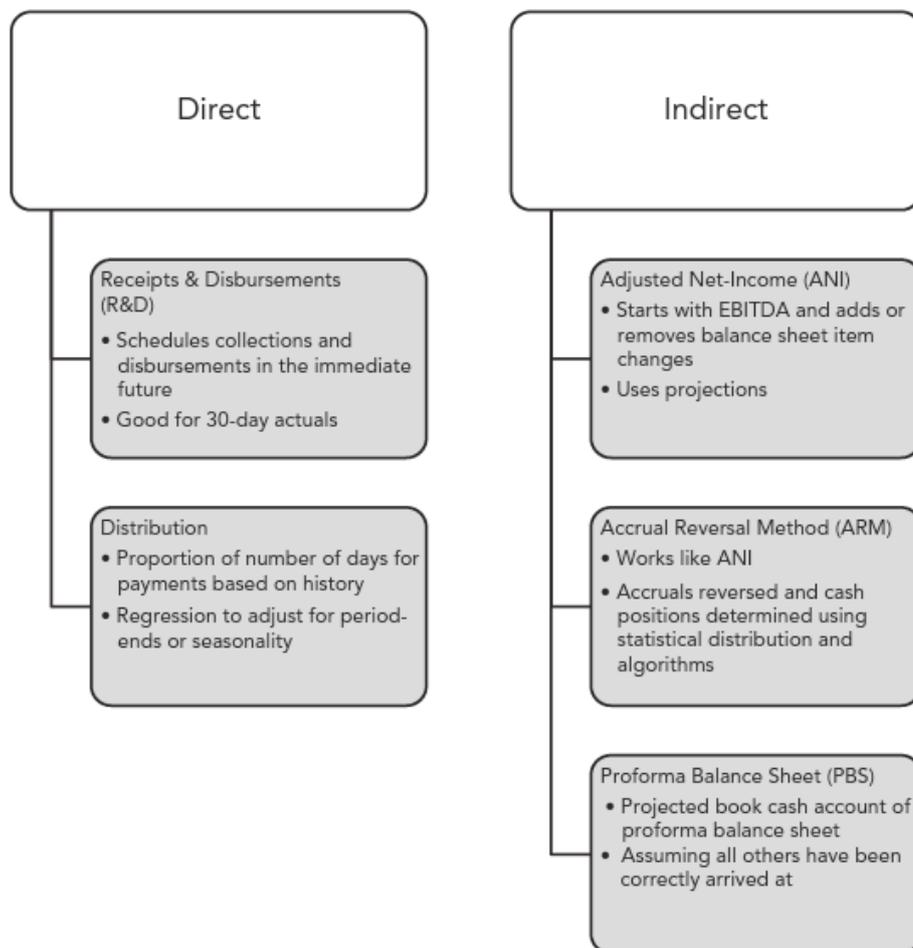
Figure 8. Classical types of forecasting. (Rajendra, 2013.)

4.1.1 Method 1 – The Direct Receipts and Disbursement Method

Epstein (2011, 75.) states that, "*The rule makers, the Financial Accounting Standards Board, prefer the direct method. This method groups major classes of cash receipts and cash payments. For example, cash collected from customers is grouped separately from cash received on interest-earning savings accounts or from dividends paid on stock owned by the company. Major groups of cash payments include cash paid to buy inventory, cash paid to employees, cash paid for taxes, and cash paid to cover interest due on loans*."

According to Rajendra (2013) the direct method, Receipts and Disbursement (R&D) method is the most commonly used method of short-term cash flow forecasting. The cash receipts and cash disbursements by Rajendra (2013) are illustrated in **Figure 9**. Sharma (2009) states that, "*The approach (R&D) follows a simple process of constructing a timeline depicting known and estimated cash inflows and outflows. This can be easily maintained using common spreadsheet software e.g. MS-Excel. The timeline may represent any period - a week, a month, a year*."
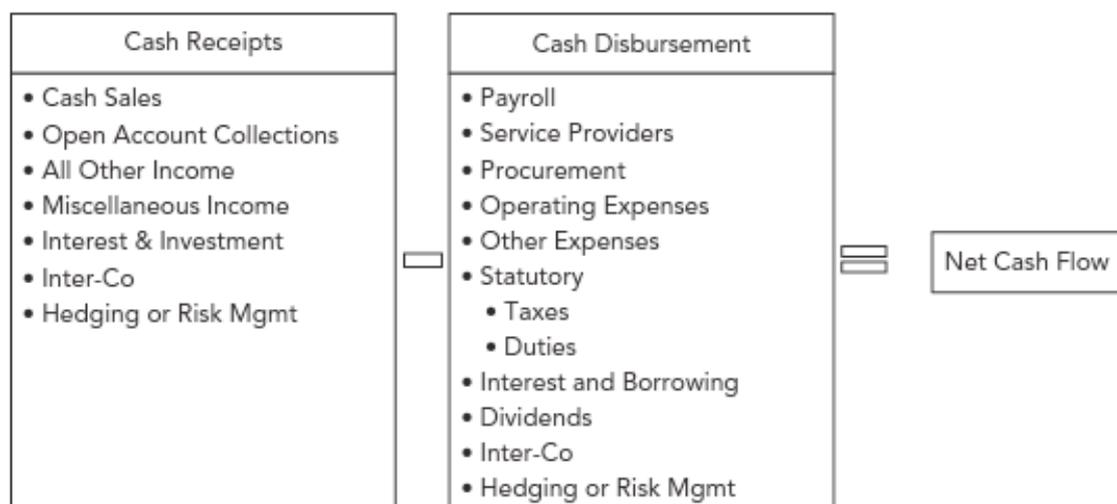
Figure 9. Receipts and Disbursement Method. (Rajendra, 2013.)

In order to maintain Receipts and Disbursement based model of cash flow forecast it is important to have a full understanding all types of the company's cash flows (Sharma, 2009). As shown in **Figure 9** typically cash receipts consist of for example cash from sales, open account collections and other income. The cash disbursement include out-

flowing cash of payroll, service providers, operating expenses, taxes, interests etc. These items all together form a direct net cash flow.

In **Table 2** below Bragg (2010) presents a sample of cash flow forecast based on the Receipts and Disbursement method. In this example the forecast period is nine weeks witch is about two months. A monthly forecast could be as well implemented with this format. According to Bragg (2010) it is important to show when the forecast was last updated. In many companies the treasury department implements also a short-term daily forecast by using this format.

Table 2. Sample of cash flow forecast (Bragg, 2010.)

Cash Forecast					
Date Last Updated	**1/4/2010**				
		For the Week Beginning on			
	1/4/2010	1/11/2010	1/18/2010	1/25/2010	2/1/2010
Beginning Cash Balance	$ 1,037,191	$ 1,009,796	$ 936,763	$ 957,771	$ 915,935
Receipts from Sales Projections:					
Coal Bed Drilling Corp.					
Oil Patch Kids Corp.					
Overfault & Sons Inc.					
Platte River Drillers					
Powder River Supplies Inc.					
Submersible Drillers Ltd.					
Commercial, Various					
Uncollected Invoices:					
Canadian Drillers Ltd.			$ 9,975		
Coastal Mudlogging Co.			$ 6,686		
Dept. of the Interior	$ 18,250			$ 11,629	
Drill Tip Repair Corp.				$ 5,575	
Overfault & Sons Inc.			$ 9,229		
Submersible Drillers Ltd.				$ 4,245	
U.S. Forest Service		$ 2,967	$ 8,450	$ 8,715	
Cash, Minor Invoices	$ 2,355	$ —	$ 3,668	$ —	$ 21,768
Total Cash In	$ 20,605	$ 2,967	$ 38,008	$ 30,164	$ 21,768
Cash Out:					
Payroll + Payroll Taxes		$ 62,000		$ 65,000	
Commissions		$ 7,000			
Insurance	$ 18,000				$ 18,000
Rent	$ 20,000				$ 20,000
Capital Purchases			$ 10,000		
Other Expenses	$ 10,000	$ 7,000	$ 7,000	$ 7,000	$ 10,000
Total Cash Out:	$ 48,000	$ 76,000	$ 17,000	$ 72,000	$ 48,000
Net Change in Cash	$ (27,395)	$ (73,033)	$ 21,008	$ (41,836)	$ (26,232)
Ending Cash:	$ 1,009,796	$ 936,763	$ 957,771	$ 915,935	$ 889,703

In this example the inflowing cash includes customer sales and the outflowing cash consists of payroll, taxes, commissions, insurances and other cash out items. Top of the row includes the opening cash balance. In the bottom of the exhibit there is the end-of-period cash position that will be shown in the beginning of cash balance for the following reporting period. The model is easily adjusted by adding for example other

payments such as dividends and interest payments to the lenders, however the extra workload should be considered when modifying the template. (Bragg, 2010.)

4.1.2   Method 2 – The Indirect Adjusted Net-Income Method

The indirect adjusted net-income method (ANI) is also a simple technique to build a medium or a long-term cash flow analysis. It starts with EBITDA, earnings before interests, taxes, depreciation and amortisation and the forecasted changes to balance sheet items such as accounts receivable, accounts payable and inventories are added. (Rajendra, 2013.)

Adjusted net-income method formula:

EBITDA

+ / - Change in working capital

      (- Increase / + decrease in inventories)

      (- Increase / + decrease in receivable)

      (+ Increase / - decrease in payables)

Working capital changes have impacts on cash. Company's working capital is basically company's current assets minus current liabilities. For example, when inventory increases it means that the company has spent cash on more inventory and decrease indicates the opposite. When the company has paid for its suppliers it indicates cash outflow the payables will go down. (Vickerstaff & Johal, 2014.) See illustration on Table 3.

Table 3. The impact of working capital on cash. (Vickerstaff & Johal, 2014.)

Working capital	Increase/ decrease	Impact on cash
Inventory	Increase	Cash outflow as inventory has been bought, so cash goes down
	Decrease	Cash inflow as inventory has been sold, so cash goes up
Receivables	Increase	Cash goes down as money has not been received
	Decrease	Cash goes up as money has been received
Payables	Increase	Cash goes up as payments have not been made
	Decrease	Cash goes down as payments owing have been made

4.2 Direct and Indirect Cash Flow Statements

Farshadfar & Monem (2013) studied the direct and indirect methods of cash flow statements and which of these has a better predictive ability for future cash flows. They analyzed 348 companies between 1992 and 2004. Their study showed that the direct method of cash flows had a better predictive ability of aggregating operating cash flow up to a four-year forecast horizon. Moreover, they note that the study results clearly indicate that the direct method of cash flow forecast provide information that is more useful for example to the investors, analysts and others than indirect method of cash flows.

The difference between these two methods of cash flows is that the indirect method combines the differences between net income and operating cash flow whereas the direct method shows cash receipts and cash payments, interests paid and received and the taxes paid. No matter which of these two models a company chooses under the both methods the net cash flow should be identical. (Krishnan & Largay, 2000.)

There has been a debate for the last three decades concerning the direct or the indirect statement and which one is more preferable form in reporting cash flows. Despite the fact that the indirect method of cash flows became common in accounting world wide, the direct method has still been popular among numerous groups of accounting academics and professionals. Recently, the International Accounting Standards Board (IASB) and the Financial Accounting Standards Board (FASB) have been favouring the direct statement of cash flows and the evidence shows that in some countries companies have brought it into practice. Yet, there has been criticism is it worth the financial investment changing the accounting systems to obtain the necessary information. Many players however have identified that direct cash flow statement components have improved explanatory power and forecasting accuracy. (Clacher et. al. 2013.)

5   Model Proposal

5.1   Direct Method of Cash Flow Forecast

The project team decided to propose a direct cash flow forecast by using the receipts and disbursement method. The cash flow forecast implemented with this model was found to be useful and reliable in the previous reporting system, therefore, the project team ended up supporting this model. The team defined the inflowing and outflowing items for the statement and made the definitions of the needed attributes for the forecast. The desired cash flow forecast model is illustrated in **Table 4**.

Table 4. The proposed model of cash flow forecast.

	FC JAN	FC FEB	FC MAR
INFLOW / Receipts*			
Contract sales (agreed)	5 000	4 000	3 000
Contract sales (to be aqcuired)	1 000		50
Apartment sales (agreed) + project loans	500	1 000	200
Apartment sales (to be aqcuired) + project loan advances	100	7 000	1 000
Rental income (if any)			50
Plot sales (if any)			
Interest income Group (if any)			
Other income		100	150
Adjustment row In-flow	-50	-1 000	100
Inflow (in the offing)*	**5 450**	**4 100**	**3 500**
Total Inflow (incl. to be acquired)*	**6 550**	**11 100**	**4 550**
OUTFLOW / Disbursements*			
Cotract expences (agreed)	5 000	5 000	5 500
Cotract expences (to be aqcuired)	150		50
Administrative expences	500	550	300
Rental expences (non-office, If any)			50
Plot purchases		1 000	
Interest expences	200	200	200
Interest expences Grou (if any)			
Taxes, incl. VAT	1 000	700	500
Other investment expences (if any)	10	10	10
Other expences (if any)			
Adjustment row Out-flow	-50	-100	100
Outflow (in the offing)*	**6 660**	**7 360**	**6 660**
Total outflow (incl. to be acquired)*	**6 810**	**7 360**	**6 710**
Net-flow (in the offing)*	-1 210	-3 260	-3 160
Total Net-flow (incl. to be acquired)*	-260	3 740	-2 160
Cumul. Net-flow (in the offing)*	**790**	**-2 470**	**-5 630**
Cumul. Total Net-flow (incl. to be acquired)*	**1 740**	**5 480**	**3 320**

*) All the figures are fictitious

As Epstein (2011) notes, the cash flows can be divided into three different categories: operating activities, investing activities and financing activities. All of these cash flow categories were applied into the model proposal. The following will show how the cash flow data is obtained.

5.2   The Project Cash Flows

As Jury (2012) explains via the manufacturing business example the purchased raw materials will be transformed to the inventory: first into work in progress and finally into finished goods. The same goes in building constructing. The construction costs and plot cost is shown in the balance sheet in work in progress before the project delivery. In addition, according to Keown et. al. (2008), when measuring cash flows it is important to note that accrual-based accounting does not reflect when the revenue has been received in cash or costs have been paid out. It only shows when the accruals have been recorded. In the case company there are few different financial planning templates for projects for different revenue recognition reasons. The following explains how using the projects' financial accrual-based forecast data generates the project cash flow forecasts.

5.2.1   The Cash Flows of Own Development and Construction Projects

The cash flow data of own development and construction projects is obtained from the project planning templates that are updated in monthly basis. The planning template consists of project's total net sales (turnover), total costs, monthly-accrued costs and monthly-accrued sales rates. In the forecasting template the completion rate is established automatically according to accumulated costs. The modelled project cash flows can be found in appendix 1.

The forecasted project cash inflows are derived as follows.

Sales ratio * Total net sales = Monthly invoicing (see illustration in **Figure 10**.)

In the example of appendix 1: 50,0 % * 4.200 = 2.100

Figure 10. Monthly invoicing.

In order to specify the customer invoicing it is derived from the formulas below.

The customer invoicing share (CIS) of total net sales:

100 % - Project loan share (%)

In the example of appendix 1: 100 % - 70% = 30%

Monthly invoicing * term of prepayment * (CIS %) = Monthly customer invoicing (see illustration in **Figure 11**.)

In the example of appendix 1: 2.100 * 10 % * 30% = 63

Figure 11. Monthly customer invoicing.

There are regional differences in project loan shares and in prepayment terms. The team defined different terms concerning to which technical hierarchy the project is

linked to. The project loan is raised in accordance with the percentage of completion. In order to specify the inflowing cash of project loan it is derived from the formula below.

Project loan share * Total net sales * completion ratio = Monthly raised project loan (This is illustrated in Figure 12.)

In the example of appendix 1: 4.200 * 70 % * 10 % = 294
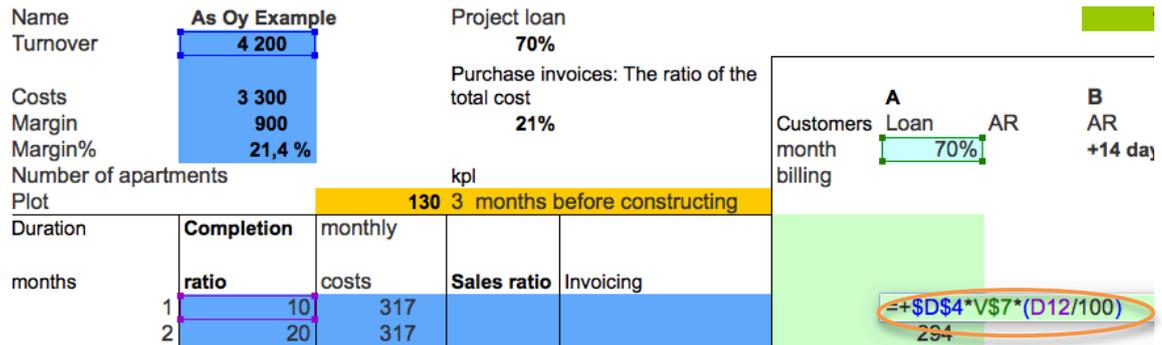
Figure 12. Inflowing cash of project loan.

The monthly raised project loan is received during the same month, whereas the customer receivables are received in accordance with the payment term. In the example of appendix 1 the term of payment is 14 days. The basic assumption is that about half (57 % exact) of the cash of customer receivables is received within the same month, and the rest will be received during the following month. See the illustration in **Figure 13** and **Figure 14**.

The formula of cash received from customers during the same month below.

(The sum of actual customer invoicing - previous months customer invoicing) * (17/30)

In the example of appendix 1: (142 – 63) * (17/30) = 45

Figure 13.The inflowing cash of customer receivables 1.

The formula of cash received from customers in the following month:

(The sum of actual customer invoicing - previous months customer invoicing) * (13/30)

In the example of appendix 1: (142 – 63) * (13/30) = 34

Figure 14. The inflowing cash of customer receivables 2.

The formula of the total monthly inflow can be generated from the items above.

Monthly raised project loan + the cash of customer invoicing during the same month + the cash of customer invoicing from previous month's receivables = the total monthly cash inflow (see the illustration in Figure 15.)

In the example of appendix 1: 45 + 27 + 294 = 366

Figure 15. The total monthly cash inflow.

The costs consist of payroll and social expenses and other construction costs. The basic presumption of the modelled project cash flows is that the share of payroll and other social expenses is 21 % of total costs. It is also assumed that the payroll will be paid during the same month, though in reality the net salary is paid during the same month and the withholdings in the following month. However, the amount of payroll and withholdings is more or less constant every month.

The formula of monthly paid payroll expenses:

The payroll ratio of the total costs (%) * month accrued costs (See the illusration in Figure 16.)

In the example of appendix 1: 21 % * 317 = 67

Figure 16. The monthly paid payroll expenses.

The plot is included in the project's total costs, however it is not accrued in monthly cost forecasts because usually it will be paid before the constructing begins and the project planning begins when the project starts. Therefore, the cash of plots will be separated from the project planning templates.

The terms of payment in purchase invoices is expected to be 30 days. The other constructing costs are paid out in the following month of accrual. The construction costs are obtained by simply calculating accrued costs minus the payroll expenses. In the example of appendix 1: 317 – 67 = 250. See the illustration of cash paid out for other construction expenses in Figure 17.
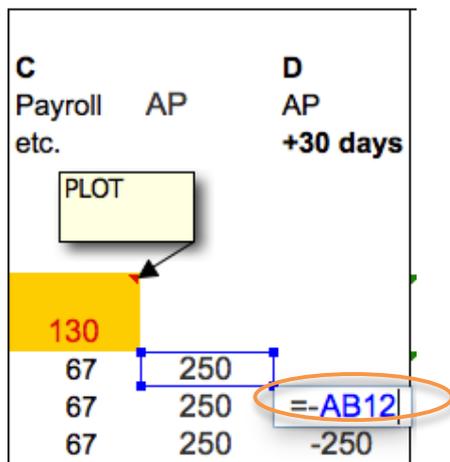
Figure 17. The cash paid out for other expenses, the terms of payment 30 days.

The net cash flow is obtained by calculating the cash in and cash out (see the illustration in Figure 18.)
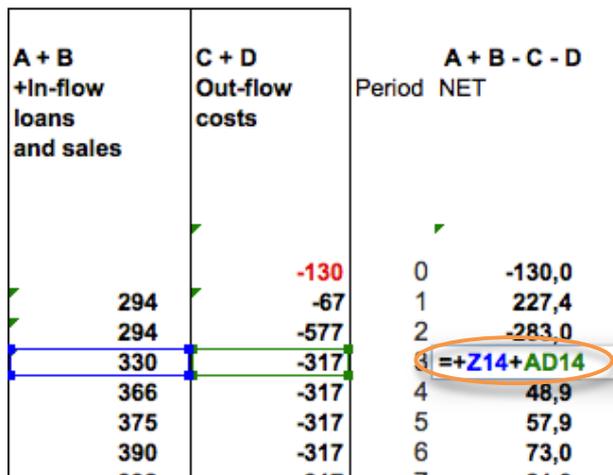
Figure 18. The net cash flow.

5.2.2   The Cash Flows of Contract Projects

The financial forecasts of contract projects are also updated monthly in the project planning templates. The templates differ from own development and construction project templates due to their different revenue recognition policy. Contract project planning templates consist total net sales (turnover), total costs, monthly-accrued costs and monthly-accrued invoicing. The modelled project cash flows can be found in appendix 2.

The inflowing cash of contract projects are obtained from monthly-accrued invoicing figures. The calculation of future incoming cash flows is relatively simple compared to the previous because these projects are not financed under the project loan, instead all the inflowing cash comes entirely from the customer or indirectly by factoring.

It is also assumed in this case that the terms of payment is 14 days in receivables and the basic assumption is that about half (57 % exact) of the cash of customer receivables is received within the same month, and the rest will be received during the following month. See the illustration in Figure 19 and Figure 20.

The formula of cash received from customer during the same month:
Monthly invoicing * (17/30)

In the example of appendix 2: 400 * (17/30) = 227
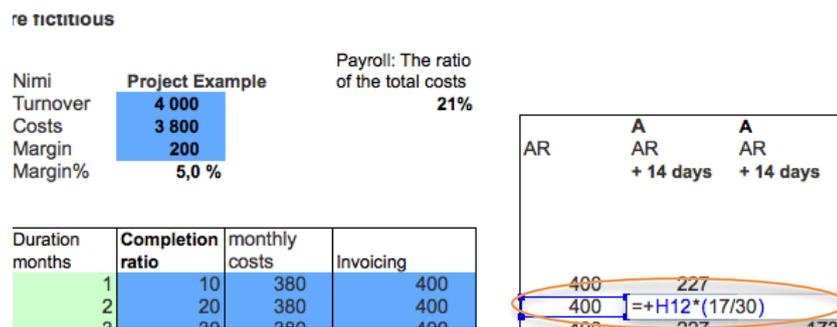
Figure 19. The inflowing cash of customer receivables 1.

The formula of cash received from customers in the following month:
The previous monthly invoicing * (13/30)

In the example of appendix 2: 400 * (13/30) = 173
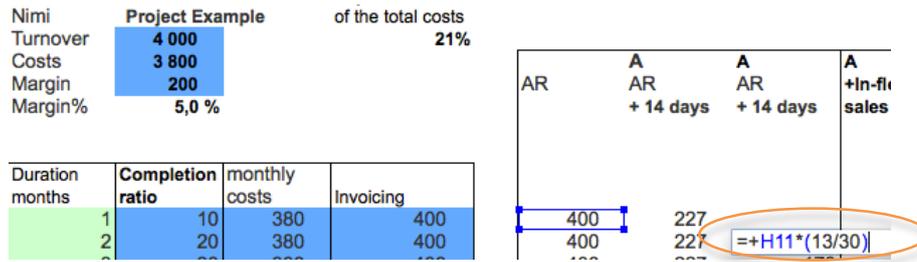
Figure 20. The inflowing cash of customer receivables 2.

The monthly inflowing cash from sales is generated from the items above.

The cash of customer invoicing during the same month + the cash of customer invoicing from previous month's receivables = the total monthly cash inflow (see the illustration in **Figure 21**.)
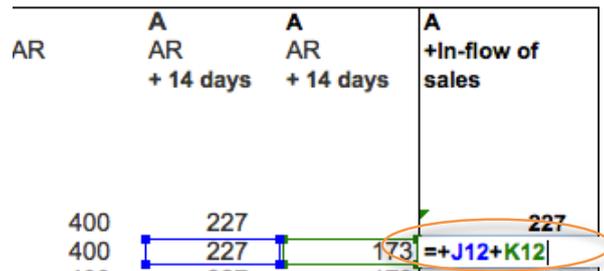
Figure 21. The total monthly cash inflow.

The outflowing cash of expenses does not differ from the cash flow modelling of own development and construction projects. The costs consist of payroll and social expenses and other construction costs. The terms of payment are similar, so the outflowing cash calculation functions on the same principle. In addition, the net cash flow calculation does not differ from the previous either.

5.2.3 The Cash Flows of Projects to Be Acquired

Financial forecasts also include projects to be acquired though they are not yet included in the order backlog. These projects are forecasted on the same planning templates that previously introduced. However, it must be noted that the own development

and construction projects that do not yet include in the order backlog but are forecasted as to be acquired, have the plot cost on the accrued forecasts on the beginning month for technical reasons. The book value of plot is included in the accrued cost forecasts because it is to be transferred to the balance sheet into work in progress but it must be eliminated from cash outflows because in reality in most of the cases it has been paid out prior to the beginning of the project. The project team did not define in detail how to eliminate possible plot value of accrued costs in projects to be acquired.

5.2.4   The Cash Flows of Small Projects

Projects with a turnover less than 500 k Euros have own financial forecast planning templates. This is because these projects are relatively small and do not have specific revenue recognition policies. The planning templates are plain and the cash flows are easily obtained from the templates. The planning templates include monthly-accrued costs and net sales. Depending on the forecasting accuracy the payroll expenses may also be specified if any but in simplicity the inflowing cash from sales will be received with 14 days term of payment and the outflowing cash of costs will be paid out with 30 days term of payment. The cash flows are generated in the same way as contract project cash flows, though the planning templates are slightly different.

5.3   Administrative Cash Flows

Fixed costs also known as administrative costs are a significant part of company's expenses. Fixed costs are also forecasted monthly in the same financial planning system. Fixed costs in outline include the following:

- Salaries and personnel costs
- External services
- External training
- Travelling expenses
- Real-estate expenses
- Other expenses

The cash of fixed payroll and other personnel costs is paid out during the same month when accrued. The other expenses (external services, external training, travelling ex-

penses, real-estate expenses and other expenses) are paid put in 30-day term of payment, in the following month of accrual.

5.4   The Cash Flows of Plot Purchases and Plot Sales

The cash of plot purchases and sales need to enter into the cash flow forecast manually before the data input can be automated. The working capital forecast does include plots in inventories, yet the cash flow data cannot be directly obtained from it. This is because when the construction of project with a plot starts the book value of plot transfers into work in progress among other construction costs and will be excluded from plots. The reduction of plots however is not incoming cash. Table 5 illustrates the planning template for plot cash flows.

Table 5. The input template of plot cash flows.

	JAN	FEB	MAR	APR
Plot sales (Inflow)*			50	
Plot purchases (outflow)*		1 000		500

*) All the figures are fictitious

The plot purchases and sales forecasts are entered into the system manually on a forecasting hierarchy level.

5.5   The Cash Flows of Interests and Taxes

The group treasury maintains interest forecasts in a different reporting system. This system is not currently integrated to case company's financial forecasting system. Therefore, obtaining the cash flow data of interests is a challenge. The project team had difficulties to define how the data could be integrated at this point so it was concluded that this topic would need its very own exploratory work.

In accrual-based accounting the sales and most of the expenditures are reported excluding VAT. In current state analysis it was found that adding VAT payables and receivables into the cash flow forecast was also a challenge. Although, the purchase invoices and sales are recorded excluding VAT in reality, however, they will be paid. The

project team decided to leave this out of a proposal until sufficient attributes are defined concerning this topic.

5.6   The Adjustment

The adjustment row is necessary in case the most of the data input is automated. The business controller has the possibility to adjust the forecasts based on his or her view of future cash flows. This enables humane assessment that is important in business controlling.

As Bragg (2010) notes by comparing the past forecast to actual figures and correcting the system a company can improve the cash flow forecasts. Applying the actuals into the forecast was considered important. The cash flow forecast proposal includes cumulative net-flow. Calculating the net cash flow requires the actuals. This is also something that needs further investigation because the actual cash inflows and outflows are recorded in the group treasury management system. The system integration requires a significant amount of time and additional determinations.

5.7   Summary

The project team managed to determine most of the attributes. Some areas however proved to be too challenging and time demanding to determine within a short period of time that further development is needed concerning this project. As Rajendra (2013) stated, cash flow forecasting creates visibility into company's cash and liquidity position. The direct method of cash flows enables to locate cash inflows and outflows in advance and also tests whether the company's cash funds are in the maximum utilization and there are no extra borrowings. It is justified that the company management would consider implementing the new cash flow forecast and would release time for further research.

What comes to the automation of data input it makes the forecasting process fluent and not too hard to maintain (Bragg, 2010). The project team considered this very critical and wanted to avoid manual data input as much as possible. Although it would have been possible to enter VAT an interests into the forecast manually, the team wanted to

automate the data input concerning these items as well and for this reason there is a need for further investigation.

6   Feedback on Proposed Model

Based on the feedback from company's financial management of building construction the project team managed to build a blueprint to use for cash flow modelling and forecasting. In the evaluation the management notes that even if the full implementation is still on hold, the proposed model can be put into effect as soon as the resources, permit and sufficient support for the methodology is obtained from the Group.

The management found that the suggested, direct cash flow forecast was studied thoroughly and the project team had a clear arguments why the company should prefer the direct method for forecasting cash flows. However, the management also stated that although the indirect cash flow forecast result incorrect forecast, the choice of method should not impact on the final outcome of the calculation and the both direct and indirect methods should yield the same result. The indirect method, which is currently in use in the Group has correct base parameters, nonetheless it result incorrect cash flow forecast, because it contains certain errors. The author of this thesis wants to underline one comment by the management of forecast accuracy: "*The choice made by the project team is well founded and especially applauded as it ties back to the operative organization. No forecast will be accurate unless there is sufficient ownership and understanding in the operative organization, which is responsible for the base data and assumptions.*"

In the feedback the management highlights the importance of forecasting the balance sheet. It shall be taken into account that the direct method of cash flow forecasting does not support the balance sheet forecasting. The controllers should understand how income statement, balance sheet and cash flow items are linked between each other and to give an understandable statement to management and other stakeholders. The management points out that the business is to make a sufficient return on capital invested, therefore it is vital to fully understand the balance sheet, after all the balance sheet is a significant performance indicator. However, the management notes that the direct cash flow method has its benefits when managing short-tem liquidity and financing needs.

The management concludes its feedback with the following: *"Overall the work carried out by the project team and documented in this thesis is of high quality. As mentioned earlier, the models are defined accurately enough to be implemented into base systems pending sufficient resourcing. Recommendations for further development have also been noted and will be considered in the future."*

7   Conclusions

7.1   Objective vs. Outcome

The purpose of this master thesis research and development project was to develop a cash flow forecast model for the case company that operates on building construction field. The project team that investigated on the issue and researched the best-known practices formed a proposal for the company for forecasting future cash flows. Numerous studies and articles showed that the direct cash flow method had a lot good qualities and it provides the management in-depth information on future cash flows. The project team noted that the current, indirect cash flow forecasting model did not provide the necessary information as such and decided to support the indirect, Receipts and Disbursement method for better cash flow forecasting. The research showed that better forecasting accuracy could be obtained with the direct method as long as all of the attributes were defined thoroughly.

Action research method proved to be effective in this case and gave the project team licence to operate flexibly. All of the data and solutions were documented sufficiently well, which made the thesis writing process smooth. In this research process the author had a chance to work with numerous professionals in the case company, which allowed the author to gather herself valuable information especially on defining technical attributes on the reporting system.

The author evaluates that the project team managed to reach the objective with the exception of few attributes. To achieve a successful cash flow management in the case company the author suggests that the rest of these necessary attributes will be defined in a technical sense to complete the forecasting model.

7.2   Reliability and Validity

Numerous studies have found that direct cash flow forecast is valid and gives the company a realistic picture of future cash flows. The project team modified a forecast based on the Receipts and Disbursement method which is applicable to any company, only

attributes were tailored to fit the company's reporting system data. The study took into account the theoretical framework in order to guarantee the highest reliability and validity. Overall the study showed that an improvement on cash flow forecasting is possible and the suggested model ensures a better information level.

7.3   Next Steps

The author suggests that the cash flow forecasting project carries out the following steps to reach the desired outcome.

- Completing the attribute determination in every detail
- Implementation planning: resources, schedule, costs
- The approval from the Group
- Implementation into the reporting system:
    1. Pilot
    2. Testing and adjustments
    3. Release

Prior to implementing proposed model into the system, completing the attribute determination in every detail is prerequisite. This allows the technical implementation. To get the final approval from the Group requires a sufficient implementation planning. That includes the resource requirements, implementation schedule and estimation of the implementation costs. When the forecasting model in ready to be implemented it would be advisable to construct a pilot version into the test system. To ensure an infallible forecast the pilot is to be tested and possible adjustments are executed before releasing the forecast into the reporting system.

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The Cash Flow Model for Own Development and Construction Project

NOTE: All the figures are fictitious

k€	Name	**As Oy Example**	Project loan
	Turnover	**4 200**	70%
	Costs	**3 300**	Payroll: The ratio of the total costs
	Margin	**900**	**21%**
	Margin%	**21,4 %**	

Plot **130** 3 months before constructing

customer invoicing, term of prepayment **10%**,

Year	Month	Duration	Completion ratio	monthly costs	Sales ratio	Invoicing	3	4	5	6	7	8	9	10	11	12	later
2015	8 months																
	9	1	10	317													
	10	2	20	317													
	11	3	30	317	50,0	2 100	63,0										
	12	4	40	317	56,3	263	63,0	15,8									
2016	1	5	50	317	59,4	131	63,0	7,9	11,8								
	2	6	60	317	65,6	263	63,0	7,9	3,9	31,5							
	3	7	70	317	68,8	131	63,0	7,9	3,9	7,9	19,7						
	4	8	80	317	71,9	131	63,0	7,9	3,9	7,9	3,9	23,6					
	5	9	85	159	84,4	525	63,0	7,9	3,9	7,9	3,9	3,9	110,3				
	6	10	90	159	90,6	263	63,0	7,9	3,9	7,9	3,9	3,9	15,8	63,0			
	7	11	95	159	96,9	263	63,0	7,9	3,9	7,9	3,9	3,9	15,8	7,9	70,9		
	8	12	100	159	100,0	131	63,0	7,9	3,9	7,9	3,9	3,9	15,8	7,9	7,9	39,4	
	9	1			100,0												
	10	2			100,0	-											0,0
	11	3			100,0												
	12	4			100,0	-											0,0
2017	1	5			100,0												
	2	6			100,0	-											0,0
							630,0	78,8	39,4	78,8	39,4	39,4	157,5	78,8	78,8	39,4	0,0
			100	**3 170**		**4 200**											
						0											

cash flow	inflow		outflow	balance	
2015	1 284	-	1 148	136	
2016	2 916	-	2 153	764	
in total	**4 200**	-	**3 300**	**900**	k€

AR=ACCOUNTS RECEIVABLE
AP=ACCOUNTS PAYABLE

Customer monthly invoicing	A Loan 70%	AR	B AR +14 days	B AR +14 days	A + B +In-flow loans and sales	C Payroll etc.	AP	D AP +30 days	C + D Out-flow costs	Period	A + B - C - D NET
						130			-130	0	-130,0
	294				294	67	250		-67	1	227,4
	294				294	67	250	-250	-317	2	-23,0
63	294	63	- 36		330	67	250	-250	-317	3	12,7
79	294	79	- 45	-27	366	67	250	-250	-317	4	48,9
83	294	83	- 47	-34	375	67	250	-250	-317	5	57,9
106	294	106	- 60	-36	390	67	250	-250	-317	6	73,0
102	294	102	- 58	-46	398	67	250	-250	-317	7	81,0
110	294	110	- 62	-44	401	67	250	-250	-317	8	83,8
201	147	201	- 114	-48	309	33	125	-250	-284	9	24,8
169	147	169	- 96	-87	330	33	125	-125	-159	10	171,4
185	147	185	- 105	-73	325	33	125	-125	-159	11	166,7
161	147	161	- 91	-80	319	33	125	-125	-159	12	160,2
-		-	-	-70	70			-125	-125	13	-55,3
-		-	-	0	-				0	14	0,0
-		-	-	0	-					15	0,0
-		-	-	0	-					16	0,0
-		-	-	0	-					17	0,0
-		-	-	0	-					18	0,0
					-						
1 260	2 940	1 260	- 1 260		4 200	796	2 505	- 2 505	- 3 300	Total	899,6
	0							0	0		0

PLOT
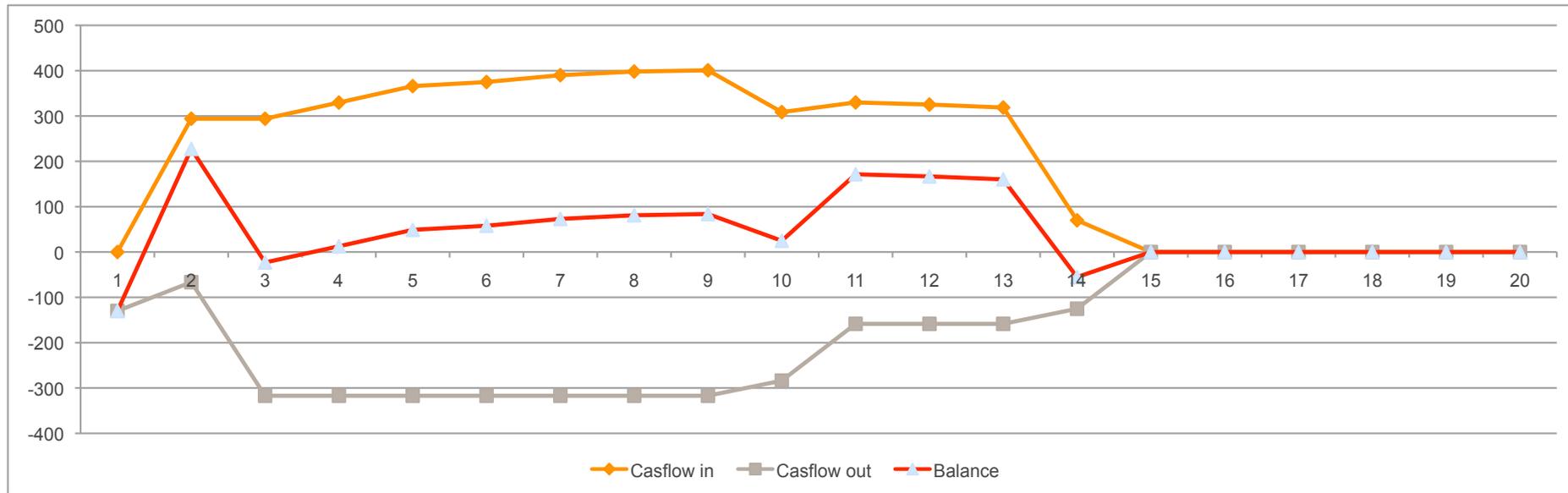
The Cash Flow Model for Contract Project

NOTE: All the figures are fictitious

AR=ACCOUNTS RECEIVABLE

AP=ACCOUNTS PAYABLE

k€	Nimi	**Project Example**	ratio of the total costs
	Turnover	**4 000**	**21%**
	Costs	**3 800**	
	Margin	**200**	
	Margin%	**5,0 %**	

Year	Month	Duration months	**Completion ratio**	monthly costs	Invoicing
2015	8	months			
	9	1	10	380	400
	10	2	20	380	400
	11	3	30	380	400
	12	4	40	380	400
2016	1	5	50	380	400
	2	6	60	380	400
	3	7	70	380	400
	4	8	80	380	400
	5	9	85	190	400
	6	10	90	190	400
	7	11	95	190	
	8	12	100	190	
	9	1			
	10	2			
	11	3			
	12	4			
2017	1	5			
	2	6			
			100	**3 800**	**4 000**
					0

AR	A AR + 14 days	A AR + 14 days	A +In-flow of sales	C Payroll etc.	AP	D AP +30 days	C + D -Out-flow costs	NET
400	227		**227**	80	300		**-80**	147
400	227	173	**400**	80	300	-300	**-380**	20
400	227	173	**400**	80	300	-300	**-380**	20
400	227	173	**400**	80	300	-300	**-380**	20
400	227	173	**400**	80	300	-300	**-380**	20
400	227	173	**400**	80	300	-300	**-380**	20
400	227	173	**400**	80	300	-300	**-380**	20
400	227	173	**400**	80	300	-300	**-380**	20
400	227	173	**400**	40	150	-300	**-340**	60
400	227	173	**400**	40	150	-150	**-190**	210
-	-	173	**173**	40	150	-150	**-190**	- 17
-	-	0	**-**	40	150	-150	**-190**	- 190
-	-	0	**-**	-	-	-150	**-150**	- 150
-	-	0	**-**	-	-	-	**0**	
-	-	0	**-**	-	-	-		
-	-	0	**-**	-	-	-		
-	-	0	**-**	-	-	-		
-	-	0	**-**	-	-	-		
-			**-**					
4 000	**4 000**		**4 000**	**798**	**3 002**	- **3 002**	- **3 800**	**200**
						0	**0**	-