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TAXONOMIES OF BUSINESS PERFORMANCE MANAGEMENT SOLUTIONS

Abstract: The main aim of the paper is to present taxonomies of Business Performance Management (BPM) software. BPM software supports strategy and performance management. The market of BPM software is still growing and this software category is becoming more and more important for managers and companies. The world-wide known consultant groups, such as IDC, Gartner and Forester Research, give various definitions of BPM software and categorize the software packages in different ways. The author presents these definitions and taxonomies, as well as tries to indicate their common features.

1. Introduction

After introducing transactional ERP systems many enterprises built data warehouses and developed Business Intelligence applications by themselves. These home-grown solutions usually supported operational management in such areas as monitoring and reporting business results, planning and budgeting, financial and sales reporting. Nowadays more and more information system suppliers offer purpose-built software applications which support both operational and strategic management. The application packages are recommended by vendors as solutions designed for Corporate Performance Management (CPM), Business Performance Management (BPM) and Enterprise Performance Management (EPM)[1]. According to Gartner Group, CPM includes the processes used to manage strategy formulation, budgeting and forecasting, the methodologies that support these processes (balanced scorecard, or value-based management), and the metrics used to measure performance against strategic and operational performance goals [Rayner et al. 2007].

BPM (CPM) software suite comprises a series of analytic applications, such as business planning and forecasting, financial consolidation, and financial-reporting, which provide the functionality to support these processes, methodologies and metrics,

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[1] One should consider all three terms as synonymous.

targeted at the CFO, finance team, senior executives and corporate-level decision makers [Chandler et al. 2009]. The specific feature of BPM applications is that they help enterprises to link corporate strategies and objectives with operational activities measures and, in consequence, help to drive them down to many individuals within the organization to encourage accountability and control. That is due to including Balanced Scorecard application module in BPM package. BPM applications are the key in linking strategy to operational execution.

Applications for business performance management belong to the software category named Business Analytics (BA) and are designed for those firms which are looking for integrated business analytics solutions and to those which want to replace their home-grown solutions [Januszewski 2008, pp. 39-45].

There are some reasons which make the choice of the BPM product for managers very difficult. First of all there are many vendors, that deliver a lot of BA suites consisting of various applications. In addition, the consultant companies, which analyze the market of Business Analytics, categorize the BA software packages according to various criteria. The next reason is that the managers are hardly ever familiar with business performance management software. Gartner states that there is a lack of knowledge among most finance and business users about the potential of these applications, and few companies appear to be leveraging them to their fullest extent [Chandler et al. 2009]. The author wants to add that in Polish literature Business Performance Management solutions are hardly described, and that is one more reason motivating him to undertake this issue.

The goal of this paper is to present various definitions of BPM solutions and taxonomies given by Gartner Group, Forrester Research and IDC. The author hopes that the characteristic of BPM software categories will help managers to choose the most appropriate solutions for their businesses.

2. The Gartner Group CPM
and Forrester Research BPS taxonomies

Gartner Group names the software for performance management as Corporate Performance Management solution. According to Gartner Group the main application components of a CPM suite are as follows [Rayner et al. 2007]:
– Budgeting, Planning and Forecasting,
– Profitability Modelling and Optimization,
– Strategy Management,
– Financial Consolidation,
– Financial, Statutory and Management Reporting.

Budgeting, Planning and Forecasting (BP&F) support the creation of financially focused budgets and plans, and should support the complete budget creation and approval process with appropriate workflow that enables users to define and control the flow of budgets, plans and forecasts for review and approval. The ap-

plication should also keep an audit trail of changes to budgets, plans and forecasts[2]. BP&F support both short-term financial budgeting, usually with a one-year time horizon, and longer-term planning, commonly with a three-to five-year time horizon. The budgeting module allows to plan and control costs, expenses, incomes and revenues in multidimensional view. CPM BP&F applications also support forecasting and modelling, which involve extrapolating new versions of plans and budgets based on the analysis of historical data. The planning solutions can usually deliver a variety of scenario-based planning activities as well as forecasting processes that add value beyond that provided by traditional budgeting processes[3].

BP&F applications may also provide other detailed planning, such as salary or head count planning, revenue planning, capital planning or expense planning.

What is really worth mentioning is that BP&F applications provide links to strategy maps in scorecard applications, which are used for strategic initiatives and goals monitoring. This is due to internal integration of all CPM applications, which are based on a common database (usually data warehouse).

Profitability Modelling and Optimization modules support implementation of detailed costing and profitability models and analysis, which is necessary for margins improvement. Profitability-modelling applications focus on profit optimization capabilities that enable executives to see the impact of different strategies on profitability, such as customer or product. The models reflect business complexity and help organizations to analyze operating costs and overheads against revenues by product, customers, and lines of business. The applications often use Activity-Based Costing (ABC) as the methodology to develop sophisticated cost and profitability analytical models. ABC allows to determine and allocate costs at a highly granular level. Using ABC and complex sales models it is possible to create very sophisticated profitability models which help to determine and assess profitability at many levels and from different perspectives (such as products, group of products, customers, sales regions, distribution channels, etc.). Profitability modelling and optimization models also include Activity-Based Management (ABM) applications which provide modelling capabilities to enable users to model the impact of different cost and resource allocation strategies on profitability. The ABM applications provide various measures which are used for performance evaluation in Balanced Scorecard.

Strategy Management applications are essential for managing the business strategies. They provide a platform for definition and implementation of strategies at any level, from departments to business lines and throughout the company. The applications support strategic planning, modelling and monitoring to improve corporate performance, accelerate management decision making and facilitate collaboration. They support formal strategy management philosophies (e.g. the Balanced

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[2] This is an important requirement for addressing regulatory demands, such as those related to the U.S. Sarbanes-Oxley Act.

[3] Forecasting can be simple (for example, add three months of actual data to nine months of budget data) or sophisticated (based on statistical techniques) to help predict future performance.

Scorecard) but might be adapted to a business specific needs. Strategy management comprises [Chandler et al. 2009]:

– strategic planning application which includes long-term financial planning, which creates a high-level perspective of revenue, expenses, balance sheet items and cash flows to show the financial impact of different strategic alternatives;
– initiative/goal management application which includes project-management-like tools to enable responsible managers to execute specific tasks related to a strategy;
– scorecards and strategy maps which help organizations measure and align the strategic and tactical aspects of businesses, processes and individuals with goals and targets. They are used to record strategies, objectives and tasks, measure performance, and provide a collaborative environment for effective, enterprise-wide communication;
– dashboards (or cockpits)[4] which are a reporting mechanism that aggregates and displays metrics and Key Performance Indicators (KPIs), enabling them to be examined at a glance before further exploration via additional BI tools, make it possible for the users to quickly monitor and track performance via an aesthetic user interface which employs visualization components, such as gauges, thermometers, dials and traffic lights.

Financial Consolidation applications let organizations reconcile, consolidate, summarize and aggregate financial data based on different accounting standards and federal regulations. These applications must be able to handle consolidation from multiple Generally Accepted Accounting Principles (GAAP) perspectives in a single system, while maintaining a clear audit trail of how each set of results was obtained. They must also provide sophisticated multicurrency-handling capabilities, including the ability to support complex translation and revaluation processing.

Financial consolidation applications usually operate on data warehouse where financial data coming from various divisions and departments are gathered. They are a fundamental part of CPM suite, because they create the audited, enterprise-level view of financial information that must be shared with other CPM applications to analyze variance from targets.

In Gartner's taxonomy reporting is considered as a separate module named **Financial, Statutory and Management Reporting**. It supports both reporting of statutory financial information and management reporting. Statutory financial reporting has some specific reporting requirements that indicate specific presentation rules and tools. It must meet specific presentation rules, such as U.S. GAAP or International Financial Reporting Standards (IFRS). Financial-reporting applications incorporate templates, business rules, workflow and audit trails to better meet regulatory, compliance and governance programmes. They should also support financial-reporting technologies, such as Extensible Business Reporting Language (XBRL), as regulators increasingly require the submission of financial statements in XBRL format.

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[4] Dashboards are a common part of all CPM applications.

The management reports are used by executives at corporate and business unit levels to manage and explain financial performance. The management reporting capabilities of CPM suite include budget/variance analysis, visualization techniques designed specifically to support the analysis of variance from budgets or targets. The reporting applications are usually strongly integrated with dashboards and scorecard applications, and use specific visualization techniques, such as decision trees, heat maps, and hyperbolic trees. They should enable the creation of "management packs" which produce groups of reports, electronic or in printed form, with the ability to add annotations and commentary.

User experience – Access via Corporate Portal

| Dashboards | Scorecards | Strategy maps | Diagrams |

| On-line Analytical Processing | Spreadsheets |

Analyses

Business Performance Solutions applications components

| **Financial Reporting and Consolidation** | **Strategy and Performance Measurement** |
| **Planning, Budgeting and Forecasting** | **Cost and Profitability Management** |

Configuration tools for processes and business models

Business Intelligence platform

Data Warehouse

Integration tools (ETL – Extraction, Transformation, Load)

Data

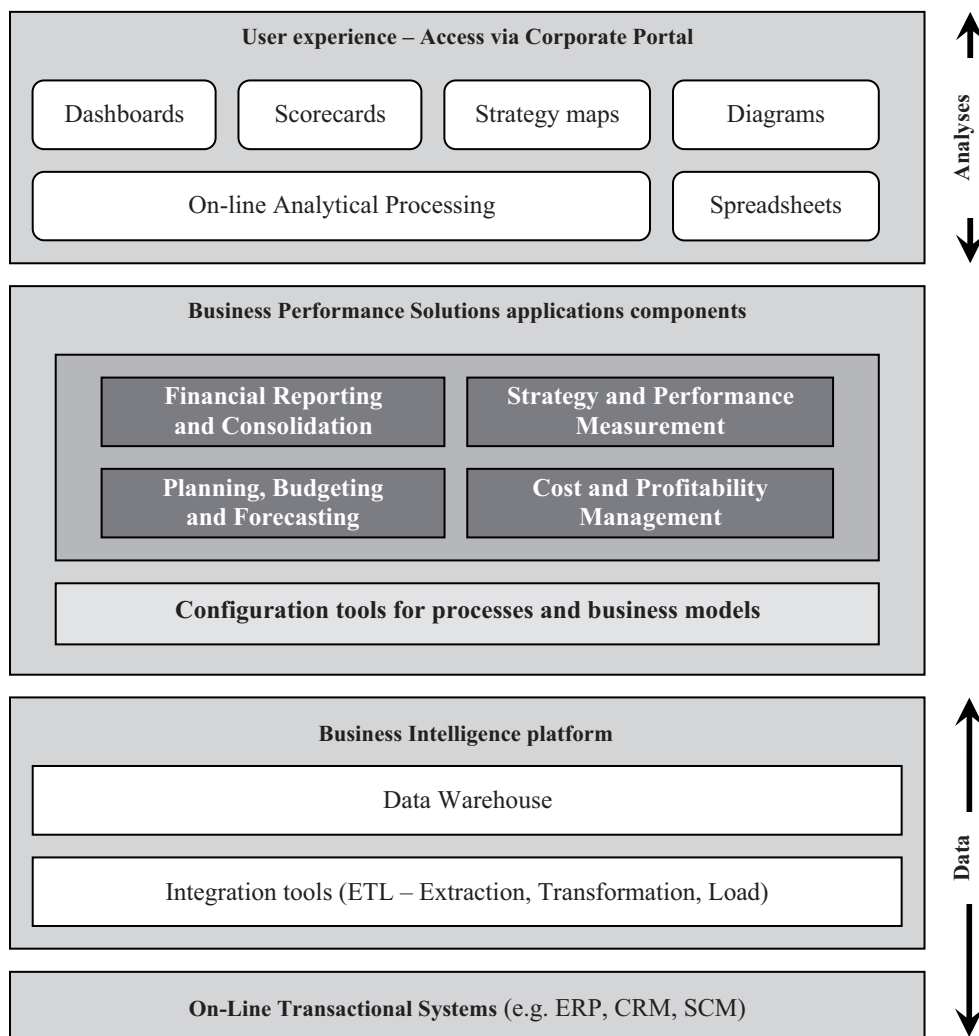**On-Line Transactional Systems** (e.g. ERP, CRM, SCM)

Figure 1. Business Performance Management solution architecture

Source: own elaboration.

The Forrester Research analysts name the software for supporting performance management as Business Performance Solution (BPS) and define it as a purpose-built set of software applications consisting of applications for budgeting, forecasting, financial reporting, profitability analysis, and performance measurement. Forrester Research taxonomy is very similar to the one introduced by Gartner Group. Business Performance Solutions packages consist of four main modules [Hamerman 2009]:
– planning, budgeting, and forecasting,
– strategy and performance measurement,
– cost and profitability management,
– financial reporting and consolidation.

As one can state, the only difference is that Forrester Research – contrary to Gartner Group – does not mention reporting module as a separate one.

The general architecture of BPM solution is presented on Figure 1.

Business Performance Management solution is usually a data warehouse-based system and uses rather "traditional" Business Intelligence tools and methods, such as query and reporting, spreadsheets, On-Line Analytical Processing (OLAP), dashboards, scorecards. The analysis results (reports, tables, graphs, KPI, ratios, measures, etc.) can be embedded on a corporate portal platform, which is a typical distribution channel in Business Intelligence systems, and accessible via Internet Explorer or other web browser.

3. The IDC Business Analytics taxonomy

The IDC taxonomy is more complex than that given by Gartner Group and Forrester Research. It incorporates all kinds of Business Analytics applications, not only those for financial budgeting, consolidation, profitability and strategy management. IDC mentions the two main layers of Business Analytics solutions (Figure 2):
– data warehouse platform,
– performance management tools and applications.

The first layer provides technological platform for analyses and reporting and incorporates Data Warehouse generation and Data Warehouse management.

The second layer comprises both specific analytical applications and Business Intelligence tools. Specific analytical components support the following segments: financial performance and strategy management applications, Customer Relationship Management analytics, workforce analytics, supply chain production planning, services operation analytics and other supply chain analytics, and spatial information management analytics.

According to IDC, BI tools market includes two segments: end-user query, reporting, and analysis (QRA) and advanced analytics [Vesset, McDonough 2009]. End-user query, reporting, and analysis software include ad-hoc query and multidimensional analysis tools as well as dashboards and production reporting tools. Advanced analytics software includes data mining and statistical software. The
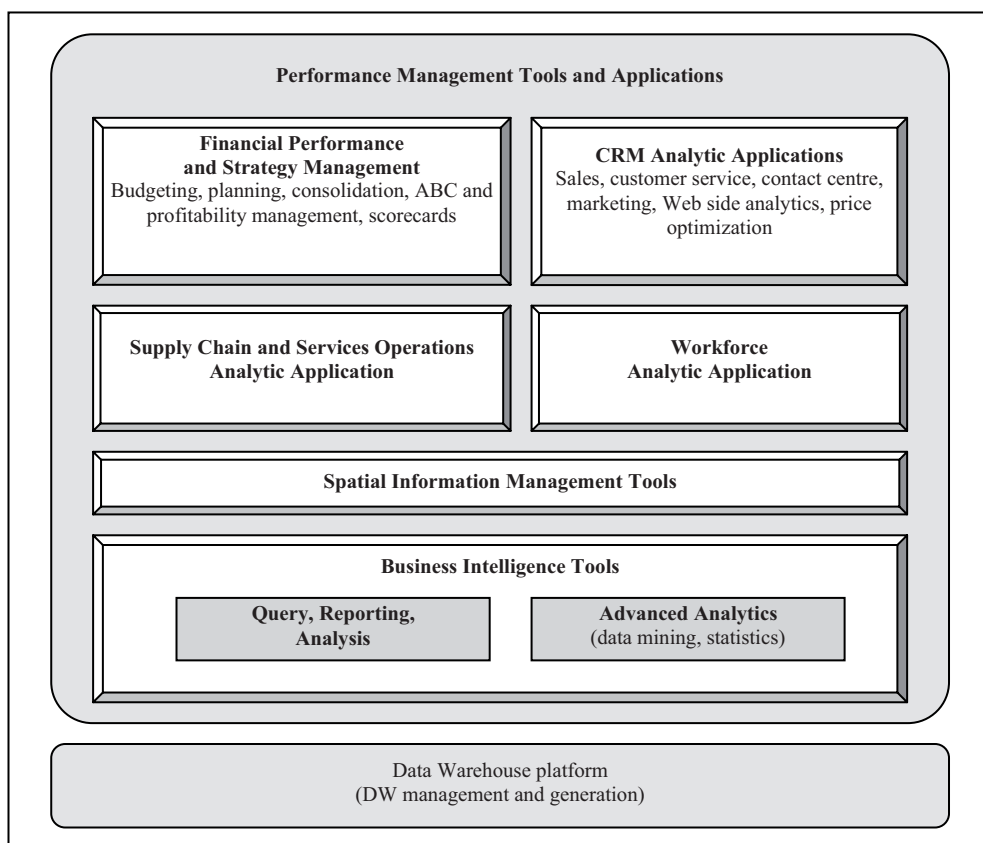
Figure 2. IDC's Business Analytics Taxonomy

Source: [Vesset et al. 2007].

tools use technologies such as neural networks, rule induction, and clustering, among others, to discover relationships in data and make predictions that are hidden, not apparent, or too complex to be extracted using query, reporting, and multidimensional analysis software. Advanced analytics also includes technical, econometric, and other mathematics-specific software that provides libraries of statistical algorithms and tests for analyzing data.

All of the applications and tools above mentioned are recognized by IDC as performance management software.

4. Conclusions

Despite the financial crisis the BPM solutions market is rapidly growing [Hamerman 2009], which shows that this software category is considered to be of great

importance for more and more managers. The BPM solution is an integrated applications package that helps them to monitor how the strategy, strategic and operational objectives are realized. There is a number of business intelligence (BI), Enterprise Resource Planning (ERP), specialists, and BPM pure plays on the market, which offer a variety of interesting alternatives.

Software market analysts present varied BPM software taxonomies. The distinctions concern both functional applications and BI tools. Taxonomies given by Gartner Group and Forrester Research are very similar, and encompass five (Gartner) or four (Forrester) main components with functionality covering budgeting, financial consolidation, cost and profitability management and strategy management. IDC adds to those functional areas a few others: Customer Relationship Management, workforce analytics, supply chain production planning, services operation analytics and other supply chain analytics, and spatial information management analytics. In Gartner Group and Forrester Research taxonomies, Business Intelligence incorporates rather "traditional" tools such as queries and reports, spreadsheets, On-Line Analytical Processing (OLAP), dashboards and scorecards; whereas, according to IDC, advanced analytics with statistical algorithms, econometric models and other data mining methods are considered as a very important component of performance management.

When choosing the BPM vendor it is necessary to learn the functionality of the products they offer, because the breadth of coverage of the BPM functional components can vary widely.

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