

## A Dual Loop Model for Managing Information Resource

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### Abstract

*With the rapid development of information and communication technology, modern business activities become increasingly dependent on Information Resource Management (IRM). To manage implemented information resources successfully in practice, one great challenge facing the management team is how to deal with various mismatches between information provider and information user. In this paper, the substance of IRM challenges on mismatches is clarified, and a dual loop model is designed to deal with the issue on mismatches. The contribution of this paper will be twofold: one is to set up a sound management mechanism for promoting information resources management, the other one is to create adaptable information resources in practice.*

### 1. Introduction

Organizations are increasingly aware of the potential of Information Resource Management (IRM) for gaining a competitive advantage and sustaining their business success because if information resources are managed properly, significant benefits can be derived from improved productivity, improved quality of decision-making, and improved performance of tasks or organizational learning curve.

IRM is defined as a comprehensive approach to the collection, storage, process, maintenance and dissemination of electronic information, as well as the exchange of information between different organizations [1]. IRM is also known in some literature as Information Management, Information Systems Management [2], Management Information Systems or Management of Information Technology [3] and covers five types of resource management: systems support, processing data and images, conversion and transformation, distribution and communication, and finally, retention, storage and retrieval [4].

To manage information resources successfully, the technology used to manipulate, manage and transmit information resources is a significant element of IRM. It is important to understand whether the technology (or information system design) can be implemented or accepted successfully in practice. However, once the technology infrastructure (or information system) is in place, it doesn't mean that IRM is complete and accomplished because information resource should be recognized as a valuable entity, independent of the technology that manipulates it [5]. Consequently, information resource management issues in practice deserve more attention.

Previous study efforts have been greatly contributed on identifying and verifying management issues on IRM [6], [7], [8], [9]. However it still is very limited in providing solutions to deal with those issues. Motivated by the research reality on IRM, this paper will focus on promoting the usability of information resource in the practical context. The objective of this paper will be management strategy oriented for IRM. The contribution of this research is expected to provide a constructive and helpful model for information resource executives, information system designers, information system administrators, and other similar management teams to manage information resources in practice.

The paper proceeds as follows. First, management issues of IRM concerning information accessing are studied. Then, we come up with a dual loop model for managing information resources from two aspects: setting up a sound IRM mechanism and creating adaptable information resources. Finally, the paper ends with conclusions and research recommendations.

### 2. Key Issues on Information Resource Management

Management challenges of accessible information resource can exist in every stage of information resource management, namely, information requirement, information collection, information process, information use, and information disposition. Moreover, such challenges could also associated with information resource management related activities, for example, acquiring information, organizing information, storing information, developing information products and services, distributing information and using information.

Although management challenges could relate to both information resource management stages and information resource management activities, all aspects of information resource management should be based upon a consideration of information requirements and information needs in practice. It is especially important to provide the acquisition of information resources 'just in case' they are likely to be useful for information users, and to start providing access to information resources 'just in time' and easy to use. Therefore, to manage the accessibility of an information resource, the provision of the right information in the right form and at the right time to meet the needs of practical information users should always be considered as the most important objective of information resource management.

However, people do have very different opinions on the importance of information because different life styles and different cultures may affect their

perceptions and expectations [7], [9]. This could be closely associated with both the information provider and information users. In practice the key challenge of IRM is the mismatch between the information provider and information users, which can be summarized as four types [10]:

- The important information is provided but is not important for users, and therefore the provided information is of no use to information users;
- The important information required by information users is not important for information providers, and therefore it is not available for information users;
- Although the provided information is important and exists, it may not be understandable for information users because the inconsistent or mismatched description and definition of information between the information provider and users.

To ensure the availability, reliability, integration and consistency of information resources in practice, we could narrow our focus to an adaptable information resource management. This is to address questions such as: What is the available approach to manage an adaptable information resource? How could we reduce the mismatch between the information provider and information users? How can an adaptable information resource be created and maintained? To answer those questions above, we will come up with a dual loop model for managing the adaptability of information resource.

### 3. A Dual Loop Model to Manage Information Resource Sharing

To deal with the adaptability of an information resource, it is important to set up an efficient linkage between information provider and information user in the context of a practical environment, which can be presented in Figure 1.

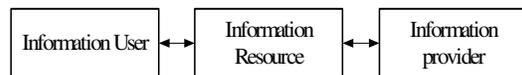


Fig 1. A Generic Model for Information Resource Management

There are three entities: information user, information resource, and information provider in figure 1. The meaning of those entities as well as the relations among them can be briefly introduced as follows. The entity of information user, in general, can be any one who associated with information resource by any kinds of application. For an enterprise, users can be internal employees, managers, and external business partners, customers, and suppliers. All of them have access to the information resource because of being involved in

business processes in one way or another. The entity of information resource, for example, can be aligned with business processes that provided information users with a genuine capacity to enable real-time, interactive exchange of business transaction information. Information provider entity indicates who collects information being responsible for building up information resource in general, providing information service to all kinds of information users in particular.

Based on clarifications in previous section, we identified the mismatches between information provider and information user because they might have different opinions on the importance of information. To improve information resource accessibility, we would like to employ the “Closed Loop Principle” [11] to deal with the mismatch issues between information provider and information user. The principle of the closed loop is based on the following concept: developing, using and maintaining Information Systems (IS) will only be successful in cases where the stakeholders involved have (direct) incentives to do their Information Systems Management (ISM) tasks in an appropriate way. The best way is for stakeholders to have “benefits” (positive or negative incentives) from being involved in ISM. The “Closed Loop” with its entities, as well as the relationships between the entities, can be depicted below in Figure 2.

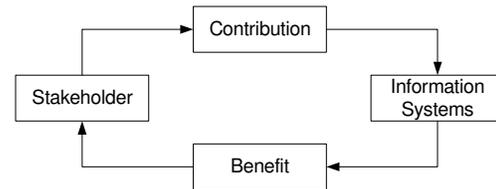


Fig. 2. The Closed Loop Model

According to Bemelmans [11], the relationship between IS and their stakeholders can be classified into two parts: contributions and benefits. In effect, the stakeholders contribute to the relevant IS. Contributions will be delivered if and only if, stakeholders experience incentives for doing so. One of the best motivators is a direct positive benefit for doing the ISM tasks in the prescribed way. The closed loop principle emphasizes the importance of creating incentives for all stakeholders in an ISM design.

To improve the accessibility of an information resource, it is important to build up an adaptable information resource. The significant step is to set up effective linkages among information user, information resource and information provider, creating incentives for both information provider and information user. In this way it is expected to improve the construction of an information resource and promote the accessibility of the information resource from user’s perspective. The solution is to employ the “Closed Loop Principle” to build up an adaptable information resource, which can be named as a dual

loop model for information resource management and presented in Figure 3.

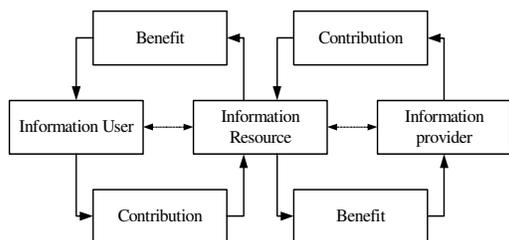


Fig. 3. A Dual Loop Model for Information Resource Management

The dual loop model for information resource management indicates a number of significant improvements in practice. First, this model serves as a useful communication channel to capture users' preferences when they access to an information resource. In this way the channel could transmit information users' preference, perception and opinion for information resource management. Meanwhile, this model is also a useful channel for information provider to gain user's preference, perception and opinion.

Second, if information resource management is armed with this approach, it can then try to ensure that the information resource management delivers what users liked and preferred. In return, information users will benefit, and should be satisfied if they can access an information resource that is as pleasant as they thought.

Third, based on the continuous and repetitive updating the contributions from information user and information provider, this model can be a way of learning for information resource designed in one location and will be implemented to another. Accordingly this model, on the one hand, can help information provider to extend the information service wherever the business to be deployed. On the other hand, it can also help information provider provide information service in the specified filed. From time to time, the adaptable information resource could bridge information users and information resource both professionally and individually, which will greatly contribute not only the information recourse management and information service business, but also various information requirements for information users. It is believed that the dual loop model provides a sound management mechanism by linking both information users and information providers to building up an adaptable information resource.

#### 4. Conclusion and Recommendations

It is important to have information resource designed technically sound. However, technically sound information resource may not be successfully adopted if the mismatches between information provider and information user are ignored. To get an information resource adopted successfully in practice, it is crucial to set up a sound mechanism for promoting the accessibility of the implemented information resource. The contribution of this paper is to create the sound mechanism with the dual loop model involving both contributions from information user and information provider. With the repetitive and continuing updating of the contributions from information user and information provider, the information resource can successfully meet information user's requirements, fit comfortably within its capability, and make information users happy to access it.

Second contribution of this paper is to provide a better communication channel among information user, information provider and information resource with the dual loop model. Based on this channel, information resource could be adapted by gaining users' preferences from their "contribution", and "benefit" them by providing useful contents as they expected. In this way the information resource implemented in practice will be liked for users. It is believed that the dual loop model is meaningful and helpful to promote accessibility of an information resource, to improve the quality of information access for the implemented information resource, and finally to adapt the implemented information resource for meeting the requirements of information users.

To manage information resource successfully in meeting with the information users' requirements, more research efforts are still needed. One recommendation is for further research to continue this study and concentrate on practical cases or "best of breed" practices of user engaged information resource management. The research findings of such cases including both experiences and lessons will greatly contribute to the research on information resource designing as well as promoting the development of information service business.

Another recommendation for further research could focus on developing tools for user engaged information resource management. It is definite that those tools will not only promote the progress of information resource implementation and application in practice, but also improve the development of information service business significantly.

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