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# **The Role of Information Systems in Human Resource Management**

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## **Abstract**

Over the last years, human resource management (HRM) has experienced significant transformations. The focus has passed from the administrative management tasks to becoming a strategic partner of the overall organization strategy, largely with the strong support of information technologies' evolution in this field of knowledge area. The extended use of information systems has a deep effect in the way HRM is managed nowadays. It boosted a major transformation of human resources (HR) processes and practices within organizations, namely on how they collect, store, use, and share information. Several HRM processes have become more efficient and the impact of this service level improvement allowed a greater involvement of HR in the business strategy. This new role in business strategy adds significant changes to HR function and to its professionals. Along this chapter, we discuss the effects of information systems in HRM, considering the existing literature on the topic, and describe the benefits and possible limitations of using them. We also provide an overview of some applications of technology in functional areas of HRM, within organizations.

**Keywords:** information systems, human resource management, HRIS, HR professionals

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## **1. Introduction**

Fast changing markets, industries, and services require organizational environments capable of constant adaptation with bright new ideas and reduced time-to-market. Under these

competitive reality, HRM has a more critical role than ever because new forms of business require new ways of involving people [1].

HR professionals must analyze social, economic, political-legal, and technological environment opportunities to redesign HRM processes and practices that are key success factors to the organization mission and objectives.

To respond to these challenges, HRM has been forced to adopt new logics and most HR managers must forget habits and ways of thinking and acting outdated. On the other hand, they should help organizations to define their strategies and build programs to develop their human capital [1].

In this context, information systems have increased the efficiency of HRM through more effective recruitment methods, organizational communication, employee involvement, and increased skills of HR managers [2]. From there, human resource management areas must relate human capital strategies to the most appropriate technological solutions. It means creating an eHR organization focused on interconnecting people with business strategy to achieve rapid adaptation to changing needs common to people and business. These same needs begin to make eHR necessary.

However, not all HR professionals work in strategic HRM. Many still find themselves pressured and seeing their time spent with day-to-day concerns. It is critical to get rid of the administrative burden or at least to mitigate it, to optimize your time and your contribution to the organization.

With this chapter, we intend to contribute to the definition of the role of HRIS in human resources management, as well as the role of HR professionals in this process.

## 2. Information systems in human resources management

In recent years, information technology has effects on almost every aspect of our society, as well on organizational processes, including HRM processes and practices [3]. From a position associated with administrative management, it has managed to become a strategic partner of organizations, largely because of the use of technologies.

*“Continuous innovations in technology will fundamentally change the way HR work is accomplished”* [4]. Information systems have a deep effect on HRM. It transformed human resources processes and practices mainly in terms of how organizations collect, store, use, and disseminate information.

The quality of HRM is a key success factor for organizations. The HR professional should analyze and consider the environment, social, economic, political-legal, and technological. To respond to these challenges, HRM has been forced to adopt new logics and most HR managers must forget habits and ways of thinking and acting outdated. On the other hand, they should help organizations to define their strategies and build programs to develop their human capital.

In fact, the principal goals of HR in organizations are to attract, select, motivate, and retain talented employees in their roles, and *“technology has transformed the way HR processes are currently managed, essentially how organizations collect, store, use, and disseminate information about their HR”* [4].

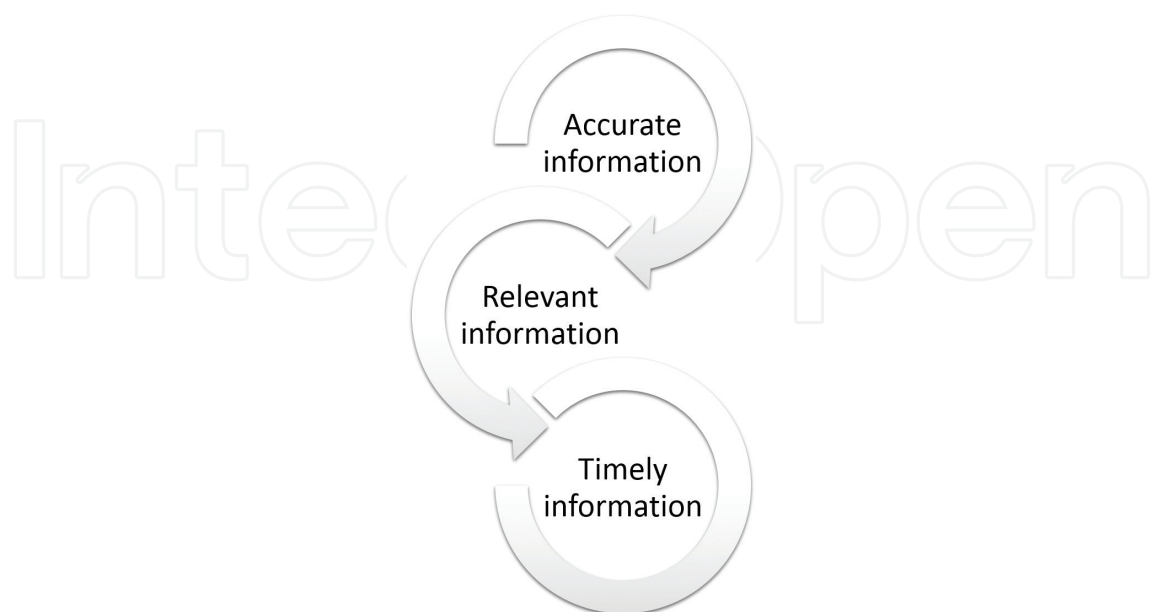
Kovach et al. defines human resources information systems (HRIS) as a systematic procedure for collection, storing, maintaining, retrieving, and validating data needed by organizations about HR [5]. Tannenbaum defines it as a technology-based system used to acquire, store, manipulate, analyze, retrieve, and distribute pertinent information regarding HR in the organization [6].

HRIS shapes an integration between HRM and information technology [7]. HRIS is a management system designed specifically to provide managers with information to make HR decisions. Is a system that lets you keep track of all your employees and information about them. It is usually done in a database, or more often in a series of inter-related databases.

In this context, information systems have increased the efficiency of HRM through more effective recruitment methods, organizational communication, employee involvement, and increased skills of HR managers [2]. From there, human resource management areas must relate human capital strategies to the most appropriate technological solutions. It means creating an eHR organization focused on interconnecting people with business strategy to achieve rapid adaptation to changing needs common to people and business. These same needs begin to make eHR necessary.

## 2.1. Objectives

HRIS shapes an integration between HRM and information technology. Therefore, the basic objectives of HRIS are [7] (**Figure 1**):



**Figure 1.** HRIS objectives.

- To provide accurate information about human resource and their functioning and relevant environmental factors.
- To provide relevant information.
- To provide timely information.

Organizations require information about their human resources and their functioning, but also require information from their external environment. Thereby, HRIS allows us to collect, store, manipulate, analyze, retrieved, and distribute information from internal and external environment.

HRIS in an organization should be developed in such a manner that the data stored in it can be used for several outputs. Because of these multiple uses of data, there is a need to develop a complete system of gathering, processing, and flowing of information [7] (**Figure 2**).

Chakraborty lists several examples of information that is collected from HR departments or from the surrounding environment and that makes part of HRIS, such as [8]:



**Figure 2.** Type of information needed in HRIS.

- Employee information (name, age, qualification, ...);
- Type of employee recruited during the year;
- Training and development offered;
- Results of performance appraisal;
- Promotion, demotion, transfer, separation of employees;
- Compensation packages, both financial and nonfinancial, offered;
- Employee absenteeism and turnover;
- Maintenance, safety and health services;
- Availability of human resources from different sources;
- Training and development facilities available outside the organization;
- Expectations of human resources from the organization;
- Government policies affecting the employment conditions and labor laws;
- Trade union movement and its attitudes toward employer organizations;
- Benchmark of HRM practices.

## 2.2. Components of HRIS

HRIS applications allow users to store and track all types of data that are related to HR [9]. In the research carried out by Dorel et al. is notorious that HRM was focused on collect and store personal data (records) of each employee, handle their salaries, benefits, vacations, etc. However, HR function has developed and became a very important function of management. Keeping this in mind, we can identify three major functional components of HRIS [5] (Figure 3).



**Figure 3.** Functional components of HRIS.

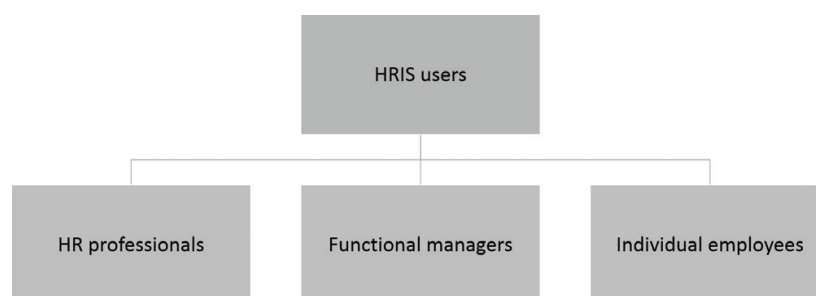
Input function allows us to enter personnel information into the HRIS. The maintenance function allows us to update and add new data into the database. To generate valuable outputs, HRIS needs to make the necessary calculations, and format the data in a way that it could be understood. Therefore, it is important to remember that the most important elements of HRIS is the information, rather the automation of the process or the hardware/software used [7].

In HRIS we can identify three dimensions of HRIS: operational, tactical, and strategic [10]:

- Operational human resource information system – provides data to support routine and repetitive human resource decisions (e.g. workforce, governmental regulations, ...);
- Tactical human resource information system – provides data for support decisions related with allocation of resources (e.g. recruitment, job analysis, training and development decisions, compensations plans, ...);
- Strategic human resource information system – provides data for strategic decisions in human resources plan.

## 2.3. Users

There are several users of a HRIS. So, who uses HRIS and how is it used? Essentially, we can define three groups of people: HR professionals, functional managers, and employees (Figure 4) [11].



**Figure 4.** User of HRIS.

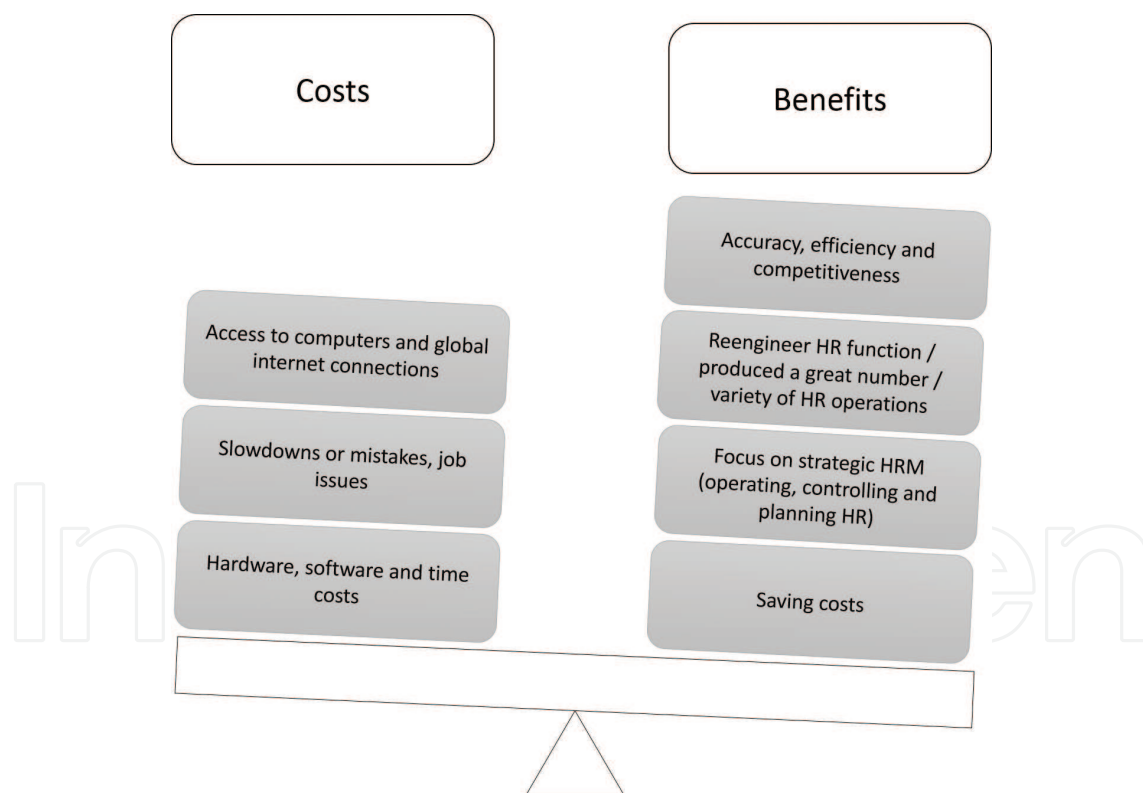
In the HR professionals' case, HRIS helps them to fulfill the job functions, even the most elementary job tasks, like reporting and compliance, payroll and compensation analysis, benefits administration, applicant tracking, and skills inventory.

In the other hand, functional managers expect that HRIS provide data to achieve goals and objectives. They expect that the system provide information for performance appraisal and management, team and project management resume processing, recruitment and retention, training and skills testing, and management development [12].

Additionally, individual employees become end users of several HRIS applications, such as self-service, benefit options, career planning, or training and development. Boateng draws attention to the importance of web-based access and self-service portals that have simplified the use of the systems for the employees [7].

## 2.4. Costs and benefits

Information systems represent a major investment by the organizations. Thus, it is necessary to keep in mind the costs and benefits of implementing a HRIS (**Figure 5**).



**Figure 5.** Costs and benefits of HRIS.

The common benefits of HRIS referred by different authors are:

- Improved accuracy [7, 13, 14];
- Provision of time and quick access to information [7, 10, 13, 14];



- Saving costs [7, 10, 13, 14];
- Operating, controlling and planning HR activities [7];
- Increase competitiveness by improving HR practices [9, 15, 16];
- Increased efficiency [10, 15, 17];
- Produce a great number and variety of HR operations [16];
- Shift the focus of HR to strategic HRM [9, 16];
- Make employees part of the HRIS [9, 15, 16];
- Re engineer HR function [16].

However, there are costs associated with a HRIS implementation:

- Employees need to have access to computers and global internet connections [7];
- Slowdowns or mistakes, errors [7, 18];
- Costly technology costs, time costs [7, 18];
- Job issues (change of tasks, need for training, change of posts, dismissal, ...) [7, 9].

There are many software solutions offers, the choice it will be dependent on the decision of the user. Many types of computer-based training, internet access to the recruitment world, and the use of certain programs to assess employees in the hiring process are only available for those with technology-rich environments. The reality is that HRIS enable effectiveness and efficiency, and ensure competitiveness.

According to Hendrickson study, increased efficiency is a benefit of an HRIS [19]. Both time and cost efficiency can be addressed with the ability to do more transactions with fewer fixed resources. This can specifically be seen in areas such as payroll and benefits. In terms of accuracy, the HRIS helps in transactions. Additionally, the technology can be used to simplify processes [19].

### 3. The role of information systems in HRM

*"Continuous innovations in technology is ganging the way HR work is accomplished"* [4]. These technology developments made it possible to create a real-time information-based and interactive work environment. Personnel information systems have evolved from the automated employee record keeping into more complex reporting and decision systems [7].

In a traditional HRIS, practically we could only work administrative issues, like monitor absences, salary structures, training information, recruitment, media response, accessing to current information, medical information, and global administration.

However, we watched a break with the past and an increase in effectiveness. HRIS allows us to respond more quickly to changes and to needs of decision-making. HRIS allows budget



control, tracking and screening, skills matching, appraisals, feedback, manpower planning, succession planning, skills monitoring, training needs analysis, and global analysis [20].

The main issue is to define what are the real implications and the role of the information systems in HRM. HRIS can be applied in several areas, integrated into the HRIS system [12] (Figure 6).



**Figure 6.** Areas of application of HRIS.

According to the research of Kavanagh et al., HR professionals spend their time essentially in business process improvements, talent management processes, workforce metrics, HR strategy, workforce management and planning, and competency management [21]. We will now discuss some examples of the application of information systems in the functional areas of HRM [20].

### 3.1. Strategic HR management

Strategic HRM is characterized by the adoption of a dynamic vision of the resources it manages. It covers not only the planning and implementation of actions, but also the control of results, which must be related to the strategy of the organization [22]. In HRIS, we can find information at these levels:

- Environmental scanning: monitoring internal and external environments for detecting opportunities and threats that may influence organizational plans;
- Quality and productivity improvements: analysis and development to certify the development of HR quality and productivity.

### 3.2. Workforce planning and employment

HR planning of what the organization will need is of great importance to HR professionals, revealing different skills profiles, working schedules, enabling the organization to have the right people, in the right amount, at right time. It reflects the interests and perspectives of the organization as well as the aspirations of the candidates and collaborators [23]. The information that we can collect in this area from HRIS is, for example:

- Promotions, transfers, hiring, and termination rates: tracks data to analyze and make decisions about workforce planning and employment needs.
- Analysis and definition of work: allowing employees in geographically dispersed locations to work together.
- Recruitment and selection: ability to support processes by creating tools that are more agile and enable online work.

### 3.3. Human resource development

In addition to the need for work organization and decision-making, what will allow organizations to have increased levels of productivity will be the preparation of their staff and their motivation? In this sense, the development of HR will be a factor of competitiveness and even, in some cases, of survival. *“Organizational development is directly associated with the development of Human Resources”* [9, 23]. In these cases, the information that we can gather from HRIS is:

- Career development: analysis of careers, their evolution, development of career plans and the achievement of objectives outlined.
- Education, skills, and training programs: analysis and identification of competences, identification of training needs, access to training contents remotely.
- Evaluate employee performance: definition of performance goals, design of evaluation metrics, performance evaluation, and feedback of results.

### 3.4. Total rewards

Reward systems consist of all material and immaterial counterparts, which employees can receive, depending on the quality of their performance, the contribution to the development of the business and its identification with the values of the organization [9, 23]. HRIS allows us to identify the following information, regarding rewards:

- Salary information: salary processing, holiday management, absences and absences, automatic calculations of wage components.
- Retirement planning: identification of succession plans, pensions, streamlining of untying programs.
- Benefit administration: benefits attribution, attributed benefits analysis, cost-benefit analysis.
- Salary analysis: analysis of salary developments, salary comparisons.

### 3.5. Employee and labor relations

The role of HR professionals in the social relations system is considerable. They appear as a link between the organization, employees and trade unions and workers' committees [22]. HRIS can help us in different aspects of this area:

- Employee discipline records: access and management on disciplinary proceedings, disciplinary proceedings reports.
- Union and labor distribution: management of information on trade unions and workers' committees, work distribution, and analysis of work and labor relations indicators,
- Attitude, climate, culture, and commitment: possibility to automatically inquire the entire organization and perform the attitude, climate, culture and commitment analysis.

### 3.6. Risk management

Safety and working conditions improvement are areas with a profitability difficult to evaluate and considered as real investments for the company, being considered a specific domain of HRM. Thus, great consistency must be sought between the actions developed and the other areas of HRM [22]. HRIS can assist the risk management by analyzing the following points:

- Accident and illness: analysis of trend on accidents and illness; managing reports.
- Safety, insurance and workers' claims: agility and support to processes, records maintenance, monitoring of high-risk conditions and accidents.

## 4. The role of HR professionals in HRIS

Human resource management provides the guidance for an organization's workforce. *"The use of information technology (IT) in HRM is vital in order to meet organizational demands with well qualified employees and help support the organization"* [2].

Therefore, we can say that information systems have been a valuable tool for HR managers to facilitating HR processes and practices, as we have already seen. However, HR professionals have a special role in this path.

The Society for Human Resource Management [20] refers that HR professional should recognize that integrating an HRIS is a big project and a major change for the organization. Some employees (staff and even management) will resist changing and it is imperative that they are prepared to deal with the resistance.

HR professionals must support the change and facilitate the communication [20]. They need to:

- Recognize individuals may react negatively to change.
- Anticipate resistance and find ways to deal with it.
- Show commitment and a positive attitude toward the change.
- Involve people in the process.
- Ensure top management is visible and supportive.
- Remind that change is a process and successful change takes time.
- Reinforce change with incentives.
- Communicate with employees and management.

We simply cannot forget that it will take some time before success is apparent. HR professional needs to remember that HRM was limited to employee record keeping and was provided as a service to the organization [17]. The human resource function has undergone dramatic change. With global competitive success relying upon the application of knowledge, information and technology, HR professionals are now committed to engage more significant and strategic roles, improving efficiency. They become strategic business partners relying on the usage of HRIS in their job [17].

The future trends in HRIS can easily lead to confusion for organizations and HR professionals and it can cause great changes in the operation of HRM and an HRIS in organizations Kavanagh et al. Note the need to be attentive to the particularities of each context. However, they draw attention to the fact that organizations that are most successful are those who are able to leverage the technology and link it to their HR strategy [21]. In this case, HR professionals need to understand that:

- the technology of the future will be both collaborative and connected;
- there will increase the use of HR scorecards with workforce analytics;
- the automation process and the use of online analytical processing will be more used;
- will be possible to access to accurate real-time HR information due to advancements in communication tools;
- information security should be a top priority; and
- the worker of the future will be able to work anywhere, any time, and on any device [21, 24].

## 5. Conclusions

Increasingly, technology has a profound impact on HRM. As technology evolves, it will also force HRM to take on new contours in both its processes and its practices. HRIS emerged in response to the need for this change to be carried out in the most fruitful way possible, considering the improved accuracy, the quick access to information, the increased competitiveness and efficiency and the re engineer of the HR function.

There are still many questions about the true objectives of HRIS and the responses they allow to the real needs of HRM. It is true that there are still some limitations to its use and its results. However, its role in HRM allows us to respond more quickly to HRM changes and needs, for example, enabling to control budget, tracking and screening, skills matching, appraisals, feedback, manpower planning, succession planning, skills monitoring, training needs analysis and global analysis.

By focusing on using technology to continuously improve the quality of the work. Technology can improve the information available to HR, facilitating HR processes, and making them faster and more effective.

One of the biggest allies in HRM, HRIS is adopted to make organizations more accurate and effective. However, we face several challenges are faced. HR professionals need to prepare themselves for the future by gearing up for new roles or find themselves outsourced. HR professionals needs to integrate an HRIS as a big project and as a major change for the organization, assuming its role as business partner, as a data analyst, as an internal consultant, focused on the strategic issues of HRM, necessary for the development of people, business and organizations.

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