

KPI - METHODS AND TECHNIQUES USED FOR ACCOUNTING INSIDE ERP SAP- A STUDY CASE

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Abstract: Inside companies, the ERP solutions have been adopted in order to help manage their work, to have integrated solutions with clear targets, and to have a comprehensive visibility of existing processes. In our case, ERP adopted solution SAP it has been implemented with a clear scope: all our processes should be managed together, all results obtained from this system, should be accessible to all interested persons. Our research, for this paper, was oriented to Key Performance Indicators (KPI) established for an economic entity, for daily, weekly, monthly, quarterly, yearly-performed work within an accounting department. We want to offer a perspective, for interested people, showing how they can manage their activities, making use of applying formulas established in our research. This developed solution – the ZKPI application, was adapted in SAP, using ABAP as a programming language, more than that, WebDynpro was the technology used. The ZKPI module/application was integrated with our core SAP system and is maintained by internal developers. In order to monitor the entire activity performed by accountant colleagues for Treasury and Tax department. We want to highlight that a part of our data was automatically collected (most of it) and some of data were manually introduced into the system (based on Excel files, text delimited, etc.). This tool it used inside a big oil and gas company. This paper aims to facilitate the understanding of the KPI implementation into the ERP system, the constraints in terms of processes in this area - oil and gas - and will provide guidelines from lessons learned in this regard..

JEL classification: C61, C81, C88, M41, Y10

Key words: SAP, SaaS, ABAP, o Data, WebDynpro technologies, KPI - Key Performance Indicators, ERP - Enterprise Resource Planning

1. INTRODUCTION

The main guidelines of this article is are the development and adaptation of a software module within an ERP system; in this case, we are talking about SAP. SAP is an ERP (Enterprise Resource Planning) system, so we will discuss how the systems have evolved over the years (Keller, 1999). We will not insist much on the evolution of such systems, but we would want to recall, that this term, ERP, was implemented for the first time by the well-known consulting firm Gartner Group in 1990. This ERP concept improved everything that has involved the management of an economic entity, and not only that, it has ordered / grouped, the stages underlying a business with everything that encompasses it (Chen and Lin, 2008). The evolution, in time of ERP systems (concepts) is

shown in Figure 1 (Leu and Huang, 2009). Regarding SAP (System, Applications and Products), in 1972, this system appeared in the world of ERP systems, the first module made by the five former IBM employees, being an economic one (Zhou, 2009). The SAP R / 2 product was launched in 1980, becoming one of the most widely used IT products, bringing SAP AG among the "players" to be among the top ten over the years. SAP combines the functionality of several information systems, all transactions are real time and more, all current information is available to all divisions belonging to a company, regardless of the location where those who use such software system are found (Weidmann and Teuber, 2009).

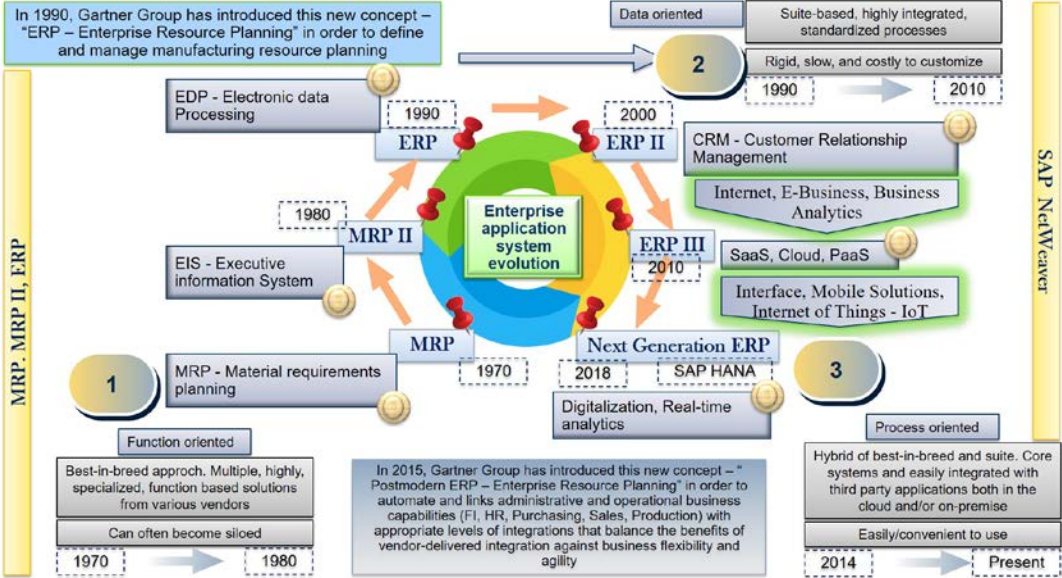


Figure 1. Evolution of ERP solutions

2. SOFTWARE REQUIREMENTS SPECIFICATION – MODELS USED FOR CALCULATION OF KPI'S

In this paper, we want to explain how we can use the KPI's methodologies (Agarwal and Rathod, 2006) and techniques in the economic area of an oil and gas company. We want to describe how we can develop and adapt a software solution (ZKPI) in terms of a local module / application within an ERP system, namely SAP. Moreover, this ZKPI's module / application, it was used and via SAP Portal, for mobility via SAP Fiori or using SAP Cloud. Our desire was to be able to adapt to SAP using the ABAP programming environment - using the latest WebDynpro technology, business environment requirements. Our colleagues from economic departments wants to use this application not only in the office but also outside of it. Therefore, we want not to have an impediment using the latest technologies, using smartphones, tablets for this SAP module. Using this opportunities, any colleague can see the activities performed anytime. (AbouRizk, Hague, Ekyalimpa and Newstead, 2014). In this case, we are discussing about the activity performed in the Treasury and Tax department, inside of Business Unit Finance division, the final target being to collect, monitor, and count of two areas defined (payments and taxes reports, tax returns):

- Treasury
- No of total payment processing transactions;

- No payment processing transactions / FTE;
- % Automatic degree
- Tax
- Number of Tax reports prepared
- Thereof number of tax returns
- Total amount of taxes recovered by the Tax Department (in mn EUR)

When we started the discussions with our business colleagues (department managers), for this KPI type of activities (Davenport and Lawrence, 1998), for colleagues in the economic departments, the perception of what we have to do was very poor. This motivated us a lot, so the time spent on this development was a long-lasting and very interactive one (Fink and Holden, 2007). In the present paper we want to analyze the Treasury and Tax department, more precise are payments and taxes reports, tax returns transactions. Everything (analysis, technical solution, development) was done inside SAP Competence Center and the proposed integrated in-house SAP solution it was called Z-KPI tool. The arguments that have been used (Delaney and Fahey, 2000) to develop such an application, to the detriment of buying a similar product software market, were as follows:

- The product will be integrated into core used system SAP;
- Internally developed (maintenance can be maintained without additional costs);
- Knowledge both KPI and programming are internally maintained;
- All developments tailored to the requirements of colleagues in accounting in line with business analysis.

In the oil and gas company where I have performed this study, the following KPIs (some of) (Coughlan, Eatock and Patel, 2011) are used and are presented in this paper (GL – General Ledger; Inv. - Invoices; AR - Accounts Receivable; PP - payments proposal; FA - Fixed Assets; CMDM - Central Master Data Management), we are focusing for the Treasury and Tax department (1FTE = 125h):

Table 1. KPI name / formula used

KPI NAME	FORMULA	QUARTERLY FORMULA
KPI <i>Total activities</i>	'=Current Activities + Internal controls + Closing + Group/Authorities Reporting + Projects & training + Business support + Mgmt & Admin	'=sum monthly total activities
KPI <i>FTE/Current Activities</i>	'=Current Activities/125	'=average monthly FTE
KPI <i>%Utilization rate</i>	'=(Total activities-Mgmt & Admin) / (active FTE*125)	'=average monthly FTE
KPI <i>%Activity index</i>	'=Total activities/(active FTE*125)	'=average monthly FTE
KPI <i>%Automatic bank transactions</i>	=1-(Number of manual bank transactions/Total no. of bank transactions)	'=average monthly transactions

We have performed a series of Functional Specification, together with the management of the department and Finance Division. We want to find the best criteria for counting the activities performed, to find the best way to achieve the data collection Specification), as well as creating the necessary formulas to be built / adapted in the application that will be programmed into ABAP (WebDynpro) (Banta, Cojocar, Moisescu and Sacala, 2014). Our desire was that everything should be adaptable / customizable, our interaction within the created application to be reduced (minimum time-consuming), so the colleagues can do the management of the application (new elements can be added to be used in future formulas, interactive reports can be built, data can be exported, data can be imported). We have also taken into account the goals of each manager / employee sets each year, so that the results of this application will later help to achieve the objectives of each employee. In this way, we have made the application intensively used either by adding data manually or by automatically collecting data from the SAP system, of course after performing the posting of activities in the reference system (Lin and Shih, 2009).

We have to take into consideration that, in our tool Z-KPI application, the following points (criteria) are established: 1) When a cell is updated by more than one formula, the value is set by the formula with the last solve order. 2) To change the solve order for multiple calculated items or fields, on the Options tab, in the Calculations group, click Fields, Items, & Sets, and then click Solve Order (Banta and Cojocar, 2014). In the following, once we have established the above formulas (Table 1), we will detail what data we collected from the Treasury and Tax department (Table 2).

Table 2. KPI data for one year based on formula used

TREASURY	2016 AV. Q	2017 AV. Q	Q4/16	Q1/17	Q2/17	Q3/17	Q4/17
No of total payment processing transactions	161.169	163.189	222.943	158.906	157.218	168.525	168.106
No payment procesing transactions / FTE	37.394	39.111	55.736	40.229	39.403	37.120	39.930
% Automatic degree	89,0%	90,0%	93,0%	89,0%	89,0%	90,0%	92,0%
FTE assigned	4,31	4,2	4	3,95	3,99	4,54	4,21

AV - average

“2017 AV. Q” = (“Q1/17” + “Q2/17” + “Q3/17” + “Q4/17”) / 4

“No payment procesing transactions / FTE” = “No of total payment processing transactions” / “FTE assigned”

“% Automatic degree KPI” = AVERAGE (“Q1/17”; “Q2/17”; “Q3/17”; “Q4/17”)

FTE assigned = AVERAGE (“Q1/17”; “Q2/17”; “Q3/17”; “Q4/17”)

Based on below data collection and formula used, we have the following picture / graph

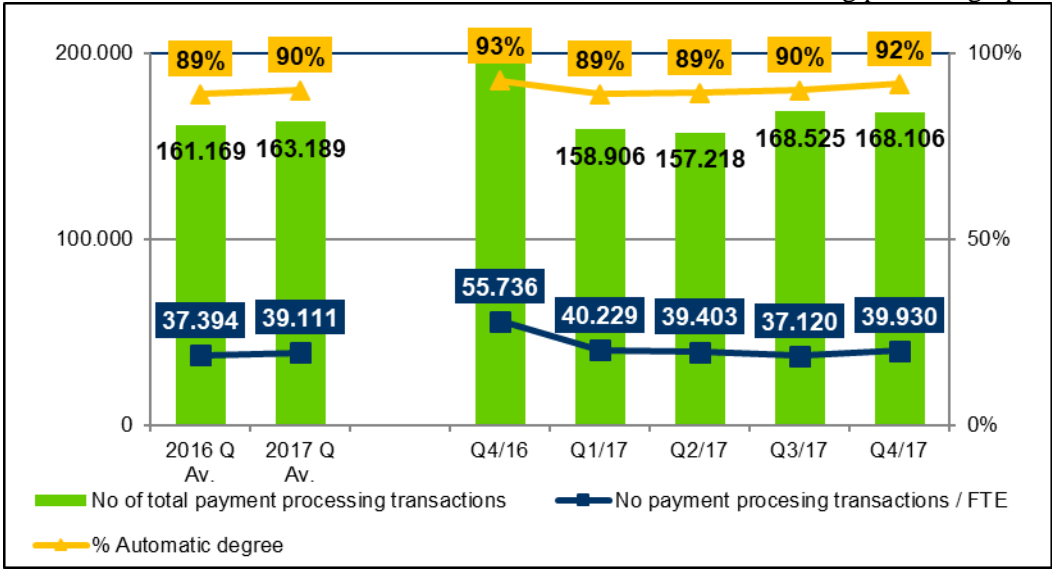


Figure 2. The Graph for KPI collected based on formula used

We can conclude (as a remark) that Q2&Q3 2017 - Interest received from the state budget for excise duty related to export deliveries as well as interest and penalties for amounts not reimbursed by the authorities within the legal term.

Our research continued with the second part monitored by us in the GL department: Petty cash.

Table 3. KPI data for one year based on formula used

TAX	2016 Q AV.	2017 Q AV.	Q4/16	Q1/17	Q2/17	Q3/17	Q4/17
Number of Tax reports prepared	2.158	1.858	2.553	1.684	1.613	1.664	2.470
Thereof number of tax returns	1.017	620	743	655	633	620	571

AV - average

“2017 AV. Q” = (“Q1/17” + “Q2/17” + “Q3/17” + “Q4/17”) / 4

“Number of Tax reports prepared” = SUM(“Q1/17” + “Q2/17” + “Q3/17” + “Q4/17”) / 4

Thereof number of tax returns” = SUM(“Q1/17” + “Q2/17” + “Q3/17” + “Q4/17”) / 4

Based on below data collection and formula used, we have the following picture / graph:

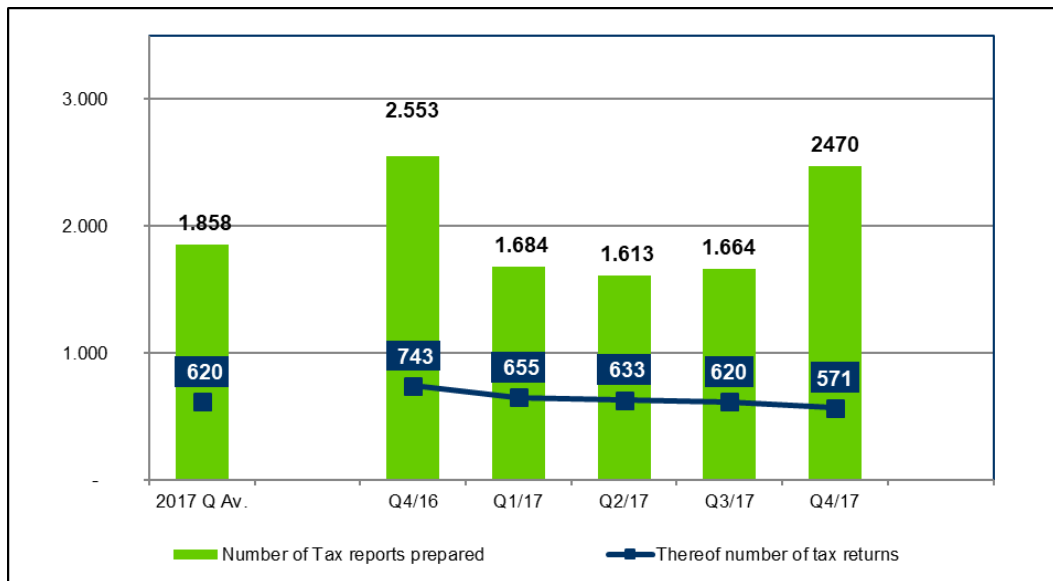


Figure 3. The Graph for KPI collected based on formula used

We can conclude (as a remark) that -in Q4 2017 the number of reports was influenced by the reconciliation letters sent to local authorities. Also, the number of tax returns in Q2 and Q3 was greater than Q4, due to the tax returns prepared for advertising campaign performed in Q2 and Q3, in case of OPM.

3. SOFTWARE DESIGN FOR ZKPI TOOL

Enterprise resource planning - ERP - as it is known, it's coming with a lot of advantages in terms of modeling and managing existing processes in the company (Banța and Cojocaru, 2014). Our company uses SAP, this integrated system is implemented in all divisions, from exploration and production to marketing, power and accounting areas (Jardim-Goncalves, Grilo, Agostinho, Lampathaki and Charalabidis, 2012).

We used the new WD technology for creating ZKPI tool, (for this research, we used ABAP programming language for ZKPI tool and WebDynpro (WD) facilities are used). So, was easy to applied the ZKPI tool functionalities in the business environment (the main points were to help the management of the business to reach the targets (KPI objectives)).

Many companies use SAP as an integrated system. SAP wished, over time, to meet its customers's needs by supplying innovative technologies. Thus, when SAP launched WebDynpro, the data wanted to be display in the Web form. The business environment has received this innovation very well and has put it into practice in most of the applications (they can create UI's – Web User Interface) (Banța and Cojocaru, 2014), that have been developed over time.

The realization of this ZKPI tool, after a series of researches, grouped the checks made by each team leader in a central application, at level of group-wide, the results helping to organize the accounting work properly.

We want to develop this module in the future and its ability to adapt to SAP Portal and SAP Fiori (mobility) to be easy to achieve (Goebels, Nepraunig and Seidel, 2016).

4. SOFTWARE DESIGN FOR ZKPI TOOL

The ZKPI's application developed in SAP, by us, using WD technology, displayed in figure 6. This figure contains what is ZKPIs application structure and how it looks like. We use for this KPI z-module software programming language ABAP (Advanced Business Application Programming), WD and SAP Portal (Bönnen, Drees, Fischer, Heinz and Strothmann, 2016). This programming environment was made by SAP, a German company, as we can find in the technical specification information. This programming language has been developed since 1980 and it is a 4GL programming language (Gahm, Schneider, Swanepoel and Westenberger, 2016) and was used starting with SAP R/3 concept situation. We have included the concept of LDBs (Logical Databases), and this concept is included in one of the first programming language - ABAP, this means that, the concept regarding abstraction perspective is included in the database. Everything mentioned above is included in the latest version of ABAP programming language. More than that, starting with 1992's, this language have been used for creating programs in R/3 product. SAP NetWaver platform/concept support ABAP and Java in terms of development, all three components, business applications, the operating system and the databases, have an abstraction component, this means and helps SAP not to be dependent directly on machines, servers, databases, so we can conclude that we can change (install) from one platform to another (Adams, 2016). Many components are describe here: company codes (company code, code name, legal entity, country, division, segment (Corporate, E&P, etc.). Some category: start date, end date, category and type of service (transactional services, fully serviced, fully serviced w/o statements, not serviced /small activity, serviced by OGS, transactional services). Other components, into tool, were defined, like: customers (customer list, customer data, customer products (product name ((GSFIN – ACCOUNTS PAYABLE, GSFIN – ACCOUNTS RECEIVABLE, GSFIN – STOCK ACCOUNTING, etc.), company code, logical system)), KPI master, Products, Units of measure, Users and Service Lines.

The screenshot displays the ZKPI module application interface for an Oil and Gas Company. The interface is organized into several functional areas:

- Navigation Tabs:** FI KPI ADMIN, FI KPI REPORTS, FI KPI DATA, FI KPI IMPORT, and FI KPI SLA.
- KPI Master Data:** A table listing various KPIs such as 'Current activities - bank transactions', 'Current activities - petty cash', and 'Current activities - other General Ledger'. Each entry includes details like Unit code, KPI Frequency, KPI Quarter, and Activity Index.
- KPI Details Panel:** A detailed view of a selected KPI (KPI Code: 1766610A012). It includes fields for KPI Name, Description, and various management options like 'Collect Level', 'OGS Management', and 'Admin Display'.
- Formulas Management:** A section for defining formulas, showing a formula like '1766610A012 / FTE'.
- Customer Targets:** A section for setting targets, including fields for Company Code, Fiscal Year, Month, KPI Code, Customer Code, Logical system, Product Code, and Actual Value.
- Product List:** A table listing products with columns for Product Code, Product Name, Service Line Code, and SL Aggregate. Products include 'GSFIN-ACCOUNTS PAYABLE', 'GSFIN-BUSINESS ADMINISTRATION', and 'GSFIN-FINANCIAL STATEMENT'.
- Service Lines:** A section for defining service lines, including fields for Service Line Code, Service Line Name, and various management options.
- Selections:** A panel for selecting data, including fields for Period, Fiscal Year, Customer, and KPI options.

In our tool, we have many components developed: “company code data management”, “customer data management”, “input KPI data form”, “KPI formulas data maintenance”, “Import old data”, “KPI master data maintenance”, “Application Main Menu”, “Product data maintenance”, “Report SLA per month”, “Report Year by Month”, “Service Line Maintain”, “Units data maintenance”, “Maintain users data”. These programs were create in order to meet the expectation of our business and to qualify KPI as a measure, a quantifiable one, which is used to gauge or to compare the performance achieved by our colleagues, in terms of meeting strategic and operational goals/ targets (Prewett and Pytel, 2016).

5. CONCLUSIONS

The main scope for this research was to find a couple of formula needed to calculate the capacity of a team / FTE according to the number of employees, the level of HR (junior, middle, expert, senior, senior expert). More than that, using a tool (ZKPI tool in our scope), the level of distribution of accounting people is properly, so we can conclude that the results offered from application will help the management of the company.

This research paper is route to people which wants to find some criteria to organize their work in accounting divisions. This research paper is transmit to people which wants to find some criteria to organize their work in accounting divisions. With the help of this article, the researchers, can find some links about KPI's, about implementation of a tool which collect data from an integrated system, compute these data and make analysis based on agreed formulas.

After a couple of month, the results accuracy will be higher; the forecast of people's distribution will be great, so inside the team this FTE will be very accurate. With this paper, the manager of a team can see if with his number of the people can rich the KPI's proposed starting with the beginning of the year. At any point in time, it can make changes, based on the results the application offers.

After all the configuration steps is completed, a comparison of the resulting data can be made, so the decisions taken are with a very good accuracy. One of the main objectives, was to analyze qualitatively the data, and to develop a common guideline for KPI analysis and measures performed, agreed by managers, team leaders and employees.

Regarding this research, contextually, the adaptation of a software application in the KPI management area in an ERP-SAP system can be utilized by large companies, which use internal development. Making such an application can be done easily, moreover, if there are internal developers, the costs are significantly reduced. These costs are low, because there are not involved external resources in the implementation of the application. The technology used in SAP, WebDynpro, allows the display of results in the web form, the connection to SAP Portal can facilitate easy interaction with the existing data in the developed application.

What this article brings forth is the current state of knowledge based on KPI implementation in Romanian companies, in fact it is the understanding of how can be used an integrated ERP system in a big oil and gas company. The great desire was coming from the department heads; they wanted to have a record of their activities. A big result of the research is related to the nature of knowledge management in terms of KPI management processes. Besides, with this application we highlights how this KPIs objects help the managers, to take the right decisions according with PDS goals (each employee has some goals for each year - these should be met). The focus on this article was to analyze the

activities inside General Ledger department, the KPI activities / formula agreed and implemented more than that the author focused on developing and adapting a software tool for storing, monitoring and reporting of Finance/Accounting area activities, within existing SAP integrated systems. The ZKPI application was developed using the ABAP (Advanced Business Application Programming) environment. In order to achieve a friendlier interface, the latest technology offered by SAP - WebDynpro was used. Another research that will be done by me will result in the expansion of this tool to SAP Fiori application (mobility). Switching to the ability to work using the SAP Fiori interface is considered to be a great benefit to colleagues in the finance department of the finance division, and they do not have to work in the office.

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