

Developing a New Integrated Model to Improve the using of Classical Approach in Designing Management Information Systems

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Abstract

Management information system (MIS) is used to solve management problems in the practical life, the designing and building of the management information systems is done by using one of the systems development methodologies, Classical approach is one of these methodologies which still suffer from some critical problems when it is used in designing and building the management information systems, it consumes more time and cost during its life cycle. This paper develops a new integrated model to minimize the classical approach life cycle in designing and building the management information systems to avoid the additional consume in time and cost.

Index terms— management information system, MIS, systems development methodologies, classical approach, information system life cycle, ISLC.

1 Introduction

he classical approach or (traditional approach) includes the series of stages that are used in building the management information systems [9], these stages are known as classical approach life cycle or the information system life cycle (ISLC) of classical approach. the work of classical approach always uses the all stages of its life cycle in building the management information systems (MIS's), but this paper develops and presents a new integrated model that leads in many cases to partially use of the classical approach life cycle stages, so this new integrated model will help in solving the classical approach problems which are consuming additional time and cost.

The classical approach life cycle stages are main five sequential steps which are: a) Planning Stage: it is the first stage in the information system life cycle, the responsibilities of this stage are: ? Defining the problem and collecting the required information about problem which the system will solve it. [1], [2] ? Determining the user's requirements, which the developed system will solve them. . [1], [2] ? Determining the estimated budget and time to accomplish the system. [1] , [2] b) Analysis Stage: it is the second stage in the information system life cycle. In this stage the system analyzer will study each solution in the list of the suggested solutions that is obtained from the previous stage (planning stage) and then choose the best solution. [1], [2] c) Design Stage: it is the third stage in the information system life cycle. Here, the designer's team will provide all the design necessary requirements such as: input screens, output screens, reports, data base and system algorithms. [1] , [2] d) Development Stage: it is the fourth stage in the information system life cycle. Here the system will be programmed and operated. [1], [2] e) Test and Maintenance Stage: it is the fifth (final) stage in the information system life cycle. Here, the system will be tested if it includes some errors or if it needs to some improvements to be better and effective in achieving the users' requirements. [1], [2] II.

8 . ANALYSIS THE EFFECT OF MANAGEMENT PROBLEMS CLASSIFICATION ON THE INFORMATION SYSTEM LIFE CYCLE (ISLC) OF THE CLASSICAL APPROACH

2 Research Methodologies

The classical approach (traditional approach) life cycle consists sequential steps which makes this methodology simple, easy to use, and simple to implement in building the information systems [6], but at the same time, it still suffers from critical weakness; because of its additional consuming in time ??6], which leads also to additional consuming in cost, so this research will help the classical approach to reduce from these problems, by the following research methodologies:

? The first main methodology: is to develop a new classification for management problems.

? The second main methodology: is to develop a new integrated model which will minimize the classical approach life cycle stages in many cases, this integrated model is designed according to the classification of the management problems in the first main methodology.

i. The first Category: in this category, the management problems are divided according to its nature and to its corresponding solutions, as in the following: a. First order problem: the solution of this problem is clear, and it is usually one, you need only to collect the required information about this problem in order to implement it. So the solution for this type of problems will be defined as: direct solution.

[2] b. Second order problem: The solution of this problem is also clear, but it isn't determined by one solution, there are usually a list of multiple solutions. So the solution for this type of problems will be defined as: indirect solution. [2] ii. The second Category: In this category, the management problems are divided according to the type and nature of computer program (software) that will be used to solve these management problems. In this issue, the research divides the computer programs (software) which will be used by (MIS) in order to solve the management problems into two main types: [1] a. First level problem: Here, the management problem needs software, which can be founded as s software package, and this means that management problem doesn't need to build and develop new software, but it needs software package which is ready software, that is available directly in the markets. [1] b. Second level problem: In this case, management problem needs to build and develop its own special software, which (MIS) will use it to solve this problem. [1] Figure ?? : The Research First Main Methodology

The First Category: According to the nature of the problems and to its corresponding solutions.

3 Management Problems

The Second Category: According to the type and nature of the program (software) that will be used to solve the problems.

4 First Order Problem

The solution of this type of problems is a direct solution, which is clear and one solution.

5 Second Order Problem

The solution of this type of problems is an indirect solution, which is clear with multiple solutions.

6 First Level Problem

This type of problems needs to software package.

7 Second Level Problem

This type of problems needs to develop and build its own special software.

b) The second main methodology This research develops and introduces a new integrated model, in order to minimize the classical approach life cycle during the building of management information systems (MIS's), so this integrated model will help the classical approach to reduce the additional consuming in time and cost, and this will increase the efficiency of classical approach in building the MIS's.

The integrated model is developed step by step by finding sub approaches according to the management problems classification, which the research develops and introduces through the first main methodology in the previous section 2. ??.

8 . Analysis the Effect of Management Problems Classification on the Information System Life Cycle (ISLC) of the Classical Approach

The research will study the effect of each type of management problems on the information system life cycle (ISLC) which is a adopted by classical approach, The analysis will include all types of the management problems that are mentioned in section (2) through the management problems classification, which are: the first category (first order problem, second order problem) and the second category (first level problem, second level problem). needed in this case, but also must be avoided, since if it is used, this will consume more time, effort and cost through using of the analysis stage, which the determined problem doesn't need, due to its nature and properties.

[2] a. Analysis the Effect of the First Order Management Problems on the ISLC of the Classical Approach The research defines the management problem as: first order management problem, when its solution is: direct solution; which is clear, and it is usually one, you need only to collect the required information about this problem in order to implement it. [2] In this case, there is no need to find multiple solutions to the problem and choose the best solution. This means that there is no need to consume more time, effort and cost in using analysis stage, which is the second stage in the information system life cycle that is adopted by classical approach. [2] Now, and according to the analysis of the effect of the first order management problem to the (ISLC) of the classical approach, the research develops the MIS approach (1) to build the management information systems which will be used to solve this type of problems. This approach (MIS New approach (1)) will avoid the using of analyses stage through building of the management information system by using classical approach. Using this stage is not only

9 b. Analysis the Effect of the Second Order Management Problems on the ISLC of the Classical Approach

The research defines the management problem as: second order management problem, when its solution is: indirect solution; there are usually list of multiple solutions for this type of problems, so this type of problems needs to clarify its solution by finding a list of the suggested solutions, then, the best solution will be chosen, hence, we can notice the necessary of using the analysis stage, which is the second stage in the information system life cycle that is adopted by classical approach. [2] The use of analysis stage in the ISLC of the classical approach will help these problems to change from second order management problem to be first order management problem. [2] In this case, the research agrees with the current approach which classical approach uses in designing and building management information systems which includes all stages of information system life cycle (ISLC), and defines it as: MIS classical approach, so there is no skip to the second stage in the information system life cycle as in MIS approach (1), all stages must be used, this is because of the properties of this type of problems which are: ? Solution of this type of problems is clear but it is an indirect solution; since it is not determined by one solution, on the contrary, there is a list of multiple solutions.

? The existence of multiple solutions for this type of problems, will lead to the need to study each of these solutions in order to detect the best, this means that this type of problems needs (analysis stage) which is the second stage in information system life cycle that is adopted by classical approach. [2] Figure ?? : The MIS classical approach which uses all stages of classical approachGlobal

10 c. Analysis the Effect of the First Level Management Problems on the ISLC of the Classical Approach

Here, management problem needs software, which can be founded as s software package, and this means that management problem doesn't need to build and develop new software, but it needs software package which is ready software, that is available directly in the markets. [1] If we return to the information system life cycle that is adopted by classical approach, and which has been explained through the introduction in this paper, we will find that the building of the computer program (software), which the management information system (MIS) will use it to solve the management problems, is related directly with the third stage (Design Stage) in the information system life cycle, because the building of Hence, this research provides a scientific contribution which is: the building of computer program (software) will cause the need to use the design stage, and vice versa. So, if there isn't need to build a computer program (software), design stage in the information system life cycle will be skipped. [1] Now, and according to the analysis of the first level management problems, the research develops a new approach (MIS New Approach (2)) to build the management information system (MIS) which will be used to solve this type of problems. [1] The MIS new approach will skip the third stage (Design Stage) in the information system life cycle that is adopted by classical approach. this means that this new approach will minimize the information system life cycle to be four stages instead of five stages, and this will cause to reduce the number of employees that will work in the project team, in addition, the use of this new approach will help to save time, effort and cost, and this will lead to increase the efficiency in building and designing the management information systems by using classical approach. [1] The MIS new approach will use the classical approach and skip the design stage (third stage) in building the management information system (MIS) which will be used to solve the first type of management problems. [1] Figure ?? : Finding the MIS New Approach (2)

11 d. Analysis the Effect of the Second Level Management Problems on the ISLC of the Classical Approach

In this case, the research agrees with the current approach which classical approach uses in designing and building management information systems, which includes all stages of information system life cycle, and defines it as: MIS classical approach, so in this case, there is no skip to the third stage (Design Stage) in the information system life cycle, as in MIS new approach(2); because and as it is mentioned in the section (2),this type of management problems needs to build its own special software, and this requires the use of design stage in the information system life cycle. ??

12 The Combined Management Problems

This research reaches to the new types of management problems and defines these problems as: (Combined Management Problems), these problems are appeared by the combination of two different problems from the problems that research defines them in the research methodology through two main categories which are: the first category (first order problem, second order problem) and the second category (first level problem, second level problem).

13 a) Finding the Combined Management Problems

As it is mentioned in the previous section; the combined management problems are appeared by the combination of two different management problems which the research defines them in the research methodology, now we will number each one of these problems as mathematical equations numbering: * First category Now, we will list all the results probabilities which will be obtained from the applying of the distributive operation in equation (?? The previous results will be interpreted, in order to find the new combined management problems: and if we return to section 2.2, we can note that the first order management problem leads to use the MIS new approach (1), which skips the analysis stage in the ISLC of the classical approach, on the other hand, the first level management problem leads to use the MIS new approach (2), which skips the design stage in the ISLC of classical approach, and thus, the first combined management problem will combine between the skipping of the two stages: analysis and design. As the research has mentioned, the first order management problem leads to use the MIS new approach (1), which skips the analysis stage in the ISLC of the classical approach, but the second level management problem will use the current life cycle of the classical approach which uses all stages of the INSLC of the classical approach, so the second combined management problem will inherit only the skipping of the analysis stage, and hence, the second combined management problem will not generate a new approach to build the MIS, and instead of this, the research recommends to use the MIS new approach (1) to build the required MIS in order to solve the second combined management problem.?

14 + First Order Management Problem

Second Level Management Problem According to the research methodologies, the using of classical approach to build the MIS in order to solve the problems from the type of second order management problem, there is a need to use all stages of the ISLC of the classical approach, but the second level management problems lead to use the MIS new approach (2), which skips the design stage in the ISLC of classical approach, and thus, the third combined management problem will inherit only the skipping of the design stage, and this implies that the third combined management problem will not generate a new approach to build the MIS, and instead of this, the research recommends to use the MIS new approach (2) to build the required MIS in order to solve the third combined management problem. This research mentions in its methodologies to use the all stages in the ISLC of classical approach, when we want to solve the both two problems: second order management problem and second level management problem, which are the components of the fourth combined management problem, so building the MIS by using classical approach to solve the fourth combined management problem will lead to use the MIS classical approach which uses the all stages of the ISLC of classical approach, without any skipping to any stage.

15 Second Combined Management Problem

16 +

17 Second Order Management Problem

Second Level Management Problem The New Integrated Model to Build and Design the mis by using Classical Approach

18 Fourth Combined Management Problem

Now, and after the finding of the sub approaches for solving the different management problems, these sub approaches will be the components of the new integrated model, so the research will combine all these sub approaches in order to build and find the new integrated model.

The new integrated model will implement a general and clear procedure in order to solve all types of the management problems which are defined and founded by this research; which provides suitable approaches to solve each one of these problems by using the classical approach.

The integrated model will increase the efficiency of the used of classical approach in building the required MIS that will be used to solve the management problems. Increasing the efficiency of the classical approach comes from the minimizing of the ISLC of the classical approach, in many different cases, which will help the classical approach to overcome to its problems by decreasing the additional consuming in time and cost.

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20 Conclusion

Classical approach is one of the information systems methodologies that is used to design and build the management information systems (MIS's). The classical approach suffers from critical problems; which are the long time and high cost in many different cases while building MIS. These problems come from the classical approach method, which always uses the all stages in its life cycle, although some of these stages are not necessary to be used in many different cases. In order to enhance the use of the classical approach in this field, the research develops a new classification and definition of the management problems that are probably solved by MIS, and also, some new sub approaches are developed from the classical approach in order to solve such management problems with partially use of the information system life cycle (ISLC) of the classical approach, the avoidance of the use of all stages of the ISLC will help the classical approach to save time and cost during building the MIS. And with a view to achieve a general, accurate and clear procedure that organizes the research methodologies in improving the use of classical approach in building the MIS's to solve the management problems, the research develops and implements a new integrated model which includes the developed classification of management problems and also all developed MIS sub approaches.

VI. ^{1 2}



Figure 1: Figure 2 :

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	Year 2015
	Volume XV Issue VIII Version I
	() A
First Order	
Management	
Problem	
Test and Maintenance Stage Develop-	Test and Maintenance Stage Develop-
ment and Programming Stage Design	ment and Programming Stage Design
Stage Analysis Stage Planning Stage	Stage Planning Stage
ISLC of Classical Approach	MIS New Approach (1)

Figure 2:

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