Human Resource Information System in Romanian Organizations

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Abstract

Human Resource Information System (HRIS) or Human Resource Management System (HRMS) refers to the systems and processes placed at the intersection between human resource management (HRM) and information technology (IT). Modern management throughout decision and information systems, is identified today with information technology and communication (IT&C). The aim of the paper is to study the use of the HRIS in the 2010-2011 year in Romanian organizations that have implemented a SIVECO Applications 2011. The research has revealed the global IT and specific HRIS implementing level, in the 2010-2011 Romanian organizations. The practical value of this study consists in the measurement of the impacts of contingency factors, including size, and in the assessment of the HRIS success. The results demonstrate that the relationship between firm size and HRIS is moderated by IT assets. The originality of this article consists in the balanced management and technology coverage, where IT&C have a strong influence over the manager decision

Keywords: *Management Information System, Human Resource Management System, Romanian Organizations, Management Method*

JEL classification: C12, M54, L86, M12

Introduction

While noticing a short overview of the evolution of the main management methods during the last 50 years I have tried to draw out the chapter dealing with the advanced methods used by the management of Romanian organizations. Management methods have witnessed an evolution lately, namely during the period 1990 -2010, strictly connected with the information and communication technologies. (Fotache & Hurbean, 2004) Accordingly, while the decade '70 – '80 belonged to the management methods characterized by strategy, leadership or excellence, beginning with the '90s, the personalities of management history have proposed, conceptualized, and studied management methods in close connection with information technology. The years '90s and 2000 were strongly influenced, in the field of management methods and techniques, by a series of professors, researchers and scientists belonging to American universities and having an engineering, management, and IT interdisciplinary training. The methods meant for organization's strategy, such as score-card, or for complex management decisions, such as business analyses, represent in our vision the sole solution a business and

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an organization may adopt in order to enter the decade to come. I consider that the category of the advanced management methods should include: *Enterprise Resource Planning, Business Intelligence, Balanced Scorecard, Business Process Reengineering, Business Process Management, and Enterprise Content Management*.

In the 2st century, advances in technology have made focus on the human-computer interface a prime objective. The Internet has changed the way most businesses engage with customers and even their own employees. Social-media technology has facilitated customers communicating with each other about products and services, meaning managers must act quickly to respond to product defects to avoid long-term profit losses. Balanced scorecards report on how well the business is doing relative to strategic goals. Software applications enable advanced business analytics used to make complex business decisions in a global marketplace (Ursăcescu & Cioc, 2012).

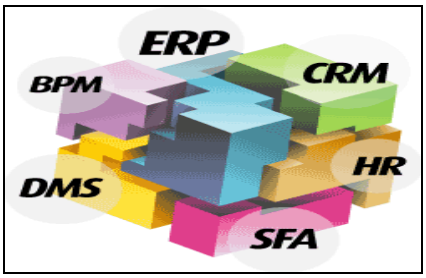

Figure 1. Advanced management methods
Source: http://www.keysoft.ro/ro/

where:

ERP –Enterprise Resource Planning

CRM - Customer Relationship Management

HR – Human Resource

SFA – Sales Force Automation

DMS – Document Management System

BPM – Business Process Management

2. Theoretical Framework of Advanced Management Methods, Management Information System and SIVECO Human Resources Management

Management Information System (MIS) is basically concerned with processing data into information. Data collection involves the use of Information Technology (IT) comprising: computers and telecommunications networks (email, Voice Mail, Internet, telephone, etc.). Computers are important for more quantitative, than qualitative, data collection, storage and retrieval; Special features are speed and accuracy, and storage of large amount of data. Telecommunications

provide the means for one-way or two-way communication and for the transmission of messages. A MIS enables businesses to provide answers to managers in search of knowledge. MIS does this by combining raw data about the organization's operations (contained in its basic information technology systems) with information gathered from employees in expert systems that reflect the organization's procedures. (Satyanarayana, et al, 2009)

MIS differ from regular information systems because the primary objectives of these systems are to analyze other systems dealing with the operational activities in the organization. In this way, MIS is a subset of the overall planning and control activities covering the application of humans, technologies, and procedures of the organization. As organizations grow, MIS allows information to move between functional areas and departments instantly, reducing the need for face-to-face communications among employees, thus increasing the responsiveness of the organization. (Laudon & Laudon, 2006)

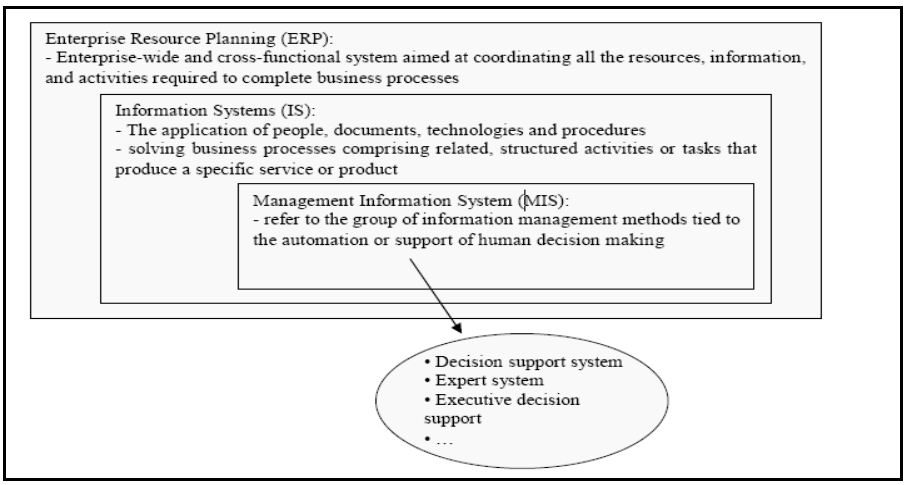

Figure 2. Concept of management information systems
Source: http://www.ijric.org/volumes/Vol5/1Vol5.pdf

My study was set on 13 implementation of SIVECO Applications, which is an innovative ERP for business administration. SA is a complex IT systems that connect companies to a set of resources ordered and related within a system, on several levels: operational, business, management etc. SIVECO is addressing mainly to large companies and public agencies, and provides efficient eLearning solutions, EAS, document Management, Business Intelligence, eHealth, eAgriculture, eCustoms and eBusiness solutions, both nationally and internationally. I have focused in this paper on two SA component HRM and Payroll Management. (Edelhauser, 2011)

2.1. SIVECO Human Resources Management Component

The SIVECO Human Resources Component provides a high flexibility in operating the company specific functionalities, as well as adapting to legislative changes and changes in the Romanian economic environment. By implementing the Human Resources Management module one keeps a strict record of all processes an employee goes through, starting with the recruiting process, training, promotion and evaluation. Based on indicators and statistics it results clearly the education level of employees, by means of the career plan, hence the level of competencies of the company as a whole.

The HRM is conceived such as to allow:

• Personnel selection and recruitment, by management of all the processes involved;

• Records of employees, with numerous personal and professional details;

• Monitoring the personnel state of health and labor protection measures;

• Assistance in designing and verifying the versions of organizational structures;

• Record on job descriptions

• Recording employees' skills, qualifications, competences and work experience;

• Record and employees participation to professional training; correlating the continuous training needs with the training schedules;

• Monitoring the individual career;

• Realizing a methodology for evaluating the employees efficiency based on quantitative and qualitative indicators; centralizing evaluation results; permanent access to historical data referring to employees evaluation;

• statistical reporting of different indicators.

2.2 SIVECO Payroll Management Component

Over the last years, the acquisition of IT solutions meant to streamline the Payroll activity has become a necessity, especially for companies with a large number of employees. With a considerable expertise in providing software solutions for supporting activities, SIVECO Romania has developed - as part of its ERP (Enterprise Resource Planning) package SIVECO Applications - a separate component that solves the specific requirements of the personnel Payroll activity. Integrated in a complex ERP system, the Payroll Management Component allows for the management of the main Payroll elements: advance payments, bonuses, pay rises, payment withholdings, taxes and deductions. This component proves particularly useful in streamlining the activity of the responsible staff within the Personnel Department.

3. A Managerial Research in the HRM through SIVECO Applications Implementation in Romanian Organizations

3.1 Methodology

The instruments used for collecting data were a quantitative questionnaire, an qualitative one and an interview. The research based on the quantitative questionnaire was structured on 27 questions focused on hardware and software endowment (8 questions), implementation of the ERP business software for five business function such as manufacturing, SCM, financial, HRM and CRM (6 questions), other 6 questions were dedicated only to Human Resource Management function and the last 7 questions were dedicated to BI management methods. In this paper I will focus only on Q15-Q20 from our questionnaire, dedicated to HRM function. (Ceptureanu, et al 2012)

3.2 Respondents

The 13 organizations investigated are representative in the SIVECO portfolio, nine are from the public sector and four are from the private sector. The nine public organizations are from various fields:

2 organizations from the energy field (currently with the name branches Electrocentrale, but probably in the process of reorganization they will be called otherwise) – SE

2 organizations providing services for the energy sector's - Hidroserv

2 organizations providing services as water utilities and heating - CET and Apaserv

2 organizations from the air transport and shipping

1 organization from the land management

Even data were collected only from 13 organizations, these are representative for the 2010 Romanian economy, because in this economical moment Romania has only 5,000 companies that need an ERP and a BI software instrument as a advanced management method. So we have only 2,000 big companies having more than 250 employees which can afford to implement a SAP, Oracle or SIVECO ERP software. But these 2,000 companies generate incomes two times higher than the other 10,000 SMB, and equal those of the 500,000 small Romanian companies, that have under 50 employees. From these 2,000 big organizations most of them are branches from trans-national companies, and have mostly implemented ERP existing in their main organization, usually SAP or Oracle. So, are likely to be investigated public organizations and private Romanian capital organizations, in which SIVECO has implemented an ERP. These two categories have a hundred percent Romanian management, and had to optimize it, so our study set sight on this special one organizations (Edelhauser & Ionică 2010).

3.3. Variable

1. Number of employees involved in human resource management field
   Variable **Pers_MRU**
2. Number of computers supporting the SIVECO Applications for Human Resources Management and Payroll
   Variable **Pers_PC**
3. SIVECO Applications 2020 Human Resources Management Component
   MRU_EvPers Records of employees
   MRU_ORG Organizational structures
   MRU_CM Labor contract
   MRU_SelRecrut Recruiting and personnel selection
   MRU_FormProf Personnel training
   MRU_Cariera Career plan
   MRU_Evaluare Performance evaluation
   MRU_Planificare Planning
   Value 1-8 level of reliance
   where 8 represent the maximal level of reliance
4. SIVECO Applications 2020 Payroll Management Component Variable
   SAL_Pontaj Timesheets
   SAL_CalculSal Pay rises
   SAL_RetSpor Bonuses and withholdings
   SAL_Modif Changes
   SAL_Etc Others
   Value 1-5 level of reliance
   where 5 represent the maximal level of reliance
5. Number of employees with granted access for SIVECO Applications in human resource management field based on their IT qualification
   Variable **Pers_MRU_IT**

3.4 Statistical Analysis

For the 13 organizations that have responded to question 18 related to of human resources management information system, can be concluded by the t test for testing the average of the variable with its specified maximum value (8) that currently only employees records is used to maximum (MRU_EvPers has deviation 0!), followed at a distance by employee training programs and organizational structures (MRU_FormProf and MRU_ORG) because only for these activities sigma value> 0.05 (confidence interval shows that is 95%) that the estimated value of t test statistics is significant at a confidence level of 95%. Following null hypothesis is confirmed, for the employees records, employee training programs and organizational structures, where for the maximum value 8 there are and no significant differences. (Jaba & Grama, 2004)

Table 1. T test results for testing the average of the variable measuring human resource components to its specified maximum value (8)

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
MRU_EvPers	13	8,00	,000[a]	,000
MRU_ORG	13	6,08	3,475	,964
MRU_CM	13	3,46	3,971	1,101
MRU_SelRecrut	13	2,31	3,637	1,009
MRU_FormProf	13	5,69	3,449	,957
MRU_Cariera	13	3,31	3,816	1,058
MRU_Evaluare	13	2,85	3,783	1,049
MRU_Planificare	13	4,23	4,086	1,133

a. t cannot be computed because the standard deviation is 0.

One-Sample Test

	Test Value = 8					
					95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
MRU_ORG	-1,995	12	,069	-1,923	-4,02	,18
MRU_CM	-4,121	12	,001	-4,538	-6,94	-2,14
MRU_SelRecrut	-5,642	12	,000	-5,692	-7,89	-3,49
MRU_FormProf	-2,412	12	,033	-2,308	-4,39	-,22
MRU_Cariera	-4,433	12	,001	-4,692	-7,00	-2,39
MRU_Evaluare	-4,913	12	,000	-5,154	-7,44	-2,87
MRU_Planificare	-3,326	12	,006	-3,769	-6,24	-1,30

Table 2. T test results for testing the average of the of the variable measuring payroll components to its specified maximum value (5)

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
SAL_Pontaj	13	5,00	,000[a]	,000
SAL_CalculSal	13	4,92	,277	,077
SAL_RetSpor	13	4,85	,555	,154
SAL_Modif	13	4,00	1,958	,543
SAL_Etc	13	,46	1,391	,386

a. t cannot be computed because the standard deviation is 0.

One-Sample Test

	Test Value = 5					
					95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
SAL_CalculSal	-1,000	12	,337	-,077	-,24	,09
SAL_RetSpor	-1,000	12	,337	-,154	-,49	,18
SAL_Modif	-1,842	12	,090	-1,000	-2,18	,18
SAL_Etc	-11,761	12	,000	-4,538	-5,38	-3,70

The effect is more pronounced for specific payroll activities in which timesheet is 100% used and payroll calculation and bonuses and withholdings are also representative. Even the recording activity of office and salary changes, transfers and termination of labor contracts is significant. On the other hand respondents could not identify any other specific activity payroll that has not been implemented.

4. Findings and discussions

4.1 Graphical results

In Table 3 I have highlighted those areas which have given a maximum score after the use (8-blue flag) and those that received a minimum score according to the same degree of use (0 - red flag). The main components for human resources activities with a maximum use for the organizations surveyed are records of employees, organizational structures and personnel training and the red flag should be placed for recruiting and personnel selection, performance evaluation and planning components. In the same table I reveal that organizations have implemented in a thorough way the software modules for human resources management and identify in this case public organizations such as the two Hidroserv's Hateg and Severin and a small private organization, which from financial reasons and economic efficiency may have placed particular emphasis on human resource.

Table 3. SIVECO Human Resources Management Component Use

Organization / HRM	Records of employees	Organizational structures	Labour contract	Recruiting and personnel selection	Personnel training	Career plan	Performance evaluation	Planning
ANR Drobeta Turnu Severin	8	8	8	8	8	8	8	0
Aeropotul Timisoara	8	7	0	0	4	5	6	0
ANIF Dunare Olt	8	8	8	0	0	8	0	8
Hidroserv Hateg	8	8	5	6	6	6	7	7
Hidroserv Severin	8	8	8	8	8	8	8	8
SE Braila	8	8	8	0	8	0	0	8
SE Mureş	8	8	0	0	8	0	0	0
CET Brasov	8	8	0	0	8	0	0	0
Apa Serv Valea Jiului	8	0	0	0	0	0	0	0
Aerostar Bacau	8	0	0	0	8	0	0	8
Meva Severin	8	8	0	0	8	0	0	8
Romvag Caracal	8	0	0	0	0	0	0	0
Cam Serv	8	8	8	8	8	8	8	8

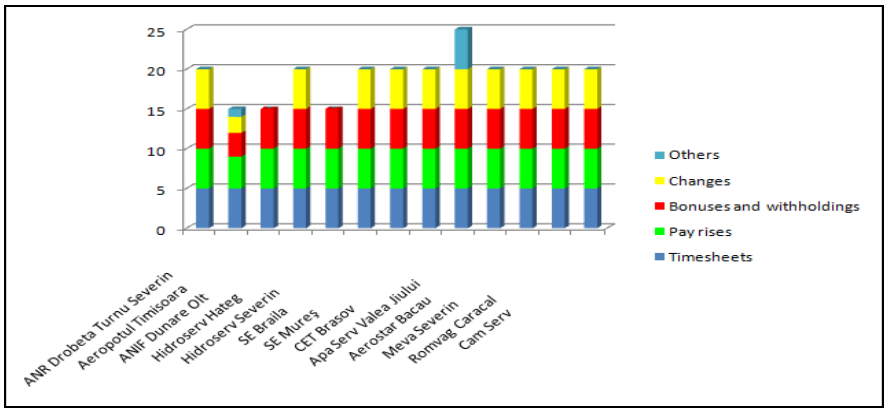

Figure 3. SIVECO Payroll Management Component Implementation

The same phenomenon found in an other survey conducted in 2004 for the mining industry from Romania, occurs in organizations that have implemented a SIVECO Application. So payroll is almost 100% managed with modern IT&C methods and maybe just by chance a few organizations do not achieve this high percentage (Figure 3). And if I consider the actual investigated organizations is obvious that except Severin Hidroserv and ANIF all other organizations have successfully implemented all payroll components.

4.2 Research Hypothesis

Hypothesis There is a direct relationship between the quality of the assisted decision based on IT&C methods and the IT experience of the managers.

General hypothesis (Dai & Duserick, 2006) will suffer a mutation in the MRU field and will be applied only for the HRM and Payroll component. To validate the hypothesis I investigated the relationship between the number of employees in the department of HR and the number of employees with granted access for SIVECO Applications in human resource management field based on their IT qualification.

Table 4. Regression analysis between the number of employees involved in human resource management field and the number of employees with granted access for SIVECO Applications in Human Resource Management field based on their IT qualification

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,995[a]	,990	,989	,290

a. Predictors: (Constant), Pers_MRU

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	90,000	1	90,000	1072,500	,000[a]
	Residual	,923	11	,084		
	Total	90,923	12			

a. Predictors: (Constant), Pers_MRU

b. Dependent Variable: Pers_MRU_IT

I used regression analysis, as a statistical method to evaluate the relation between one independent variable (number of employees involved in human resource management field – pers_MRU) and another continuous dependent variable (number of employees with granted access for SIVECO Applications in human resource management field – pers_MRU_IT). The model has been confirmed to be valid because the F test value is very high 1072,5, with significant sig. <0.05 (0,00). The regression coefficient R=0,995 shows a functional

dependency between the two variable, between the variable pers_MRU_IT, and the independent variable pers_MRU. In fact the correlation is 0,995 and the adjusted R square is 0,989. So the model explains 99 % from the total variation of the variable personal (R^2= 0,990). The rest of 1 % is influenced by other residual factors not included in the model. (Radu, et al, 2009) I made a correlation between four significant variable: total number of employee of the organization, number of employee involved in human resource management field, total number of computers from the organization and the number of computers supporting the SIVECO Applications for Human Resources Management and Payroll.

Table 5. Relevant correlation

Correlations

		personal	Pers_MRU	calculatoare	Pers_PC
personal	Pearson Correlation	1	,746**	,718**	,768**
	Sig. (2-tailed)		,003	,006	,002
	N	13	13	13	13
Pers_MRU	Pearson Correlation	,746**	1	,285	,924**
	Sig. (2-tailed)	,003		,346	,000
	N	13	13	13	13
calculatoare	Pearson Correlation	,718**	,285	1	,445
	Sig. (2-tailed)	,006	,346		,128
	N	13	13	13	13
Pers_PC	Pearson Correlation	,768**	,924**	,445	1
	Sig. (2-tailed)	,002	,000	,128	
	N	13	13	13	13

**. Correlation is significant at the 0.01 level (2-tailed).

Table 6. Regression analysis between raport_pers=pers_MRU / pers and raport_PC=pers_PC / PC

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,479a	,230	,160	,0201787

a. Predictors: (Constant), raport_pers

ANOVAb

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	,001	1	,001	3,278	,098a
	Residual	,004	11	,000		
	Total	,006	12			

a. Predictors: (Constant), raport_pers

b. Dependent Variable: raport_PC

Table 7. Regression analysis between raport_pers=pers_MRU / pers and raport_PC=pers_PC / PC for private organizations

Model Summary

Model	R proprietate = 1 (Selected)	R Square	Adjusted R Square	Std. Error of the Estimate
1	,810a	,656	,485	,0217038

a. Predictors: (Constant), raport_pers

ANOVA[b,c]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	,002	1	,002	3,821	,190[a]
	Residual	,001	2	,000		
	Total	,003	3			

a. Predictors: (Constant), raport_pers

b. Dependent Variable: raport_PC

c. Selecting only cases for which proprietate = 1

The model has been confirmed to be valid only for private organizations because the F test value is high 3,821 and the regression coefficient R=0,810 > 0,63 shows a functional dependency between the two variable, between the variable raport_PC, and the independent variable raport_pers. In fact the correlation is 0,810 and the R square is 0,656. So the model explains 65 % from the total variation of the variable personal (R^2= 0,656). The rest of 34 % is influenced by other residual factors not included in the model. (Radu, et al, 2009) So there is a very strong link between the number of employees involved in human resource management field and the number of employees with granted access for SIVECO Applications in human resource management field, and our hypothesis is confirmed.

Conclusions

A first conclusion is that management information systems play or should play a vital part in the success of an organization. Accordingly, they can provide the internal, external or inter-organizational informational infrastructure required by the business owing to: providing operational efficiency, providing an efficient management and a competition advantage.

The second conclusion consist in the fact that the success of an informational system should not be analyzed only owing to its efficiency as a lot of people wrongly consider (costs minimizing, time or use of informational resources, elements quantified according to the envisaged questionnaires) but also owing to the support that they provide with a view of elaborating business strategies, of developing trade processing, of improving organizational structure and culture, and of increasing the organization's business result and value within a dynamic and competitive environment.

Another conclusion based upon an individual and managerial point of view emphasizes the fact that informational systems represent more than a series of immediate results; they are mainly important means of providing the business's functionality, an essential factor that influences operational efficiency, the productivity of employees and of the customer relations; they are a foundation of data that determine the taking of correct decisions, a means of developing new products (services) that represent a competitive advantage and they are one of the most important resources of the organization as well as a means of analyzing the cost of the business.

Managerial decision, managerial capacity, managerial experience, and management as a resource of an organization is directly dependent on the integrated management information systems, the ERP, BI, and KM applications, or globally speaking on the information technology; and all these IT instruments should be considered as management methods.

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