

DETERMINATION OF THE SUCCESS OF A HOSPITAL'S INFORMATION SYSTEM IMPLEMENTATION

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Abstract: The successful implementation of a Hospital's Information System (HIS) is determined examining if the installed system satisfies the initially stated, in the planning phase, set of goals. It turns out that the evaluation of an installed HIS depends on the time of the judgement and the objective intentions of those that perform the examination of the system. Hence, the term success is rather dynamic and varies with time. A HIS is not a closed system, isolated in space, and its application causes and induces side effects which have to be considered in the determination of the success of HIS implementation.
Keywords: Hospital Information System, Health Informatics

Introduction

The Hospital Information Systems (HIS) implementation is, in general, an extremely difficult task [1, 2]. There exist many different HIS developments depending on the applied technology, the employed approach etc. It is evident that there are many stories of failure to mention and an analogous number of successful HIS applications with different degree of efficiency and variable cost [4]. But, when a HIS implementation can be considered as a success?

There are four sets of parameters involved in all phases of a HIS development. First, the set of all prospective characteristics determined at the planning phase by the participating parties. Such parameters are abstract and refer, usually, to the higher administration levels in a hospital's organisation. Then, second, there is the set of all targets that have to be efficiently satisfied by the implementation of the planned HIS. The parameters of this category enumerate the problems that have to be faced and effectively solved by the developed system. Next, third, there is the set of all obtainable goals implemented by the installed system. The elements of this set include the functional characteristics of the delivered system. The last, fourth, set of parameters enlists the benefits and the negative impacts from the system's installation. The content of this set may not be possible to be defined at the planning phase. The complexity of such a project hides properly the undesirable side effects that may be caused by the HIS installation, they become apparent at the end of the project.

The meaning of success is changing along with time in a HIS project as to when the evaluation of the meaning of the term success is performed and by whom. The

intentions and motives of the examiners plus the chronic occurrence of each of the formed situations affect such judgements. Success is treated as a variable in the domain of temporal logic.

Materials and Methods

A HIS was installed at the General State Hospital of Athens "G. Gennimatas", in the time period of 1998 to 2000. During the development of the installed system a number of factors were made certain with respect to the success of the project. Specifically, it was identified the importance of choosing the most appropriate clinics to start with, the need for outsourcing certain services, training and users-acceptance issues, the promotion of the project within the Hospital, the need for continuous system's evaluation, the need to include resources in the annual budget for IT and finally, some s/w and h/w matters. Lastly, it was verified that certain critical issues in the implementation of HIS are social and organizational and not solely technical [5, 6].

In the early planning stages of the project the desired goals were defined. Each participating party in the steering committee of the project had its own prospective. For example, the Ministry of Health was seeking through the project to obtain a financially controllable public hospital while the Hospital's Administration pursued to improve and evolve the applied management practices. Also, the Ministry's Technical Consultant was making efforts to end up the project without any violations to the scheduled time duration and to the initially allocated budget of the project and the vendor wished to provide the agreed services stated on a signed contract. Hence, all participating parties had their own prospects and different meaning for the success of the project.

During all implementation phases of the project, the steering committee was following the progress of the works. At each stage and project's milestone, the committee was receiving the reported problems. Discussions were taking place to evaluate the so far developed work and to examine the next phases considering the faced difficulties and thus certain compromises and short plans were made accordingly in order to obtain the initially set goals.

The finally delivered HIS was criticized by all evolved parties including the employees. The members of the medical and nursing staff stated opinions about the success of the project expressing their expectations about the outcome of the project and the possible bene-

fits and the impacts of the project's implementation carrying out the usual - customary or everyday duties. The positive or the negative attitudes towards the developed system depended on the advantages or the disadvantages caused by the introduced system in the performance of the personnel's duties.

Results

The success or the failure of the implementation of a HIS depends on the perception and the impacts caused on the interests of the involved parties. Therefore, success presents different polymorphic illusions to each participating stakeholder since each participant has different goals to obtain through the implementation.

The definition for the project's success was varying over time depending on the needs the HIS implementation was about to satisfy and the involved participating parties' representing authority. In other words, a long lasting development has to be able to continuously redefine the ways of attacking the problems it is called to solve. Hence, the meaning of success is changing over time and according to the given interpretations of facts.

The parties in complex organisations as such of a Hospital do not have identical objectives to attain through the uses of a HIS. The goals for each party are defined in the planning phase and they may be enumerated effectively in a list requiring all of them to be equally satisfied. Unavoidably, there are certain priorities in the goals' satisfaction, some of them are considered as very important while others have lower precedence and compromises may be necessary, in cases of conflicting interests.

Therefore the terms that determine the success have to be clearly defined at the early stages of each project and communicated with each stakeholder. Then, during the implementations these terms have to be re-evaluated again and again taking into account the new facts and problems that may be showed up during the implementation of the project.

Discussion

The HIS implementation is a rather composite task since besides the sophisticated applied technology, the difficulty augments with the complexity of the Hospital's organisation and the carried out procedures. Developing a HIS, from design to implementation, the developed system is considered, most of the times, as a closed system. All influences that may be caused from the environment to the installed system are not, usually, considered. Likewise, usually, all effects that may be caused by the developed system to its surroundings are omitted. Such design simplifications or considerations may cause a number of surprises, some of them positive while others being negative and of different natures (legislative, ethical, etc). The implementation's success depends on the satisfaction of the initially set goals and the elimination of any negative side effects.

Considering the initially stated goals which have to be obtained as the set of prospects: $Prospect = \{prospect-1, prospect-2, prospect-3, \dots\}$

and the set of goals: $Goal = \{goal-1, goal-2, goal-3, \dots\}$. Then, the planning phase must satisfy the relationship: $Plan(prospect) = targets (to be implemented)$. The set of targets that have to be obtained by the planned system are given by the set: $Target = \{target-1, target-2, target-3, \dots\}$. Hence, we obtain the relationship: $Implementation(targets) = Success(goal) + side-effects$. In other words, the composite function describes the relationship of planning, implementation and success: $(Implementation \circ Plan)(prospect) = Success(goal) + side-effects$.

Conclusions

There is only one recipe towards a successful implementation of a HIS: initially set the goals, which depend on a set of parameters and define the parameters taking under consideration the specific peculiarities of the each case. Next, apply continuous examination, evaluation and redefinition of the initial parameters until the initial goals have been obtained.

During all implementation phases, the opinions and suggestions of the users must be considered and filtered out in order to distinguish the users' motives and the side effects caused by the installed system. The dynamic and complex hospital's organisational environment requires the regular re-examination, continuous evaluation, thoughtful reconsideration of facts and, some times, compromises in order to obtain, finally, the initially set of goals avoiding pitfalls. The conception of success depends on when and by whom it is performed.

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