Cash Flow Management as a Tool for Corporate Processes Optimization

Lilia Dvořáková, Jiří Kronych and Andrea Malá

Finance and Accounting Department, University of West Bohemia, Plzeň, Czech Republic

ABSTRACT
The paper presents the results of qualitative and quantitative research in the area of corporate treasury management with the specific focus on the corporate cash flow management in the automotive sector. The up-to-date topic of cash flow management in theory and practice is evoked by the need to sustainably and efficiently manage the large volume of cash flow in multinational corporations. Qualitative research results provide critical analysis, evaluation and discussion of approaches to compiling and predicting of corporate cash flow. Based on the results of empirical research in the selected automotive company in central Europe, business processes for optimization have been identified and designed. The optimization of these business processes indicates a positive and significant impact on the optimization of corporate cash flow planning and forecasting with the aim of achieving of sustainable financial position and business performance in industrial companies in the technical, economic, environmental and social conditions of the twenty-first century. The application of the proposed optimization process of the selected corporate processes with a positive effect on the cash flow management influences the efficiency increase in investment decision-making with respect to the selection of the type and financial difficulty of the investment in smart technologies and components.

1. Introduction

The up-to-date issue of cash flow management in theory and practice is caused by the need to manage a large volume of cash flow in multinational corporations sustainably and efficiently; it is necessary to look for ways to develop methods and tools of corporate treasury management, whose integral part is cash flow.

Important role in the development of management activities is investment decisions and financing the business operations. Integration of selected methods of the treasury management into the financial management can significantly contribute to the improvement of the financial status and efficiency of the company [1,2]. Important research articles and studies regarding development of cash flow management are in global context presented in publications of authors such as Refs. [1–7].

The main objective was to conduct a critical analysis, evaluation and discussion of approaches to the compilation and prediction of corporate cash flow, and then to verify these approaches in corporate practice in the automotive industry. Based on the results of empirical research, the selected corporate processes for optimization have been identified and designed to have a positive
impact on improving of the cash flow efficiency and its planning and forecasting. The proposed approach to the selected corporate processes optimization presents a holistic approach to the production corporate management and the necessity of mutual integration of technical, technological, informational, communication, managerial and economic aspects implementation into the smart factory management.

2. Materials and Methods

Materials: The subject of the research was the automotive sector. Empirical research has used real and up-to-date data and information from the 2016 period found in a selected medium-sized enterprise operating in the automotive industry in the technical and economic conditions of Central Europe. The selected medium-sized enterprise is engaged in the production of interior components for world-class automobiles. Financial situation and business performance of the company currently significantly affect financial relationships with suppliers and customers. The company pays special attention to managing, planning and forecasting of cash flows.

Methods: A search of expert resources had been carried out in the form of desk research. One of the partial objectives of this research is to propose a setup of cash flow process as part of the company financial management. The methods of description, explanation, analysis, reporting and evaluation have been used to achieve the goal, which gives a comprehensive view of this issue. The authors drew from the real experience from an international manufacturing company operating in the automotive industry. The company’s branch offices are situated in the central Europe and two other branches are located in the USA. In the qualitative research, the authors used Grounded Theory method – they firstly examined the methods and tools of cash flow management. They put the theory data and information into the logical hierarchy to show a comprehensive view of the problem solving. The quantitative research contains firstly cash flow process proposal that could be used for the month end closing issue in the automotive industry. Furthermore, research is focused on optimization cash flow management in the context of optimizing selected business processes and the alternatives for cash flow optimization are discussed in the terms of use in practice.

3. Results

Cash flow is the flow of cash that records both incomes and expenditures of cash as whole, i.e. actual cash in the cash register and scriptural money [1]. These cash flow movements are recorded and reported in the financial accounting as ‘Treasury’ and ‘Bank Accounts’. This information from financial accounting is insufficient to effectively manage and predict the financial situation of an enterprise. For this reason, an enterprise’s cash flow is compiled and planned, which comprises three parts according to the use – cash flow from operating activities, cash flows from investing activities and cash flow from financial activities [2,3].

Cash flow answers the question where the company’s money comes from, why a company has a lack of funds and how the funds are redistributed and used. The cash flow statement primarily serves the managers and answers the question why a company that is profitable does not have sufficient funds to pay for its obligations. This fact is the actual cause of insolvency. On the contrary, there are situations when the company has enough financial resources but reports a loss. If the company knows its cash flow, it can analyze and manage the financial flow in more details. Nowadays, the cash flow is reported by the finance department and is taking on a new direction called treasury management [4–6].

Fundamental approaches to cash flow generation are a direct and indirect method. The direct method of compiling cash flow is demanding to conduct an analytical accounting of individual incomes and expenditures. In practice, an indirect method of cash flow generation is preferred. This method is based on the discovery of differences between the reported economic result and the cash flows.

3.1. Methodology of the Indirect Method of Cash Flow Compilation

The indirect method is based on the observed or planned profit or loss (economic result). The profit or loss is adjusted for revenues and expenses that do not represent an increase or decrease in cash. At first glance, the methodology of the indirect method of cash flow compilation might seem complicated. The use of this methodology requires advanced knowledge of the functioning of the financial accounting system, including the knowledge of the difference between expenses and expenditures and revenues and incomes. If the cash flow (CF) is calculated by the indirect method, the managers locate the loss and profit areas much better. Subsequently, it directly answers the question of why and where the economic results differ from incomes and expenditures. These are precisely the entries where there is a difference between the economic result and the cash flow and so they enter the cash flow statement corrected. In practice, this indirect
method is used more often as it gives managers more precise answers to their questions about the financial flow [2,8].

The indirect method is also used for financial planning as it is easier to disaggregate individual components that arise from the financial statements. In this case, we are talking about the three statement principle. Firstly, the profit and loss statement is drawn up. Secondly, the balance sheet is prepared and thirdly the cash flow statement (see Figure 1). Practically, all these statements are planned at the same time and then further modified so that all statements reflect the aimed result and incorporate all the goals and strategies of company for the planned period [8].

Figure 1 shows the connection of financial statements. The three statement principle basically explains that the business behaves as a whole. All the reports are generated in one enterprise, and so a specific change in these statements, thanks to their connection, will always be shown [9]. On the other hand, CF made by the direct method is visible in monetary accounts, e.g. on the cash register account and bank account, where money transfers are recorded (incomes on the debit side and expenditures on the credit side). However, it is not the real CF with the division to operating, investing and financial operations [4] only on these accounts. That is the reason why using the indirect method is a significantly greater asset for the managers. Each manager knows corporate economic result, and if they consult the cash flow statement, the managers may find out where they lose and where they earn money in comparison with the profit and loss statement [7]. The indirect method is based on a comparison of specific balance sheets accounts, their initial and final status. For a better orientation in the cash flow compilation, the authors had drawn up an overview tool (see Table 1), where key items are summarized, which modify (up + and down −) the economic result in the indirect CF method.

In practice, the cash flow statement is generated by the accounting software program whereas the cash flow definition had been set up in the program. In particular, it is possible to find a change in the account states by subtracting the final status from the

![CASH FLOW STATEMENT](image1)

Figure 1. The relation between financial statements – the three statements principle.

| Key item for transforming | Item shows increase in final statement | Item shows decrease in final statement |
|---------------------------|--------------------------------------|--------------------------------------|
| Depreciation              | + expenses that were not expenditures, the money balance remains the same | ×                                     |
| Inventories               | − expenditures that were not expenses, the money balance decreases | + expenses that were not expenditures, the money balance remains the same |
| Receivables               | − revenues that were not incomes, it does not generate any increase in money balance | + incomes that were not revenues, the money balance increases |
| Liabilities               | + expenses that were not expenditures, the money balance remains the same | − expenditures that were not expenses, the money balance decreases |
| Reserves                  | + expenses that were not expenditures, the money balance remains the same | − the opposite of disposal of reserves |
| Expenditures of the future period | + expenses that was not expenditures, the money balance remains the same | − expenditures that were not expenses, the money balance decreases |
| Expenses of the future period | − expenditures that were not expenses, the money balance decreases | + expenses that were not expenditures, the money balance remains the same |
| Incomes of the future period | − revenues that were not incomes, it does not generate any money | + incomes that were not revenues, the money balance increases |
| Revenues of the future period | + incomes that were not revenues, the money balance increases | − revenues that were not incomes, it does not generate any money |
initial account status, i.e. final balance (FB) minus initial balance (IB). Consequently, we need to use the appropriate sign in the cash flow statement for the specific item [10]. Generally speaking, the increments of the selected asset accounts are deducted, the decrease of assets is ascribed, the increments of liabilities are ascribed and the decrease of liabilities is deducted. These entries generate one-sided change in expenses, expenditures, revenues or incomes. It is convenient to remember the entries and list them in the cash flow. When the ‘+’ sign is stated in the cash flow, it is a positive cash flow. When the ‘–’ sign is stated in the cash flow, it is a negative cash flow [1,8].

3.2. The Proposal of a Cash Flow Compilation Process in a Particular Automotive Enterprise

Table 2 provides the specific data necessary for the cash flow calculation. Now, the CF calculation can be performed based on the balance sheet and profit and loss statement. The composed cash flow will be divided into the logical units cash flow from self-financing, cash flow from operating activities, cash flow from investments and cash flow from financial activities. The sum of these four cumulative nodes generates the total cash flow of the enterprise [11].

### Table 2. An overview of cash flow compilation by the indirect method.

| Entry                          | As for 1.1.2016 Initial balance in thousands EUR | As for 31.12.2016 Final balance in thousands EUR | Difference (FB IB) in thousands EUR |
|-------------------------------|-----------------------------------------------|-----------------------------------------------|-----------------------------------|
| **Fixed assets**              |                                               |                                               |                                   |
| Fixed assets                  | 53,050                                        | 50,300                                        | −2,750                            |
| Fixed tangible assets         | 63,100                                        | 70,600                                        | 7,500                             |
| Accumulated depreciation      | −10,050                                       | −20,300                                       | −10,250                           |
| **Current assets**            |                                               |                                               |                                   |
| Current assets                | 70,910                                        | 65,700                                        | −5,210                            |
| Inventories                   | 8,720                                         | 4,100                                         | −4,620                            |
| Receivables                   | 36,950                                        | 35,700                                        | −1,250                            |
| Bills of exchange             | 400                                           | 500                                           | 100                               |
| Receivables                   |                                               |                                               |                                   |
| Short-term securities         | 7,300                                         | 3,500                                         | −3,800                            |
| Current account               | 15,540                                        | 18,400                                        | 2,860                             |
| Treasury                      | 2,000                                         | 3,500                                         | 1,500                             |
| **Assets**                    | 123,960                                       | 116,000                                       | −7,960                            |
| Own equity                    | 32,500                                        | 32,500                                        | 0                                 |
| Ordinary shares               | 22,750                                        | 22,750                                        | 0                                 |
| Preference shares             | 3,250                                         | 3,250                                         | 0                                 |
| Reserve fund                  | 6,500                                         | 6,500                                         | 0                                 |
| **Liabilities**               | 91,460                                        | 83,500                                        | −7,960                            |
| Salary reserves               | 4,600                                         | 7,250                                         | 2,650                             |
| Tax reserves                  | 21,900                                        | 15,350                                        | −6,550                            |
| Pension reserves              | 9,900                                         | 13,800                                        | 3,900                             |
| Bond issues                   | 10,200                                        | 12,900                                        | 2,700                             |
| Long-term credits             | 13,160                                        | 19,050                                        | 5,890                             |
| Payables                      | 31,700                                        | 15,150                                        | −16,550                           |
| **Equity and liabilities**    | 123,960                                       | 116,000                                       | −7,960                            |

Additional data for cash flow compilation as for 31 December 2016: net earnings (profit) 5,800,000 EUR, dividend payout 5,800,000 EUR, tax rate 21%.

Corporate CF was calculated in Table 3, where the sub-parts were split into the CF from self-financing, CF from operating activities, CF form investments and CF from financial operations. The control has been delivered in Table 4 to check the correct calculation of the CF. The data for the control calculation had been taken from the balance sheet. After the cash flow calculation, the final cash flow can be analyzed if it covers the company requirement. If not, company management must react by the optimization of cash flow and analyzing of the root cause.

The company can use this method of designing the cash flow statement when compiling the monthly statement. The advantages of this method are, in particular, the verification of the accuracy on the basis of the balance sheets and the profit and loss statement [2]. Firstly, the cash flow statement needs to be prepared, then the balance sheet and the profit and loss statement. During these steps, the company decides what amount to pay to its shareholders on dividends and these factors subsequently enter the cash flow. If the cash flow verification proves that the statement is well constructed on the basis of data provided, but the cash flow result is not acceptable to the company, it is necessary to revise and make a company

| Entry                          | Amount in thousands EUR |
|-------------------------------|-------------------------|
| Net earnings                  | 5,800                    |
| Depreciation                  | 10,250                   |
| Salary reserves               | 2,650                    |
| Tax reserves                  | −6,550                   |
| Pension reserves              | 3,900                    |
| CF from self-financing        | 16,050                   |
| Inventories                   | 4620                     |
| Customers                     | 1,250                    |
| Promissory notes received     | −100                     |
| Short-term securities         | 3,800                    |
| Payables                      | −16,550                  |
| CF from operating activities  | −6,980                   |
| Fixed tangible assets         | −7,500                   |
| CF from investments           | −7,500                   |
| Bond issues                   | 2,700                    |
| Long-term credits             | 5,890                    |
| Dividend payout               | −5,800                   |
| CF from financial operations  | 2,790                    |
| **Total cash flow**           | 4360                     |

| Entry                          | Initial balance as for 1.1.2016 in thousands EUR | Final balance for 31.12.2016 in thousands EUR | Difference (FB–IB) in thousands EUR |
|-------------------------------|-----------------------------------------------|-----------------------------------------------|-----------------------------------|
| Current account               | 15,540                                        | 18,400                                        | 2,860                             |
| Cash                          | 2,000                                         | 3,500                                         | 1,500                             |
| **Sum**                       | 17,540                                        | 21,900                                        | 4,360                             |
process adjustments, which mainly influences managing and planning of the company cash flow.

3.3. Proposal of the Company Process Optimization with the Influence on the Cash Flow

If the company cash flow is under the expectation of the management and unsatisfying, company must react to improve the cash flow. The final options are connected with the optimization of company processes, especially with the influence on the working capital.

3.4. Designed Business Processes for Optimization in the Automotive Industry

3.4.1. Shortening the Invoice Maturity to Customers
This approach is one of the much-discussed topics, of course, however in the automotive industry, the conditions are stated in the framework contract and the company does not have much chance to negotiate about the maturity. This option is not seen by authors as one of the keys to increase cash flow [12,13].

3.4.2. Extending the Invoice Maturity to Suppliers
The extension of the due day of invoice is one of the key ways of increasing the cash flow in automotive. The companies are able to increase the cash flow, thanks to the overall concept of scheduling the invoice maturity for individual suppliers. Basically, due to the small effect of changing the due dates of invoices to customers, the cash flow correction is offset on this side [14,15].

3.4.3. Sell for Cash the Persuasion of Customers to Pay in Cash
When talking about possibilities of increasing the cash flow, of course we have to consider selling for cash. Unfortunately, this possibility nowadays with the contactless payment system is no longer used that much. So-called self-billing system is set in the supplier–customer relationship these days, when the customer (the car manufacturer) declares the delivered pieces and the payment is made according to that [11]. In this issue, controlling on both sides plays a major role in correcting the system and verifying the payments [16].

3.4.4. Divestment of Receivables to Factoring Companies
The receivables the company considers as very hard to claim within its possibilities are usually sold off to factoring company. We consider this option as a rather extreme solution for certain receivables but not as a long-term concept of increasing the cash flow [17,18].

3.4.5. The Increase of Prices of Products and Services
When applying this option [11], there is a pressure on the sales department to negotiate higher prices of products. It is one of the most demanding options, but its impact affects the whole business.

3.4.6. Reducing Cost Consumption Especially Overhead Expenses
These days, cost optimization is a much-discussed topic where the business focuses more on improving its own processes, rather than on the surrounding. In particular, it is connected to the methods of total quality management, Kaizen, Lean, 4sigma, etc. These methods enable the company to eliminate so-called muda (wasting). This option is a different view on constructing the added value rather than a price increase. By reducing the costs, the company increases its added value (at constant sales prices). At the same time, it remains competitive in terms of price but has a greater potential [19–21].

3.4.7. Decrease of Inventory
This topic is closely related to point reducing cost consumption, where, according to [22], the company concentrates on improving its own processes and optimizing warehouse management again.

3.4.8. Getting a Favorable Credit
Getting a favorable credit is one of the key goals for treasury management. The task of the treasury management is to negotiate such credits that correspond to the strategy of the company at the lowest costs [23].

The verification of the proposed optimization approach of the selected corporate processes in the researched corporate by the form of experiment proved the improvement of prediction accuracy of the corporate cash flow by 15% with the impact on the production process fluency, the investment in advanced technologies, and the reduction of additional costs (e.g. excessive maintenance, slow production, defective goods rate).

4. Discussion
If the cash flow does not match the corporate requirements, the company’s management is exposed to optimize the cash flow. The authors have introduced several options for optimizing cash flow. For these choices, authors split the effect of immediate and delayed way. The different types of effects vary from company to company according to the system and the terms and conditions. However, if the cash flow does not match the company’s requirements, the solution is not constantly optimize the cash flow, but for the management
of the company it is necessary to look for the root of the cause, which is anchored in adjusting the processes entering the cash flow. Everything is based on inconsistency between expenditures and expenses and revenues and incomes. One option is to focus on the cash flow structure, or on the previous operations leading to the calculation of the economic result.

The first cause could be in generating company turnover. Here may be a problem of low turnover caused by a decline in contracts or high company costs and by analogy, expenditures that disrupt the company’s performance. The second cause may be the ineffective spending of funds for long-term assets. The term ineffective means that spending resources do not bring an adequate added value to the costs incurred. In this case, the management of the company must ensure that it receives such investments that will bring the company a sufficiently high share of value added. Another option is to draw operational loans that cover time discrepancies between costs and expenses and incomes and revenues. Here, the fact of over-indebtedness must be taken in account and the company does not fall into the debt trap.

Another look at root cause and the subsequent improvement of cash flow is the optimization and management of working capital that secures the financing of part of the current assets with a long-term character. The main parts of the working capital are stocks, receivables, cash and short-term liabilities. This view of working capital management and subsequent impact on cash flow is long-term and depends on the system setting for individual parts of the working capital. We are talking here about the cash cycle, the binding of funds from the purchase of the material, its conversion into products and their subsequent sale and payment of invoices. Business management has to adjust the length of the cash cycle so that it is adequate to the required cash flow and at the same time does not pose a risk to the company.

5. Conclusions

The qualitative research presented a theoretical base into cash flow management as part of the treasury management. Authors put the theoretical basis into the logical flow, which represent a complex structured view on the whole problem. The quantitative part of the research is aimed at practical cash flow using in company, mainly for the month end closing issue. For this case, authors proposed a process of cash flow compilation. All the basic data and information like balance sheet and profit and loss statement were provided by automotive industry company. After the cash flow compilation, the possibilities for the cash flow optimization were analyzed and proposed for the automotive industry company, which are based mainly on the identification, revision and optimization of the company processes connected with cash flow.

The application of the proposed optimization process of the selected corporate processes with a positive effect on the industrial corporate cash flow management and prediction influences the efficiency increase in investment decision-making with respect to the selection of the type and financial difficulty of the investment in smart technologies and components in an industrial corporate. The proposed approach to the selected corporate processes optimization presents a holistic approach to the production corporate management and the necessity of mutual integration of technical, technological, informational, communication, managerial and economic aspects implementation into the smart factory management. Future research is focuses on the development of investment decision making methods and tools in the context of the results of investment cash flow analysis.

Acknowledgments

This paper was created within the science project SGS-2017-004 Finance and Sustainable Development from the Perspective of Theory and Practice.

Disclosure statement

No potential conflict of interest was reported by the authors.

Funding

This work was supported by the University of West Bohemia [SGS-2017-004].

ORCID

Lilia Dvořaková http://orcid.org/0000-0001-6389-381X

References

[1] Kaspina RG, Molotov LA, Kaspin LE. Cash flow forecasting as an element of integrated reporting: an empirical study. Can Cent Sci Educ. 2015;11:89–94.
[2] Brealey RA, Myers SC, Allen F. Principles of corporate finance. New York (NY): McGraw-Hill-Irwin; 2007.
[3] Hodge FD, Hopkins PE, Wood DA. The effects of financial statement information proximity and feedback on cash flow forecasts. Contemp Accounting Res. 2010;27:101–133.
[4] Navon R. Resource-based model for automatic cash-flow forecasting. Construction Manag Econ. 1995;13:501–510.
[5] Finger CA. The ability of earnings to predict future earnings and cash flow. J Accounting Res. 1994;32:210–223.

[6] Charitou A, Ketz JE. Valuation of earnings, cash flows and their components: an empirical investigation. J Accounting Auditing Finance. 1990;5:475–497.

[7] Lorek KS, Willinger GL. A multivariate time-series prediction model for cash-flow data. Accounting Rev. 1996;71:81–102.

[8] Kramná E. Key input factors for discounted cash flow valuations. World Scientific Eng Acad Soc. 2014;11:454–464.

[9] Culp CL. The risk management process: business strategy and tactics. New York (NY): John Wiley & Sons; 2001.

[10] Luft J, Schields MD. Psychology models of management accounting. Contemp Accounting Res. 2010;27:135–142.

[11] Witzany J. Credit risk management and modeling. Prague: Oeconomica; 2010.

[12] Kalinová A, Klima M, Pelikán M. Řízení rizik a financování obchodních transakcí ve vývozu a dovozu. Prague: Vysoká škola ekonomie a managementu; 2010.

[13] Jílek J. Finanční rizika. Prague: Grada Publishing; 2000.

[14] Merna T, Al-Thani FF, Penc J. Risk management: řízení rizika ve firmě. Brno: Computer Press; 2007.

[15] Vlachy J. Řízení finančních rizik. Prague: Vysoká škola finanční a správní, o.p.s.; 2006.

[16] Ambrož L. Měření rizika ve financích. Prague: Ekopress; 2011.

[17] Smejkal V, Rais K. Řízení rizik ve firmách a jiných organizacích. Prague: Grada Publishing; 2013.

[18] Smejkal V, Rais K. Řízení rizik. Prague: Grada Publishing; 2003.

[19] Collins DW, Hribar P, Tian X. Cash flow asymmetry: causes and implications for conditional conservatism research. J Accounting Econ. 2014;58:173–200.

[20] Schrand C. Discussion of “Cash flow asymmetry: causes and implications for conditional conservatism research”. J Accounting Econ. 2014;58:201–207.

[21] Döring S, Drobetz W, Janzen M, et al. Global cash flow sensitivities. Finance Res Lett. 2017;23:11–24.

[22] Khimich NA. A comparison of alternative cash flow and discount rate news proxies. J Empir Financ. 2017;41:31–52.

[23] Umut C, Kayacetin NV, Kumar R, et al. Cash flow news, discount rate news, and momentum. J Bank Finance. 2016;72:240–254.