

The Importance of User Participation in the development of Management Information System:A Literature Review

Sudha Yadav¹

Sameer Saxena²

AIIT,Amity University Rajasthan^{1,2}

Abstract:

This paper presents the various aspects of a Management Information System including the development factors, its characteristics and its importance for a system to succeed. It also presents the literature review for various papers focussing on the importance of user participation and its impact on the development of Management Information system. This paper is based on the reviews of various papers and only provides information on that basis. The various goals of this paper includes to provide information why Management Information was needed originally and what were the factors leading to its growth, how different users and their participation helps in the growth of its development and what are various factors to be kept in mind while developing Management Information System.

Keyword: MIS, Importance and development of Management Information System , DSS, User Participation/Involvement.

Introduction:

Before the computer systems were introduced, the amount of Information available bloomed rapidly making it difficult to manage within an organization. Firstly, Information Systems were developed to provide information to managers as per their required need and time. It provided relevant information for decision making (Lahar et al, 2015). This Paper by Lahar et al provided the information about the need of Management Information System, that Management Information System makes it easier for the managers to manage, collect and integrate the information to provide effective and efficient decision making processes along with the need, they also did put forward the general model of an Management Information system[1]. It consisted of following categories: (1)The Database of the Management Information System (2) The decision Making in the organization (3)Software for report writing (4)and the Mathematical Model.

The figure below shows the diagrammatical representation of the MIS model[2]:-

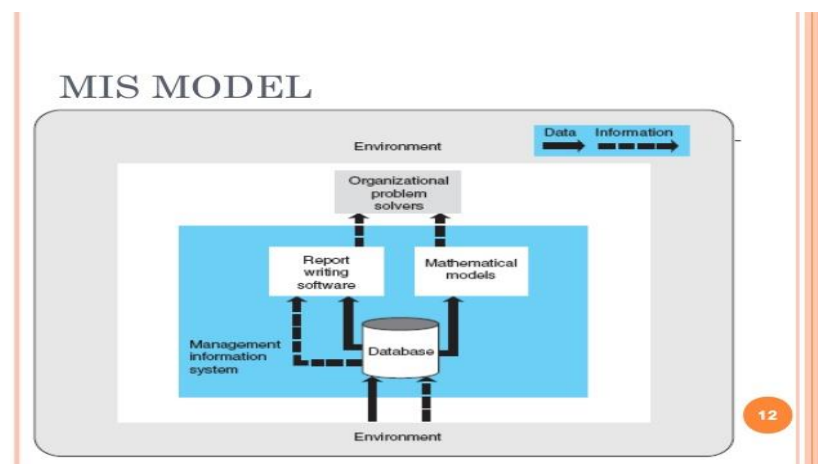


Figure 1: MIS Model given by Lahar et al.[2]

This paper also did spread light on the challenges that MIS has to face in which the most important is that MIS has a dynamic nature which makes it for many organizations to keep up with the principles, events and ideas, another challenge is that it is not adaptable that different decisions are made in different conditions and it also requires expertise which may be costly in terms of both the money and the work force and time also. To curb these challenges the organizations need to have a better decision making system that will provide dynamic environment for MIS.

What was concluded by the authors of this paper is that MIS provides better decision making in an organization, accurate, relevant information is provided to the managers timely to support efficient decision making. Also it said that the decision making techniques will be improved when directly with the amount of customer and staff satisfaction which directly leads to the concept of user participation in the development of Management Information System. However, the MIS strategies should be applied to achieve business requirements and goals.

Another paper reviewed in this session in also a systematic review of the relationship between the user involvements and the system success. It represented various aspects that explored the UI-SS relationship. There were many techniques and methods that were proposed to provide solutions for effective user involvement such as Joint-Application-Methods(JADs),Effective Technical and Human Interaction with Computer based Systems(ETHICS) are one of them.[3]

Questions to be covered:

While researching about the MIS, it is necessary to cover various questions that should be answered in order to make decision making more efficient. These questions will put forward some important key points on which focus should be imposed. The questions involved are some put up in the papers reviewed and some are produced after the review and are needed to be focussed on:

- (1) If there is really need to have a MIS in places where information is not huge as MIS will make management complex for very small organizations?
- (2) What is the status of existent MIS in that organization?
- (3) What was the degree of user participation and involvement while MIS was being developed?
- (4) Was MIS developed according to user requirements ?
- (5) What type of users were involved while developing the MIS?[3]
- (6) What perspectives did the user had while they were involved in the development of MIS?[3]
- (7) What are the benefits of involving users in the MIS?[3]

(Bano, Zowghi, 2015) provided a systematic literature review and focussed on how and why user participation is required to build a successful system. However, it was concluded that user participation has direct impact on a systems performance, there are still some other factors that are needed to be focussed on since their review was based on many conflicting results produced on different papers.

In one of other paper, Bano, Zowghi stated that although user interaction is an mandatory aspect in the development and success of a system, but what really turns the table the is the notion of user satisfaction in that context. The user Participation is undoubtedly necessary but is not sufficient. It is the adequate user satisfaction that actually plays the key role[4] . What can be derived from that notion is that the factor of user satisfaction implies for the performance of the users which also includes the employees and workers. The performance of these users will directly affect the a systems success factors in many ways. One the those ways may be stated as that if the employees are not satisfied with the system, they may not be giving their output to their full potential hence the organization will not work to its best.

The term user involvement is broken into two terms "user" and "involvement".

The first term “user” simply implies to someone who will be directly using the system. A user plays different roles at different levels in a system.[5]

Second term “involvement” is a synonym for *participation* and *engagement*. Therefore, user engagement can be defined as “*subjective psychology state reflecting the important and personal relevance of a system to the user*”[6]. However, the user participation is directly related to the decision made by the users involved while developing the system which identifies the relation between the user involvement and MIS and MIS and decision making. They explored several other factors that were involved in the user Involvement and System success relationship. These factors were represented with the help of diagram that is shown below.

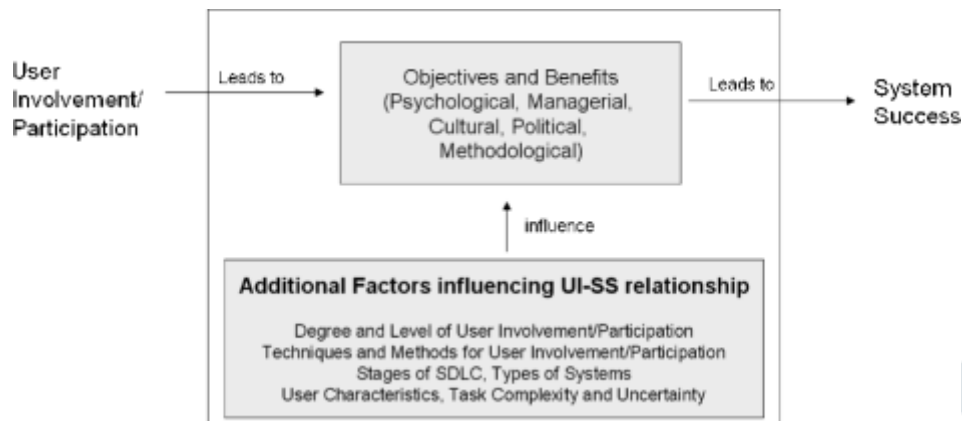


Figure 2: Different factors in SS and UI relationship by Schermann, M., & Merz, M[4]

This figure clearly pushes forward the additional factors that are also involved in the relationship. These are the level of user participation, methods for user participation, user characteristics etc. They also put light on the fact that user involvement directly leads to the benefits of the organization and help to achieve its Objectives and goals. It was also stated that the user who were actively involved felt more comfortable to perceive the system as more successful and thus were more satisfied with the system[11]

Decision Making and Management Information System:

Lahar et al. stated that a good decision has a directly impact on the successful productivity of the organization. However, it was also explored that good decision is partly dependent on the available information and partly on the functions.[7]. They explored that if some managerial objects are unavailable due to unclear information than search cannot be completed.[8] Now, it should be relevant to say that it is a known fact that Decision making is important for a management information system and for a organization to be successful it is necessary that the analysts must learn to cope up with both and the ever coming challenges in them. Now, it must be explored how user involvement affects decision making.

Edward J. Garrity explored this and provided a review which concluded that User-Participation and the top management Support systems are important for decision-oriented systems . It was also suggested that that the managers should solicit the high user involvement in the organizations.[9]. But what can be done to increase the levels of user participation in a system development and that should be implemented for the adequate results. Therefore, we are proposing a hypothesis based on our study.

Hypothesis:

So far in this paper , it is concluded that user participation and involvement is important for Management Information system and in decision making. But there are some limitations that make this factor lack in its engagement. The most important factor is the job satisfaction and social adaptability. While developing a system, the various users are involved that includes the employees of that organization for the system is being developed. Surveys, Questionaries’ and many other things are conducted to gather information. But if there is no or less job satisfaction, the user

involvement is directly effected as stated earlier it is a subjective psychology. Hence, the information at first stage is violated. Another factor that may lead to the limitation is that how much it is considered that if the user is even interested in the system or not? Because again it is the psychology. If the system is being forcefully imposed on them, then definitely, the interest and hence the information will be altered. This problem was explored by Wong, E. Y., & Tate, G. (1994). A case study was conducted for an educational institution and where the need for the management information system was just discovered. The various departments of the institution were initially not ready to build a system as it would made them and their less important. However, finally, the management information system was developed that they all agreed to.[10].

Therefore, some actions that are needed to perform to get the best out of the user participation are listed below:

1. First, it should be ensured that all the employees are jobwise satisfied in order to proceed.
2. Secondly, the types of users should be distinguished according to their involvement and its impact on the system. It will make it easier to determine which part of that system needs to be worked on.
3. The users involved should accept that system .It should not be imposed on them. It can be done by making them aware how this system will be better and beneficial for them. This point was explained by (Klobas and McGill 2010) which represented a model.

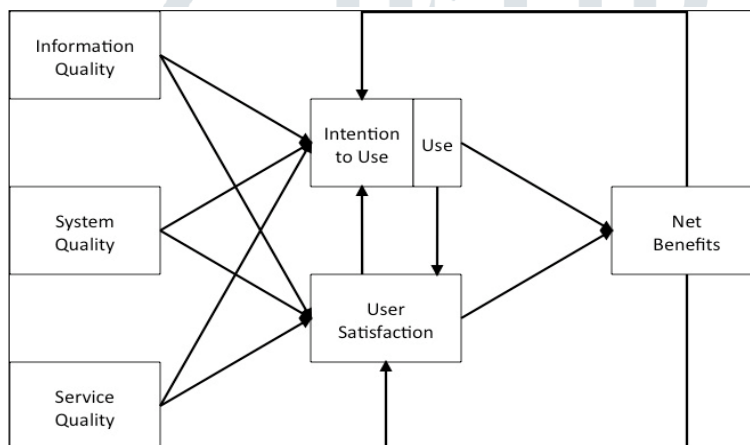


Figure 3: McLean (2003) model of IS success[13]

what is the expression of System quality, information quality and service quality were other constructs from the DeLone and McLean model of IS success [13].The system will be used more effectively and efficiently if the level of user participation and acceptance of the system increases which will lead to a better and more democratic organization system.[12]

4. The users involved should have a considerable effect on the decision making of that system.as if the users that are participating does not have anything much to do with the decision making, then the information provided by them will be no more than waste for the managers.

Results and discussions:

In the beginning there were some questions that were needed to be explored.and on the basis of our review based on another reviews, they may be answered.

Q1. If there is really need to have a MIS in places where information is not huge as MIS will make management complex for very small organizations?

The question is clear in itself. It is explored previous in this paper that originally , MIS was developed to manage the huge amounts of information when there were no computers. But in small organizations where there is information is limited and can be managed manually by single personnel's, then there is no need for such a system as it will only increase the complexity and the cost of work.

Q2. What is the status of existent MIS in that organization?

Here, the status of MIS means the condition in which the existent system is. How the existent works. The expression here signifies the level at which the MIS is being used. If the existent MIS is even able to manage the information and if the throughput of the MIS is even reliable or not.

Q3. What was the degree of user participation and involvement while MIS was being developed?[12]

Bano, Zowghi, 2017 developed a simple method for tracking the degree of user involvement. The project had different levels of user participation in its different stages. During the first stage, the users were involved only before and after the implementation of the system and not during the implementation. It was found that the users felt isolated from the system and they had to be reminded again about the objectives of the system. In the second stage, the portal stage, the users were actively participating in the development process through stand ups and feedbacks. And last in the interview stage, they showed similar perspectives via interviews that they felt satisfied when they thought that their participation and feedback matters.[12].

Q4. Was MIS developed according to user requirements ?

So long it was discussed that user involvement matters but what is more important that if the user involvement was even considered during the development or was just any formality. It is known that user involvement during system development is time requiring, complex, and costly.[12]. So, what matters most is if the system that is being developed is actually according to the user requirements or it is being developed only to save some cost and effort of the organization and its long term objectives. Zhiwei Sun 2013 represented two methodologies in the system development. SSM (soft system methodology) and SSADM (Structured Systems Analysis and Design Method) are the two methodologies. SSM focuses on the relationship between the organization and its environment and SSADM is the methodology which provides detailed protocols to the managers regarding their work.[13]. A comparative analysis was conducted for the user involvement in both the methodologies. Hence, the information gathered during user participation was the main objective for the development of the system. Here, the main concern was the user requirements and the chances of system success increased.

Q5. What type of users were involved while developing the MIS?[3]

Meaningful user involvement in systems development and an overall user orientation is critical to the success of any development project[13]. Involving users that has no impact on the system development processes and the information provided by those will be wasteful only. Since far it is declared that user involvement is required for system success. But involving the low-level employees for a admin level software is just inadequate. Therefore, it is not just sufficient to involve users but the type of users involved is also important as the quality of information, system and service are also important constructs in system success[13].

Q6. What perspectives did the user have while they were involved in the development of MIS?[3]

While involving users in a system development process, there are various perspectives of the developer as well as users involved. The developer's perspectives are clear. They are organization oriented and are according to the beneficial purposes of that organization. However, the users have different perspectives than users. We now give a brief description of these perspectives. These perspectives from user side plays an important role in analysing and discussing the benefits and challenges in user participation.

(1) Psychological perspective

As discussed earlier in this paper, the user involvement is a psychological state. The user's satisfaction is what is in the centre of this perspective. The sense of having some control over the system is what gives the willingness to participate and ultimately resulting the interest toward the system.

(2) Managerial perspective

The participation of the users is not something to be vaguely involved. It should be managed properly to achieve the desired results. This involves planning and selecting an adequate technique to ensure the psychological perspectives are fulfilled as well as the objectives are achieved. It also includes the financial support to the users from the management side.[15]

(3) Political perspective

The level and degree of involvement can be affected by organizational or political influence especially when it comes to power of decision-making and implementing changes.[16].Also, when users feel they have power over the system, it can result in a totally different and better outcome the system.[3].

(4) Cultural perspective

Although, the cultural expression is not given that much exposure as other perspectives, but it is indeed one of the most important perspectives. The overall purpose of the user involvement may differ when exposed to different cultural contexts. The influence of user involvement is different for different organizational cultures.

(5) Methodological perspective

The main factor for selection of particular method for user involvement depends on the intensity of involvement required in the software development process. The project complexity and available technological resources are other factors that play a role in this selecting process.Zhiwei Sun 2013 represented two methodologies in the system development . SSM(soft system methodology) and SSADM((Structured Systems Analysis and Design Method).A comparative analysis was conducted for the user involvement in both the methodologies. Hence, the information gathered during user participation was the main objective for the development of the system.

Comparative Analysis:

year	Author	Main Theme
2012	.Predrag[1]	Presented a general model of management information system consisting various factors that are needed to be paid attention to.
2015	Bano, M., &Zowghi, D. [3]	Explored the relationship between user involvement and system success via a systematic literature review.
2018	Schermann, M., & Merz, M[4]	Performed a meta-analysis to prove that user involvement is necessary but not sufficient in some fields.
2010	Iivari, J., Isomäki, H., &Pekkola, S.[5]	Discussed the difference between user involvement and user participation and how user involvement is important to system success.
1989	Barki, H., & Hartwick[6]	Provided a hypothesis that will ensure more user participation in system development
2015	Mishra, L., Kendhe, R., &Bhalerao, [7]	This paper focuses on understanding the concept of MIS, the need for MIS, the advantages of MIS in an organization, the MIS model, decisions and the decision making system and majorly the role of MIS in decision making.
2009	Satyanarayana et al[8]	The topic covered is how management system provides accurate and timely information to managers and help in decision making within an organization.
1994	Wong, E. Y., & Tate, G. [10]	It provided a study of user participation in management information system

1994	Garrity, Edward	Expalins the user involvement in the Management information system and how this factor varies with the varying system types. However, it does not provide any conclusive report.
2010] Klobas, J. E., & McGill, T. J.[11]	This explored the roles of student and instructor involvement in the Leaning Management System using DeLone and McLean (2003) model
2017	Bano, M., Zowghi, D., & da Rimini, F[12]	Presented a case study on how user satisfaction is important for the system success.
2013	Sun, Z.[13]	It represented the user involvement in system success contributes using two methologiesSSm and SSADM
2006	G.K. Hanssen et al.[14]	Presented a case study of a software product company and explored how Customer involvement can give certain benefits and also presented limitations like cost, effort and complexity.
2007	E.L. Wagner, G. Piccoli[15]	Explained user participation in a software development process
1982	D. Robey and D. Farrow,	This paper discussed the relationships among user participation, influence, conflict, and conflict resolution in the development of management information systems

Conclusions:

In our review, we began with the initial information about why the management information was developed in certain organizations and how it helped to manage the huge amount of information and reduced the complexity of the work. We found some questions and provided our findings about those questions and explained how user involvement is a necessary non negotiable factor that leads to the system success. The concept of decision making was also discussed and how the user participation influences the decision making processes within an organization. This paper also suggested a hypothesis about different perspectives that may help in reducing the lacks and limitations in the process on user involvement. In the last it provided a comparative analysis that showcased the particular findings and research areas of individual papers.

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