Working Capital Analytics Overview

SAP Business Suite – Application Innovation
March 2015
Abstract

As of **Smart Financials 1.0 SP02** SAP delivers
- Working Capital Analytics – DSO Analysis
- Working Capital Analytics – DPO Analysis

allowing you to explore your **days sales outstanding (DSO)**, as well as your **days payables outstanding (DPO)**

- in an intuitive and interactive way
- at your desktop or on the go using your iPad
- in real-time – powered by SAP HANA.

With **Smart Financials 2.0** the apps are integrated with **SAP Smart Business** and SAP delivers Smart Business KPI tiles to launch the apps.

The following presentation provides information about the business background, as well as KPI calculation methods.

**Note:** In addition to the Smart Financials offering, there is SAP Working Capital Analytics allowing you to analyze DSO and DPO, based on standard ERP Financials.

For more information see:
- Learning Map [SAP HANA Live for SAP ERP](#)
- Documentation [SAP Working Capital Analytics](#)
Agenda

- Introduction Working Capital Analytics
  - Overview Working Capital Analytics – DSO Analysis
  - Overview Working Capital Analytics – DPO Analysis

- DSO/ DPO Calculation Working Capital Analytics
  - Overview calculation methods – example DSO
  - Calculation formulas Working Capital Analytics – DSO Analysis
  - Calculation formulas Working Capital Analytics – DPO Analysis
  - Summary calculation methods
Introduction Working Capital Analytics
Working Capital Analytics
Definition of Working Capital

Working Capital

= Current Assets – Current Liabilities
A measure of both a company's efficiency and its short-term financial health.

Current Assets

Represents the value of all assets that are reasonably expected to be converted into cash within one year in the normal course of business.

Current Liabilities

A company's debts or obligations that are due within one year.
Working Capital Analytics
Performance Indicator Relations and Influencing Factors

Performance Indicators

- **Operating Cycle (OC)**
- **Days Payables Outstanding (DPO)**
- **Days Sales Outstanding (DSO)**
- **Days Inventory Held (DIH)**

Influencing Factors

- **Net Sales**
- **Accounts Receivable (AR)**
- **Inventory**
- **Cost of Goods Sold (COGS)**
- **Accounts Payable (AP)**
Working Capital Analytics
Fiori App Working Capital Analytics – DSO Analysis

Working Capital Analytics – DSO Analysis helps companies analyze aspects relevant for:

- Days Sales Outstanding (DSO)

Influencing Factors
Performance Indicators

Operating Cycle (OC)
Days Payables Outstanding (DPO)
Cash Conversion Cycle (CCC)
Inventory
Cost of Goods Sold (COGS)

Days Sales Outstanding (DSO)

Net Sales
Accounts Receivable (AR)

Accounts Payable (AP)
Working Capital Analytics – DSO Analysis

Intuitively analyze DSO and related KPIs e.g. by company code, country, sales organization, customer or receivables document line item, based on real-time ERP data

Interactively explore data by drilling-down across multiple dimensions and KPIs

Save every step of your analysis as analysis path, reuse and modify analysis paths for data exploration

View every step of an analysis path at a glance in an easily consumable format

Drill-down to line item level to fine-tune tactics regarding receivables

Business/Process Context

In today's volatile financial markets a company's efficiency and financial health is more important than ever.

Influencing working capital is of high significance in this context, especially in a global environment with major regional differences, e.g. with regards to payment terms.

This version of Working Capital Analytics - DSO Analysis is based on Smart Financials 1.0 SP02 and helps companies

- analyze all aspects of days sales outstanding (DSO) and related KPIs
- explore root causes of working capital changes
- optimize strategies to improve the company's liquidity, efficiency and overall financial health

Facts & Figures

- Role: Accounting Information for Managers
- Target Segment: Financial Management/Controlling
- Software Stack/Support Level: Smart Financials 1.0 SP02, see SAP Notes no. 1970542 (Financials Add-On for Suite on SAP HANA 1.0 RIN for NW), no. 1925902 (Financials Add-On for Suite on SAP HANA 1.0 Core RIN)
- Frontend related Prerequisites: See SAP Note no. 1955437 (Financials Add-On for Suite on SAP HANA 1.0 RIN for Fiori)

Features and Capabilities

- Intuitively analyze DSO and related KPIs e.g. by company code, country, sales organization, customer or receivables document line item, based on real-time ERP data
- Interactively explore data by drilling-down across multiple dimensions and KPIs
- Save every step of your analysis as analysis path, reuse and modify analysis paths for data exploration
- View every step of an analysis path at a glance in an easily consumable format
- Drill-down to line item level to fine-tune tactics regarding receivables
Working Capital Analytics - DSO Analysis

**Target Roles**
- Corporate / regional controller
- Regional CFOs
- Country manager

**Analysis Area**
- Days Sales Outstanding (DSO) / Receivables

**Metrics and KPIs**
- DSO
- Best possible DSO
- Overdue DSO
- Revenue
- Receivables
- Overdue receivables
- Open receivables
- Cleared receivables

**Business Questions**
- How is the DSO performance of my countries, customers or sales organizations?
- What is the DSO / overdue DSO trend over time?
- How is the payment discipline of customers?
- Which business partners do not pay on time?
- Which receivables are overdue and have significant business volume?
- What is the aging structure of receivables?

**Categories and Drill-Down Options**
- Time
- Company code
- Country of company code
- Customer
- Country of customer
- Customer group
- Sales organization
- Distribution channel
- Division
- Sales district
- Aging
- Net due days
- Days in arrears
- Receivables
Working Capital Analytics
Fiori App Working Capital Analytics – DPO Analysis

Working Capital Analytics – DPO Analysis helps companies analyze aspects relevant for

- Days Payables Outstanding (DPO)

Influencing Factors

Performance Indicators

Days Sales Outstanding (DSO)

Net Sales

Accounts Receivable (AR)

Inventory

Days Inventory Held

Operating Cycle (OC)

Cash Conversion Cycle (CCC)

- Days Sales Outstanding (DSO)

Cost of Goods Sold (COGS)

Accounts Payable (AP)
Working Capital Analytics – DPO Analysis

Business/Process Context

In today's volatile financial markets a company's efficiency and financial health is more important than ever.
Influencing working capital is of high significance in this context, especially in a global environment with major regional differences.

This version of Working Capital Analytics - DPO Analysis is based on Smart Financials 1.0 SP02 and helps companies
- analyze all aspects of days payables outstanding (DPO) and related KPIs
- explore root causes of working capital changes
- optimize strategies to improve the company's liquidity, efficiency and overall financial health

Facts & Figures

- Role: Accounting Information for Managers
- Target Segment: Financial Management/Controlling
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Features and Capabilities

- Intuitively analyze DPO and related KPIs e.g. by company code, country, vendor or payables document line item, based on real-time ERP data
- Interactively explore data by drilling-down across multiple dimensions and KPIs
- Save every step of your analysis as analysis path, reuse and modify analysis paths for data exploration
- View every step of an analysis path at a glance in an easily consumable format
- Drill-down to line item level to fine-tune tactics regarding payables
Working Capital Analytics - DPO Analysis

**Target Roles**
- Corporate / regional controller
- Regional CFOs / purchasers
- Country manager

**Analysis Area**
- Days Payables Outstanding (DPO) / Payables

**Metrics and KPIs**
- DPO
- Best possible DPO
- Overdue DPO
- Expenses
- Payables
- Overdue payables
- Open payables
- Cleared payables

**Business Questions**
- How is the DPO performance of my countries?
- What is the DPO / overdue DPO trend over time?
- How is the payment discipline towards my suppliers?
- What are the countries with high expenses / a high impact on DPO?
- Which payables are not paid on time?
- What is the aging structure of payables?
- How do payments terms (net due days) change over time?

**Categories and Drill-Down Options**
- Time
- Company code
- Country of company Code
- Vendor
- Country of vendor
- Aging
- Net due days
- Days in arrears
- Payables
DSO/ DPO calculation Working Capital Analytics
Working Capital Analytics
Example: Calculation Methods for DSO

Calculation: Introduction

Working Capital Analytics allows analysts to calculate relevant measures based on financial line items (referred to as direct method).

The following slides provide details about typical calculation methods in comparison to the direct calculation based on financial line items.

The calculation methods are explained by looking at a calculation example for DSO.

The example is based on a simulation as outlined on the next slide.
Working Capital Analytics

Example: Calculation Methods for DSO

Simulation Example

- Each day a certain amount of revenue is generated.
- Revenue always results in a corresponding accounts receivable position.
- Customers always pay after 15 days.

→ Obviously, the DSO is 15 days!

The graphic above illustrates how revenue and receivables are distributed over time, assuming that positions are cleared after 15 days.

The table shows revenue and receivables for June 2011.
Working Capital Analytics
Indirect Calculation Method for DSO (classical)

In a first step, the “classical” DSO calculation (indirect method) is explained in more detail.

DSO Formula
Indirect Method “classical”

\[
\text{DSO}_t = \frac{\text{Receivables}_t}{\text{Revenue of last 30 days}^*} \times 30^* \\
^* \text{Could also be any other number of days}
\]

DSO Calculation Example
Indirect Method “classical”

Receivables as of June 30, 2011: 4,087,23 €
Revenue June 1 – June 30, 2011: 15,517,40 €

\[
\text{DSO}_t = \frac{4,087,23 \text{ €}}{15,517,40 \text{ €}} \times 30 \\
\text{DSO}_t = 7,9 \text{ days}
\]

Result

Although the DSO should be 15 days, we see that the ‘classical’ approach to calculate DSO results in considerable variations of DSO values (e.g. DSO June 03: 19,3 days/ DSO June 30: 7,9 days), depending on when the calculation is performed. This effect even increases in case of seasonal fluctuations.
Working Capital Analytics
Indirect Calculation Method for DSO (rolling avg. receivables)

The following example shows how DSO is calculated using rolling averages.

**DSO Formula Indirect Method ,Rolling avg. Receivables’**

\[
\text{DSO}_t = \frac{\text{Rol. Av. Receivables 12 days}^{**} \times 30^*}{\text{Revenue of last 30 days}^*}
\]

* Could also be any other number of days
** Could also be a rolling average over other period

**DSO Calculation Example Indir. Method ,Rolling avg. Receiv.‘**

Revenue June 1 – June 30, 2011: 15,517,40 €

\[
\text{DSO}_t = \frac{5,764,15 \text{ €}}{15,517,40 \text{ €}} \times 30
\]

DSO = 11,1 days

**Result**

Using rolling averages to calculate DSO decreases variations to some degree. However, DSO values are only approximations that are subject to certain assumptions.
Working Capital Analytics
Direct Calculation Method for DSO

This slide outlines how DSO is calculated based on original documents (direct method).

**DSO Formula Direct Method**

\[
DSO_t = \frac{\sum (CD - PD) \times AR}{\sum AR}
\]

- **AR** = Accounts Receivable Amount
- **CD** = Clearing Date
- **PD** = Posting Date

**DSO Calculation Example Direct Method**

Doc. 1: posted June 1, cleared June 16, 2011: 999,41 €
Doc. 2: posted June 2, cleared June 17, 2011: 992,26 €

\[
DSO_t = \frac{((06/16/11 - 06/01/11) \times 999,41) + ((06/17/11 - 06/02/11) \times 992,26)}{1,991,67}
\]

**Result**

\[
DSO_t = 15,0 \text{ days}
\]

A DSO calculation based on document details allows you to derive DSO values that reflect real movements and developments without making any assumptions.

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The following slides depict the formulas provided with Working Capital Analytics – DSO Analysis to calculate the KPI DSO.

**Important note:**

By default, Working Capital Analytics- DSO Analysis uses the direct calculation method based on financial line items for DSO.

You can change the configuration so that calculations are performed using the indirect method instead.

For more information how to switch the calculation method see the Working Capital Analytics – DSO Analysis documentation, chapter Switching to Indirect Calculation of DSO, available at help.sap.com - SAP Smart Business for Smart Financials.
## Working Capital Analytics – DSO Analysis Definitions

<table>
<thead>
<tr>
<th>DSO</th>
<th>Indicates the average number of days that it takes a company to collect its outstanding accounts receivable.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overdue DSO</td>
<td>Indicates the average number of days that an invoice has been overdue.</td>
</tr>
<tr>
<td>Best Possible DSO</td>
<td>The DSO that can be reached if payment is always made on the due date.</td>
</tr>
</tbody>
</table>
Working Capital Analytics – DSO Analysis

Direct Calculation of DSO

\[
DSO = \frac{\sum \text{(Line Item Clearing Date} - \text{Line Item Posting Date)} \times \text{Line Item Amount}}{\sum \text{Line Item Amount}}
\]

Overdue DSO = DSO – Best Possible DSO

Best Possible DSO = \[
\frac{\sum \left( \text{Line Item Net due Date} - \text{Line Item Reference Date for Net Due Receivable Calculation} \right) \times \text{Line Item Amount}}{\sum \text{Line Item Amount}}
\]

\(^1\) The Reference Date for Net Due Receivable Calculation is either the Baseline Date for Due Date Calculation (table BSEG field ZFBDT) or the Document Date (table BKPF field BLDAT) in case the Baseline Date is not filled.
Working Capital Analytics – DSO Analysis
Indirect Calculation of DSO – Calculation per Month

DSO = \( \frac{\text{Average Accounts Receivable Balance of last } X \text{ Months}^2}{\text{Average Monthly Revenues of last } Y \text{ Months}^3} \times 30 \)

Overdue DSO = \( \frac{\text{Average Overdue AR Balance of last } X \text{ Months}^2}{\text{Average Monthly Revenues of last } Y \text{ Months}^3} \times 30 \)

Best Possible DSO = DSO – Overdue DSO

\(^2\) Parameter X: can be any positive number of months (Default parameter = 1)

\(^3\) Parameter Y: can be any positive number of months (Default parameter = 1)
Working Capital Analytics – DSO Analysis
Indirect Calculation of DSO – Overall Calculation

DSO = \frac{\text{Average Accounts Receivable Balance of Analysis Time Frame}}{\text{Average Monthly Revenues of Analysis Time Frame}} \times 30

Overdue DSO = \frac{\text{Average Overdue AR Balance of Analysis Time Frame}}{\text{Average Monthly Revenues of Analysis Time Frame}} \times 30

Best Possible DSO = DSO – Overdue DSO
Working Capital Analytics – DPO Analysis
Formulas for DPO Calculation

Formulas Provided with the Application

The following slides depict the formulas provided with Working Capital Analytics – DPO Analysis to calculate the KPI DPO.

**Important note:**

By default, Working Capital Analytics - DPO Analysis uses the direct calculation method based on financial line items for DPO.

You can change the configuration so that calculations are performed using the indirect method instead.

For more information how to switch the calculation method see the Working Capital Analytics – DPO Analysis documentation, chapter Switching to Indirect Calculation of DPO, available at help.sap.com - SAP Smart Business for Smart Financials.
## Working Capital Analytics – DPO Analysis

### Definitions

<table>
<thead>
<tr>
<th>DPO</th>
<th>Indicates the average number of days that it takes a company to pay its suppliers.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overdue DPO</td>
<td>Indicates the average number of days that an invoice from a supplier has been overdue.</td>
</tr>
<tr>
<td>Best Possible DPO</td>
<td>The DPO that can be reached if payment is always made on the due date.</td>
</tr>
</tbody>
</table>
Working Capital Analytics - DPO Analysis

Direct Calculation of DPO

\[
DPO = \frac{\sum (\text{Line Item Clearing Date} - \text{Line Item Posting Date}) \times \text{Line Item Amount}}{\sum \text{Line Item Amount}}
\]

Overdue DPO = DPO – Best Possible DPO

\[
\text{Best Possible DPO} = \frac{\sum (\text{Line Item Net due Date} - \text{Line Item Reference Date for Net Due Payable Calculation}^4) \times \text{Line Item Amount}}{\sum \text{Line Item Amount}}
\]

^4 The Reference Date for Net Due Payable Calculation is either the Baseline Date for Due Date Calculation (table BSEG field ZFBDT) or the Document Date (table BKPF field BLDAT) in case the Baseline Date is not filled.
Working Capital Analytics - DPO Analysis
Indirect Calculation of DPO – Calculation per Month

\[
\text{DPO} = \frac{\text{Average Accounts Payable Balance of last X Months}}{\text{Average Monthly Expenses of last Y Months}} \times 30
\]

\[
\text{Overdue DPO} = \frac{\text{Average Overdue AP Balance of last X Months}}{\text{Average Monthly Expenses of last Y Months}} \times 30
\]

Best Possible DPO = DPO – Overdue DPO

\(^5\) Parameter X: can be any positive number of months (Default parameter = 1)

\(^6\) Parameter Y: can be any positive number of months (Default parameter = 1)
Working Capital Analytics - DPO Analysis
Indirect Calculation of DPO – Overall Calculation

\[
DPO = \frac{\text{Average Accounts Payable Balance of Analysis Time Frame}}{\text{Average Monthly Expenses of Analysis Time Frame}} \times 30
\]

\[
\text{Overdue DPO} = \frac{\text{Average Overdue AP Balance of Analysis Time Frame}}{\text{Average Monthly Expenses of Analysis Time Frame}} \times 30
\]

Best Possible DPO = DPO – Overdue DPO
## Working Capital Analytics
### Characteristics of Calculation Methods for DSO / DPO

<table>
<thead>
<tr>
<th>Calculation Approach</th>
<th>Direct Calculation</th>
<th>Indirect Calculation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calculation Level</td>
<td>Direct calculation of time span between posting date and clearing date (true DSO / DPO) per line item</td>
<td>Indirect calculation by deriving DSO/ DPO from influencing factors (receivables balance and revenue for DSO; payables balance and expenses for DPO)</td>
</tr>
<tr>
<td>Relevant Documents</td>
<td>granular per line item</td>
<td>aggregated</td>
</tr>
<tr>
<td></td>
<td>cleared line items (cleared receivables/ cleared payables)</td>
<td>receivables/ payables: line items posted before end of analysis time frame and open at end of analysis time frame revenue/ expenses: posted within analysis time frame</td>
</tr>
</tbody>
</table>
## Working Capital Analytics
### Pros and Cons of Calculation Methods for DSO / DPO

<table>
<thead>
<tr>
<th>Pros</th>
<th>Indirect Calculation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pros</strong></td>
<td><strong>Cons</strong></td>
</tr>
<tr>
<td>• More precise</td>
<td>Effects in case of special business transactions:</td>
</tr>
<tr>
<td>• Independent from calculation effects caused by seasonal business or big scale transactions.</td>
<td>• Unexpected effects in case of a high proportion of credit memos.</td>
</tr>
<tr>
<td>• Independent from calculation effects caused by seasonal business or big scale transactions.</td>
<td>• Lower values in case of invoice pooling or partial payments.</td>
</tr>
<tr>
<td>• Less affected by a high proportion of special business transactions such as credit memos, invoice pooling, partial payments.</td>
<td>• Highly key date dependent, that is, KPI calculations are more affected by influences and assumptions causing considerable KPI variations with limited informative value.</td>
</tr>
<tr>
<td>• Highly key date dependent, that is, KPI calculations are more affected by influences and assumptions causing considerable KPI variations with limited informative value.</td>
<td>• Effects can be reduced to some degree using rolling averages.</td>
</tr>
</tbody>
</table>
Further Information

SAP Community Network

- http://scn.sap.com/docs/DOC-58907

Video Tutorials

- UI Overview: http://www.youtube.com/watch?v=XBRshH5IBf8
- Creating an Analysis Path: http://www.youtube.com/watch?v=jx-VeS4KcaU
- Further Options for Analysis Paths: http://www.youtube.com/watch?v=BHPeOfKVEJo
- Filter Data in an Analysis Path: http://www.youtube.com/watch?v=x0W3lGR1V4Y

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