

## Evaluation of Human Resources Information System Success in public sector

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**ABSTRACT:** This study is an empirical test of an adaptation of the DeLone and McLean Information System (SI) success model in the context of human resource management in a Moroccan public administration. The model has 6 dimensions: quality of information, quality of system, quality of service, use, user satisfaction and perceived net benefit. The auxiliary condition demonstrating strategies were connected to the information collected from a survey, given over to 120 officials of a large Moroccan ministry. The hypothetical relationships between the six success variables are largely confirmed by the data. The results obtained have several important implications on the topic of human resources research and practices too. This article concludes by talking about the impediments of the research, which ought to be tended to in future investigate.

**KEYWORDS:** Evaluation, Information System, Success, Human resources, Public sector.

### 1 INTRODUCTION

In recent years, the Moroccan government has focused on public sector reform, with an aim to make its organizations more efficient and more citizen-oriented.

In this regard, it is necessary to shed light on the evolution of the public sector in terms of expenditure and complexity of the information system, and its implementation that has become undeniably coveted by all the providers of public sector services.

Subsequently, there has been an uncertainty and unpredictability associated with costs and benefits' assessments in the public sector.

This situation highlights the need for an assessment of information systems in public sector organizations. Earlier studies assessing the success of public sector information systems have been undoubtedly limited, despite the fact that these information systems have had a significant impact on the way in which public services have been provided in recent years.

Most of the research published regarding the public sector information system consists of case studies or theoretical frameworks focused on the analysis of a particular implementation of an Electronic Government [1]. This electronic government must overcome the big challenge: once implemented, the use of the information system does not last perpetually and investments are often wasted [2]. These findings are supported by international findings showing a percentage that covers between 70% to 80% of the implementations of electronic administration that do not allow us to obtain filtered results [3]. This makes measuring the success of information systems essential in order to be used as a determiner for overall government results.

Current approaches used by governments to measure the success of online administrations initiatives tend to replicate those of business enterprises by focusing on functional results and economic measures such as investment returns and cost reduction [4]. Nevertheless, public sector's information systems wander from approaches utilized within the private sector in a way that they "regularly include strategic goals that go past efficiency, effectiveness and economy, and incorporate political and social objectives such as reliability [5]. However, the use of information systems in the public sector will make it easier for citizens to access non-governmental service providers. This requires an adaptive and an aggregate approach to determine the success of online administrations initiatives in achieving the desired results in public policy.

In this regard, and within this study, an online administration is defined as “a coherent collection of infrastructures, information, services and capacities within which communities can interact, engage, develop and make use of their own opportunities, markets and progress” [6].

This article aims to broaden the understanding of the success of the information system’s dimensions as a factor influencing the performance of Public Administration. In this context, this study will be conducted in a large Moroccan Ministry to measure the success of a human resources information system (HRIS) using the success model of [7] as Theoretical framework.

## **2 THEORETICAL FRAMEWORK**

The Time Management system of access and access Control system is a special type of HR Information System. Therefore, in this section, we first review the theoretical underpinnings and the conceptualization of the success of HRIS based on previous studies of the success of information systems; to underline the importance of the information system that is the subject of our research.

### **2.1 THEORETICAL FOUNDATIONS**

In their endeavor to structure the horde of factors related with the differences of information system successes, [8] made an investigation in this respect, but they did not test it broadly sufficient (more than 100 observational articles concerning measures of IS success between 1981 and 1988). Delone and Mclean concluded that the calculation of input factors such as client participation or IT ventures in IS was barely important on the off chance that the subordinate or yield variable, the success of the IS, or the viability of the IS might not be assessed with the same exactness.

They contended that there were six fundamental variables within the success of the Information system, specifically: the characteristics of information system (System Quality), the quality of the result of the Information Systems (Information Quality), the quality of Information Technology service rendered to users (Service Quality) the utilization of the IS result (Use), the IS client reaction to the IS (client Satisfaction), its impact on client behavior (individual impact) and its impact on organizational execution (impact on the organization).

At the same time, [7] created their framework by considering that information is the output of an information system. They also similarly underline the nature of the data that could circulate within the organization. By returning to the works of [9] and [10], they famous that the effect of information on its recipient (client) can be measured at the specialized, semantic or adequacy level. The specialized level concerns the quality of how a framework transmits communication images, the semantic level concerns the clarification and elucidation of meaning by the beneficiary compared to the aiming meaning of the sender, and the proficiency level concerns the quality of how the meaning transmitted to the collector influences its behavior. Mason extended the model of Shannon and Weaver by labeling capability as an affect and talked to the levels inside the outline of an course of action of events happening at the accepting conclusion of an information system [10]. shows that the communication process has five stages: the generation of data, the item itself, the beneficiary of the data, its impact on the beneficiary, and its impact on the efficiency of the system. Mason clarifies that the level of reasonability joins the impact of the message on the behavior of the recipient (client). Hence, the assessment and application of data can alter the behavior of the user [11].

In terms of the Delone and Mclean’s model, the system quality is unequivocally connected to the specialized level, as the information quality is connected to the semantic level, use, user satisfaction and individual impact are linked to the level of impact. The Delone and McLean's model takes the progression of levels of Shannon and Weaver as the premise for modeling system quality and information quality as drivers for use and user satisfaction. At that point, Delone and Mclean connected Mason's contentions to model the use and user satisfaction (response to the use of its results) as scenery of individual impact (behavioral information impact) and organizational impact. A key feature of the Delone and Mclean model is that user satisfaction is seen as an information system success variable, and that it is integrated into their information system success model [12]. have made numerous vital commitments to our understanding of the success of the information system. To begin with, they grant a model for categorizing the gigantic number of IS success measures utilized and detailed in earlier writing. According to [13], the investigation of the information system success has been incredibly formed by the model of Delone and Mclean [14]. also affirm that "the article of Delone and Mclean (demonstrate) is an critical commitment to the writing concerned with measuring the success of the information system since it is the primary think about that attempted to force a certain arrange on the choices of the analysts as respects for success. Second, they propose a model of transient and causal interdependency between categories and between developments. Third, their approach starts to distinguish different levels of organization within the appraisal prepare [13], [15].

Petter, DeLone, and McLean 2008 [16] appear a review of the later writing concerning measuring the success of data systems. In this way, they accepted the measures for the application and examination of the associations that make up Delone and Mclean's success show in an individual and organizational context. In another work, Urbach and Müller [17] investigate the current state of inquire about

concerning the success of information systems by analyzing and classifying later important articles based on their hypothetical establishments, their inquire about approach and their plan. The comes about appear that standard analysts analyze the effect of a particular sort of IS through client assessments gotten from overviews and basic condition modeling. The success model of DeLone and McLean is the most hypothetical premise for the studies surveyed. Some success models for evaluating specific sorts of IS - such as an agent section [17] or e-government [18] have been made from this theory.

## 2.2 THE INFORMATION SYSTEM UNDER STUDY

Our study concerns the Evaluation of a time and access management system, which is a Human Resources Information System (HRIS), applied within a large-scale Moroccan Ministry making it possible to ensure the following features:

- The management of the working time and absence of the ministry's workers through a real-time access system
- The optimization of working time with a flexible web solution that is easy to administer and operate;
- The management of all access events and transmit them in real time;

It is an Integrated System for the management of several options at once, namely, inter alia, the time, the access control of visitors, the management of alarms and online requests (Workflow); and this is via an Open Full Web solution allowing employees to access the system perfectly and without limits according to their profile.

On the other hand, it can be argued that this is a solution that can be easily used by all employees at any level, which could potentially lighten the work of HR Department.

## 3 RESEARCH MODEL

Within the setting of human resources administration, human resources work force use the systems to carry out human resources capacities, making human resources administration a communication and information system wonder that loans itself to the upgraded success of the system [7].

DeLone and McLean 2003 [7] affirm that the web application process fits well with their upgraded information system success show and the six measurements of success, and they empower other clients to proceed testing and putting to trial their model. The IS success show upgraded by DeLone and McLean 2003 [7] can be adjusted to the challenges of measuring a modern setting for online human resources administration. In any case, this study offers a total model of success for electronic human asset administration (see Figure 1), which recommends that the quality of information, the quality of the system, the service quality, use, client satisfaction and perceived net benefit are factors for the success of a human resources information system.

We have studied the definitions of the dimensions of the success model of the IS success model of DeLone and Mclean, and compared them with the properties specific to human resources management in HRIS and consolidated the diverse focuses of view in a reexamined classification construction. Hence, we have included the taking after measurements of victory in our hypothetical model:

**The Information Quality**, which emphasizes the quality of the output from an HRIS system (i.e. the quality of the information provided by HRIS) and its convenience to the client.

The information quality has proven to be an important success factor when examining the in general IS success, especially within the setting of web frameworks [19].

**The Quality of System** which comprises of electronic HRM measurement as a system in itself. In particular, it considers execution characteristics, convenience and ease of utilize [19]. However, the quality of the system can be considered as well as the degree of easy use of the system to accomplish tasks [20],

**The service quality**, which incorporates measures of the in general bolster connected to HRIS and given by the Service supplier. In this setting, the measurement of success covers viewpoints such as the reactivity, unwavering quality, compassion and competence of the capable benefit work force [21].

**User satisfaction**, is the emotional attitude towards an HRIS of an worker who interatomic specifically with him [22]. User satisfaction is one of the most important measures when looking at the overall success of information systems.

**Use**, which measures the actual perceived use of an HRIS by departmental human resources personnel.

**The perceived net benefit** of electronic HRM corresponds to the achievement of the company's objectives in terms of the use of electronic HRM and the achievement of the objectives linked to the end user. These benefits cover the actual benefits inferred from the utilize of HRIS for clients and incorporate a large number of benefits covering the impacts of HRIS, that workers infer from the utilize of HRIS. These benefits cover angles such as errand execution, work proficiency, quality improvement and cost reduction.

DeLone and McLean 2003 [7] propose that particular actors or partners may have particular conclusions around what is valuable to them or not. Analysts must characterize the accomplices and the setting in which the success of the information system or the net benefits must be measured [7]. Hence, this thinks about primarily centers on the employee’s viewpoint and uses the six updated successes of the information system: quality of information, system quality, service quality, use of the system, user satisfaction and perceived net profit.

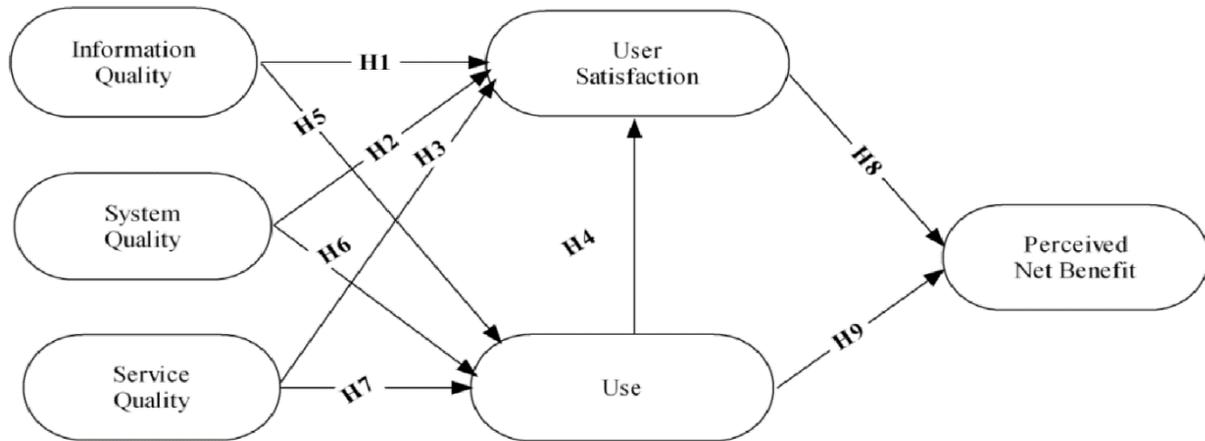


Fig. 1. Research Model

Source: [7]

The theoretical relationship between the HRIS success factors is based on the hypothetical and concrete work detailed by DeLone and McLean 2003 [7]. As they propose, the success model still has to be created and approved some time recently it can serve as the premise for the choice of fitting IS measures. Consequently, the study made the following nine hypotheses:

- H1. The quality of the information has a positive impact on user satisfaction.
- H2. The quality of the system has a positive impact on user satisfaction.
- H3. The quality of the service has a positive impact on user satisfaction.
- H4. Use have a positive impact on user satisfaction.
- H5. The quality of the information has a positive impact on use.
- H6. The quality of the system has a positive impact on use.
- H7. The service quality impact positively the use.
- H8. User satisfaction have a positive impact on the perceived net profit.
- H9. Use have a positive impact on the perceived net profit.

**4 RESEARCH METHODOLOGY**

In arrange to guarantee the legitimacy of the substance of the scales, the estimation scales for the collection of quantitative information were basically gotten from already confirmed sources. The concept of quality of information was measured employing a 7-point scale shape used by [23], with alterations adjusted to the particular setting of human resources management. Bailey and Pearson’s way is widely accepted, its reliability and validity have been tested by several researchers and it has become a standard tool in the field of information systems. A four-point scale was adopted and refined from the instruments used by [24] to measure the quality construct of the system.

The benefit quality structure was measured utilizing a 5-item scale, and after that refined utilizing the way used by Chang, Wang, and Yang 2009 [25]. Use was measured utilizing a 4-item degree balanced from past considers [11], [26].

In this study, we assess satisfaction as an evaluative judgment relating to a specific inclusion of HRIS and the enthusiastic attitude toward human resources administration of the worker who interacts specifically with human resources administration [22]. This construction was measured with the Seddon and Yip [27] 4-item scale. HRIS perceives the characterized benefits as an accomplishment of the organization's goals within the utilize of HRIS and the accomplishment of end-user targets. These cover the real benefits determined from utilizing HRIS for clients and incorporate a bunch of benefits covering the impacts of HRIS. This was made operational by a six-point scale [24], [28]. All items were measured using a 5-point Likert scale with anchors ranging from strongly agree (5) to strongly disagree (1).

Once the estimation factors were created, the clear legitimacy of these factors was tried. Based on the comments gotten by the examiners from the researchers, the questions that were confounding or considered possibly troublesome to get it have been expelled or supplanted by unused reasonable components. Table 1 presents the investigate concepts and related overview things utilized to degree each of these concepts.

*Table 1. The measuring variables for the questionnaire*

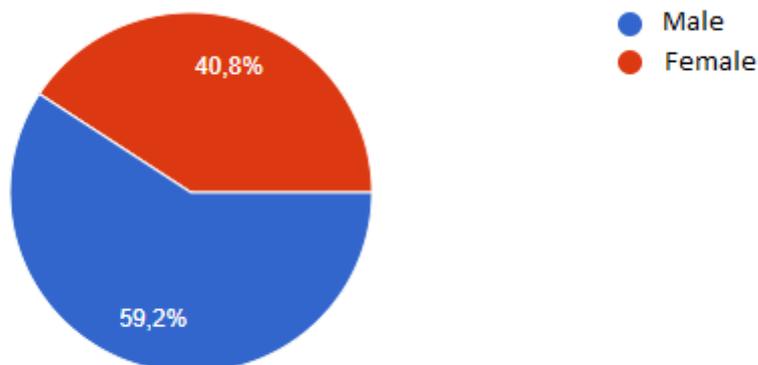
The Variables	Questions	Source
Quality of Information	QI1: The Time and Access Management system provides information corresponding exactly to your needs QI2: The Time and Access Management system provides at the right time the needed information. QI3: The Time and Access Management system provides enough information QI4: The Time and Access Management System provides easy to understand information QI5: The Time and Access Management system provides updated information	[23]
System quality	QS1: The Time and Access Management system is easy to use. QS2: The Time and Access Management system is ergonomic. QS3: The Time and Access Management system provides quick access to information. QS4: The Time and Access Management system gives intuitively functionality between clients and the system.	[24]
Service quality	QSV1: When users have a problem, the Time and Access Management system shows a sincere interest in solving it. QSV2: The Time and Access Management system insists on recordings without error. QSV3: The Time and Access Management system inform clients when the administrations will be performed. QSV4: Time and Access Management system make You feel in security. QSV5: The Time and Access Management system gives users special attention.	[25]
User Satisfaction	US1: Most users adopt a positive attitude or evaluation towards the function of the Time and Access Management System. US2: You think the perceived usefulness of the Time and Access Management system is high. US3: The Time and Access Management system answer to your expectations. US4: You feel satisfied with the Time and Access Management system.	[27].
Use	U1: The frequency of use with the Time Management and access system is high. U2: You depend on the Time Management and access system. U3: You were able to total a assignment using the Time and Get to Administration framework indeed in spite of the fact that there was no one around to let me know what to do as I went along. U4: You are able to use the Time and Access Management system.	[11], [26]
Net Benefit	NB1: The Time and Access Management system make you progress your performance. NB2: The Time and Access Management system helps the organization reduce costs. NB3: The Time and Access Management system make the organization reach its objectives. NB4: The use of the Time and Access Management system improves assessment and training needs. NB5: Using the Time Management and work access system increases my productivity. NB6: Overall, the use of the Time and Access Management system improves performance management.	[24], [28].

## 5 DATA COLLECTION

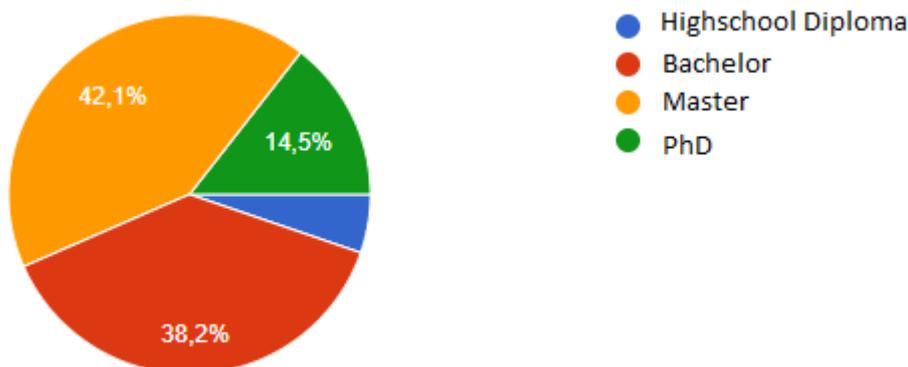
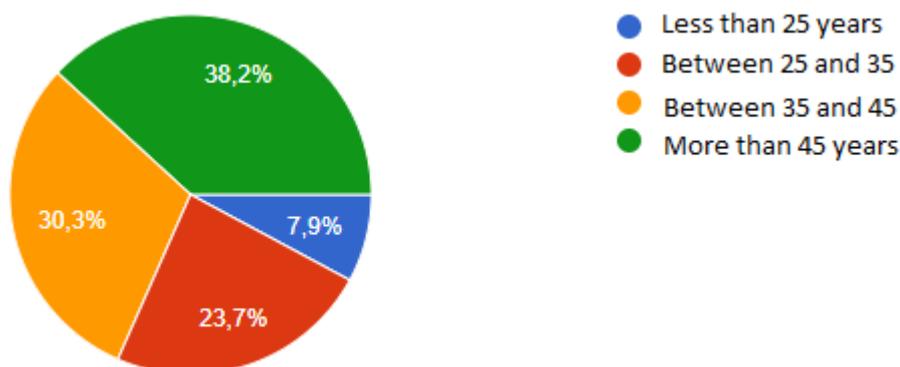
A sample of human resources (HR) and CIO managers and officials from a large-scale Moroccan Ministry has been used for collecting the data for this study. The research testing strategy is "focused on testing" which permits analysts to utilize their possess judgment to choose the appropriate population for the sample.

76 usable questionnaires were returned of the 120 distributed to public servants working in the department, representing an adequate response rate of 63.3%.

According to our sample, men made up a slightly higher percentage of the whole sample (about 60%) than women (about 40%).

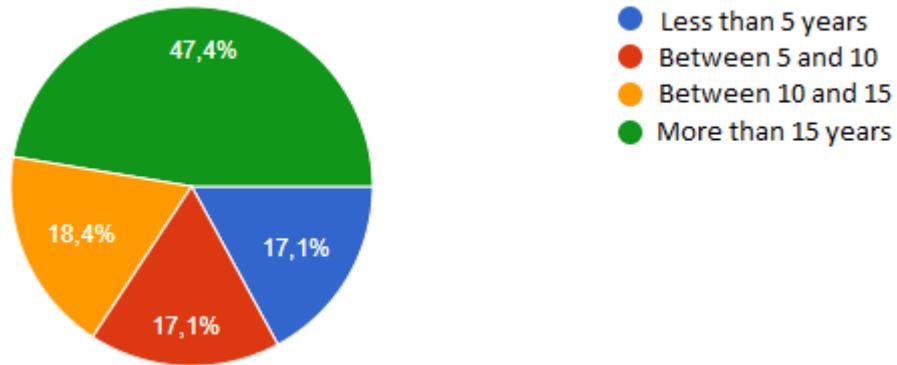


23.5% of the participants were aged 25 to 35 years, 30.3% were aged between 25 and 45 years old and 38.2% are older than the age of 45.



The complete sample was made up of well-educated people, about 42% of whom had a master's degree in engineering and 14.5% of whom were doctors.

Most of the participants were computer users. About 47% of the participants had more than 15 years of professional experience in using computers.



## 6 RESEARCH RESULTS

In order to test the hypotheses, two measures were used to evaluate the structural model: the statistical significance (t tests) of the estimated path coefficients and the ability of the model to explain the variance of the dependent variables R square ( $R^2$ ). The  $R^2$  results represent the amount of variance in the construct in question which is explained by the model [29]. Its purpose is to measure the explained variance of the dependent variable relative to its total variance.

The data analysis was done using the XLSTAT software through the implementation of latent and manifest variables, the results of the analysis are as follows:

**Table 2. Coefficient Standard et  $R^2$  ( $\beta$ )**

Hypotheses	PATH	$\beta$	$R^2$	decision
H1	Information quality $\Rightarrow$ Satisfaction	0.50	0.59	Confirmed
H2	Quality of the System $\Rightarrow$ Satisfaction	0.31		Confirmed
H3	Service quality $\Rightarrow$ Satisfaction	0.62		Confirmed
H4	Use $\Rightarrow$ Satisfaction	0.28		Confirmed
H5	Information quality $\Rightarrow$ Use	0.48	0.67	Confirmed
H6	System quality $\Rightarrow$ Use	0.33		Confirmed
H7	Service quality $\Rightarrow$ Use	0.52		Confirmed
H8	Satisfaction $\Rightarrow$ Net profit	0.56	0.56	Confirmed
H9	Use $\Rightarrow$ Net profit	0.14		Confirmed

Model Evaluation:

latent Variable	Type	Medium (Clear variables)	$R^2$	$R^2$ adjusted	Average Communities (AVE)	Average Redundancies	Rho de D.G.
IQ	Exogenous	0,000			0,648		0,901
SQ	Exogenous	0,000			0,667		0,889
SerQ	Exogenous	0,000			0,516		0,837
USE	Exogenous	0,000	0,591	0,580	0,568	0,336	0,840
USat	Exogenous	0,000	0,674	0,661	0,801	0,540	0,941
Netben	Exogenous	0,000	0,567	0,561	0,743	0,421	0,945
Average			0,611		0,658	0,432	

A significant impact has been reached on user satisfaction by the information quality ( $\beta = 0.50$ ,  $P < 0.001$ ), the quality of the system ( $\beta = 0.31$ ,  $P < 0.001$ ), the service quality ( $\beta = 0.62$ ,  $P < 0.001$ ) and use ( $\beta = 0.28$ ,  $P < 0.001$ ), therefore H1, H2, H3 and H4 were confirmed. A

significant impact has been also reached on Use by the information quality ( $\beta = 0.48, P < 0.001$ ), the quality of the system ( $\beta = 0.33, P < 0.001$ ) and the service quality ( $\beta = 0.52, P < 0.001$ ), therefore H5, H6 and H7 were confirmed., A significant impact has been reached on the perceived net profit by user satisfaction and use, and therefore H8 and H9 were confirmed ( $\beta = 0.56, P < 0.001$  and  $\beta = 0.14, P < 0.001$ , respectively).

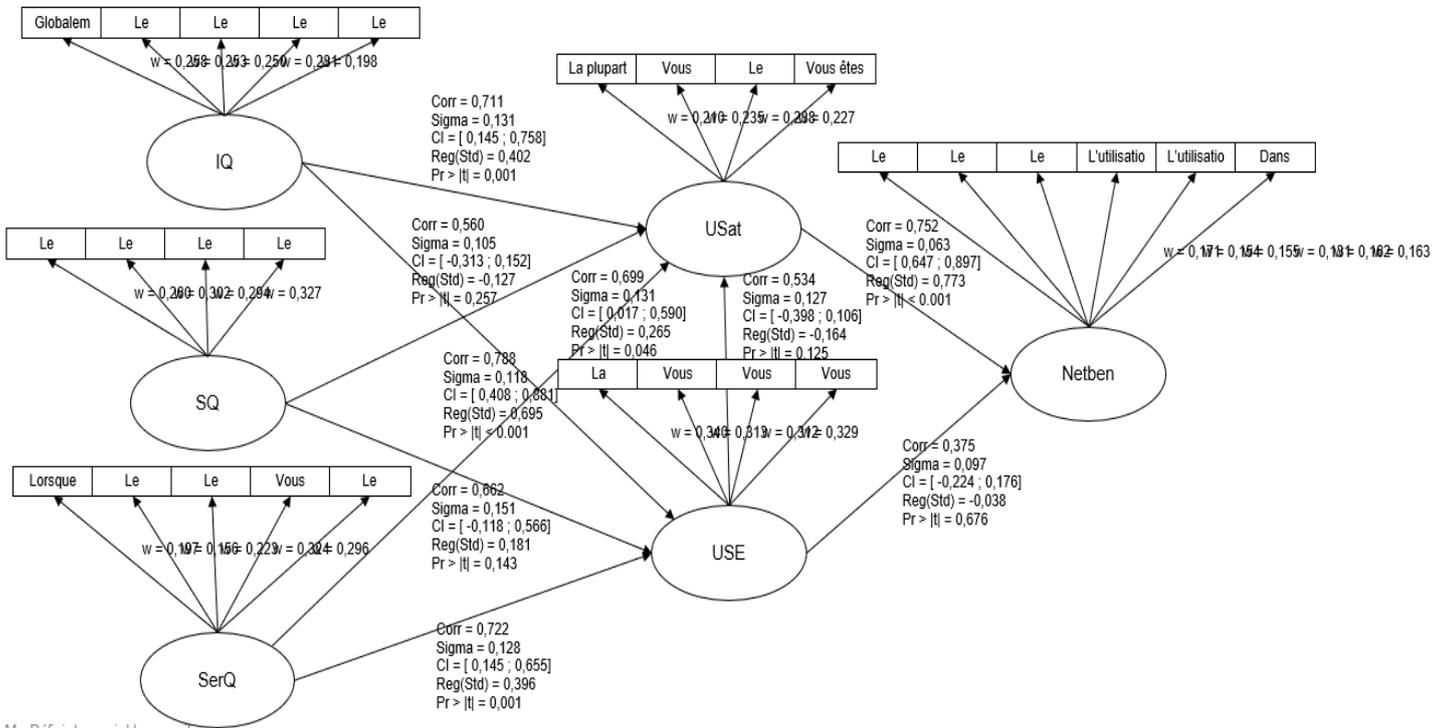


Fig. 2. The Model containing the search results

Among the three concepts related to quality, the quality of the information and that of the service had the most significant integral impact on the perceived net profit. The effects total and direct of the quality of information, the quality of the system, the quality of the service, the use and the satisfaction of the user on the perceived net profit show the standardized coefficient path as well as the variance explained.

## 7 DISCUSSION, LIMITATIONS AND FUTURE RESEARCH

In order to measure the success of the Time and Access Management system deployed in a Ministry in Morocco, a HRIS success measurement model was developed based on the updated IS success model by [7], which reports on the multidimensional nature of the success of an HRIS. The results show that the quality of information, the quality of the system, the service quality, use, user satisfaction and perceived net profit are substantial measures of the success of HRIS. The theoretical connections between the 6 factors were largely corroborated.

This study has a few organizing suggestions for the research and administration of an HRIS. Agreeing to the proposed model, it shows that the more precise measure of the success of the Time and Access Management system than the other five measures of success is the perceived net profit. It should develop if the perceived quality, use of the system and user satisfaction is managed appropriately. Thus, management attention could focus more effectively on the development of users' psychological and behavioral processes.

To fully reinforce the net profits perceived by users, public administrations must develop an HRIS with a better quality of information, systems and services, which will influence the behavior of use of the systems, on the users and on the assessment of their satisfaction, as well as the corresponding perceived net profits. In this model, it was found that the use of the system had a direct and total effect on the perceived net profit, which indicates the importance of its use to promote the perceived net profit of Rh staff and the decision makers. It is not enough to say that increased use will generate more profits regardless of the nature of that use DeLone and McLean [7], since the use of the system is a necessary condition for achieving the performance of the Rh Function and therefore the overall performance of the administration.

The results clearly show that the overall impacts of the information quality on use, user satisfaction and perceived net benefit are significantly more prominent than those of system quality and service quality. In other words, within the setting of an HRIS, convictions around the quality of information have a more overwhelming impact on user satisfaction, use and perceived net profit than convictions about quality of service and quality of system. Hence, respondents were more concerned with the quality of information. This implies that public administrations ought to pay an additional consideration to advancing the quality of information given by the human resource management system.

With the approach and improvement of Human Resources Management research (HRM), measuring several factors of HRIS success proceeds to be vital. This model gives a wealthy representation of the elements encompassing quality measure, the assessment of satisfaction, use and the net benefits perceived by the user. The results appear that public organization work force see the focal points of an HRIS since they have utilized it and are fulfilled with its data, the quality of its system and the quality of its services. Although system use and user satisfaction are usually recognized as valuable backhanded success measures of information success [22], [23], [30].

Our study suggests that the net benefit perceived by the user can be taken into account as a variable closer to success than the use of the system and user satisfaction. We will also try to confirm that use, user satisfaction and perceived net profit are complementary but distinct constructions, and that use depends in part on user satisfaction for its impact on the perceived net benefit of a HRIS.

From a reasonable opinion, this model offers public organizations a way to assess and expect the success of their HRIS, since HRIS is like all other IS, is multidimensional and interdependent.

professionals presently know more approximately the levers that offer assistance them progress their management of human resources through information technology and can arrange their IT projects consequently.

This study contribution to the theory comprises of an expansion and extra experimental tests of the success model of DeLone and McLean in a context different from those advocated by different researchers for example DeLone and McLean 2003; livari 2005 [7], [31]. Therefore, this research is among the studies that have tried to concretely validate a complete success model for an HRIS. In this way, our think about propels hypothetical improvement within the area of such systems, serving as a preface for future investigate. In expansion, using a set up data systems hypothesis as the hypothetical premise for a comparative think about, our consider endeavors to apply thorough inquire about to a commonsense and profoundly significant issue such as the assessment of an IS.

## 8 CONCLUSION

In this research we have proposed and validated a complete model of information systems success in a public organization, which takes into account six measures of success of DeLone & McLean [7]. The results of this study have provided several important implications for HRIS research and practice in a public organization.

Even though the difficult procedure allowed us to confirm a model of Public human resources information system success, this empirical study has several limits that could be addressed in the future research, this research is limited in that we used teleological sampling from a single department for data collection. A random sample of a group of public administrations would have improved the generalization of the results. With regard to the invitation of officials to participate in the survey, we have tried to select as representative a sample as possible.

Additional research efforts are required to assess the legitimacy of the examined model. Longitudinal prove might upgrade our understanding of the causality and interrelationships between factors of public information systems success.

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