Information Resource Management (IRM): Empirical Study in the Service Industry [t]

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요 약 이 연구의 목적은 주요한 정보의 원천은 무엇이며, 정보 자원 관리에서 부딪치는 문제점을 파악하여 가능한 해결방안을 제시하는 것이다. 즉, 구체적으로 문자정보, 의사소통 그리고 정보활용기술을 통해 정보를 얻고 관리하는 데 있어 직위가 다른 경우 (책임자, 일반직원, 노조 대의원) 이 다른 원천들의 중요성을 얼마나 잘 알고 또한 인식하고 있으며 이 원천들에 대한 그들의 태도는 어떠한 가를 조사해 보려는 것이다. 연구의 결과 내부 정보 자원이 가장 중요하고 가장 많이 이용되고 있다. 정보 활용기술의 시설에 대해서는 가격은 저렴해지고 있는 반면 그 기능은 매우 향상됨에 따라 그 중요성이 증대되고 있으나, 그 사용은 쉬운 것에 제한 되고있어 경영자는 효율적 사용을 극대화 하기 위해서는 좀더 많은 관심과 철저한 교육 훈련이 있어야 함을 제시하고 있다.

Abstract The great flowing of information has brought a necessity for good management to make the best use of it in the highly competitive information age. The aims of this study are to investigate the main information sources - divided into largely three groups : literature sources, communication and information technology facilities), trying to find problem areas associated with IRM, indicating possible solutions. The result shows that internal information sources were regarded the most important and most frequently used. For the use of foreign materials, the higher the level of position is, the more people use them. With respect to communication methods, internal information sources were thought most important. With the dramatic falling of the price despite enormously increased functions, IT facilities are becoming important sources. However, the study reveals the use of them is quite limited to a few well-known facilities, which indicates that management should pay attention to more efficient use of them and useful training and education methods.

1. Introduction

The continuing surge of information has brought about a necessity for good management to make the best use of it. As Pine II et al. [23: p.103, 110] argue "If you want to keep your customers forever, you should start building a learning relationship with your customer." They also claim that cultivating learning relationships depends on a company's and an individual's ability to elicit and manage information about customers with good information strategy.", good

information resource management has been regarded as one of critical success factors in a firm.

The industry chosen for this research is banking in South Korea. The reason for choosing a single industry is to avoid confusing differences among firms in different industries. In addition, the banking industry has a global financial market and a large number of banks using very complicated information and a high level of information technology (IT).

1.1. Information Resource Management

The concept of information resource management (IRM) had its origin in the mid-1970s, in a drive by the US government to control its paperwork mountain,

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by restraining the enthusiasm of the bureaucracy for producing vast quantities of paperwork, without being accountable for its usefulness. This led the US government to pronounce that information was an economic commodity, and an expensive one at that, rather than a 'free resource'.

Organizations that remain in business and grow in the future will be those that manage information as a valuable corporate resource. Diebold [10] said "Information, which in essence is the analysis and synthesis of data, will unquestionably be one of the most vital corporate resources in the 1980s. It will be structured into models for planning and decision making. It will be incorporated into measurements of performance and profitability. In other words, information will be recognized and treated as an asset." After reviewing the idea of 'information as resource' and the related 'information as commodity', Eaton and Bawden [11] use the term in two rather different ways: to indicate the importance of information within an organization, and to imply the appropriateness of a resource management model to handle information. Thus the idea that information is a 'resource', to be managed on behalf of the organization and management to which it belongs, is now well entrenched in the literature of information management, and information resource management (IRM) has become a widely generalized term.

Cleverland [6] says, in addition to the three basic elements (money, land and people) of production, an acceptance of the idea that information is the fourth resource, has considerable consequences for both managers and information workers. Further, Picot [22] argues that information resource management is no longer 'a fourth factor of production ', but is 'the prime production factor'. Because of the changes in competitive business environment, he also says that what is needed is an innovative, information-oriented corporate development plan. Moore [17] insists that better use of information holds the key to increased competitiveness, increased efficiency, improved resource allocation, and enhanced effectiveness. Olaisen [20], in particular, focused attention on how to manage information as a 'strategic resource', and Lewis and Martin [15] conclude that the management of information for strategic or competitive objectives is

one particular aspect of the information management which appears to be growing.

Smith and Medley [24] say about concept and functions of information resource management, technology and content. "First, technology is needed to process information. Second, the content of the information itself determines the value of the information and the process needed to manage it. Both the technologies for processing information and the content of the information itself must be managed".

2. Research Objectives and Questionnaire

2.1. Research Objectives

The objectives of this research are to examine the main information sources, trying to pinpoint problem areas associated with IRM, indicating possible solutions. The specific objectives of this research are to provide answers to the following questions, where information resources are grouped into largely three different areas, namely, literature, communication and IT facilities:

a) How do these sources rank in importance for different groups of staff ?

b) How well do these staff members know those sources?

c) What are the attitudes of these staff members towards these sources?

This is a part of a research which was originally conducted to investigate overall information resource management, information technology impacts and training/ education in the banking industry [14].

2.2. The Questionnaire

Many writers have emphasized the significance of the questionnaire technique as a potential research tool in social research. For example, Ary et al. [2] argue that, in comparison with personal interviews, the questionnaire is typically more efficient and practical and allows for the use of larger samples. A similar point was made by Clover and Balsley [7] who suggested that prospective respondents can be reached at relatively low cost through the use of a questionnaire. The great advantage of this is that "it is

simple to administer and easy to tabulate and analyze"
[5 : p.319]. Also, Mason and Bramble [16] holds that the
questionnaire has the advantage of increasing the
generalization of the data, and it gives respondents
more freedom to express their points.

The methodology of conducting research by
questionnaire involves a series of steps, each of which
needs to be carefully planned. The methodology used
in this research can be summarized as follows:
(1) The objectives of the study were determined.
(2) The sequential steps for the conduct of the survey
were outlined.
(3) The sampling plan was developed.
(4) The construction of the questionnaire items was
undertaken.
The forms and style of the questions were determined
largely on the basis of the existing literature where
one of the main works was done by Davies [8]. Other
factors were the researcher's knowledge (having some
working experience in one of the sample banks in
Korea) and the pilot study undertaken before the
administration of the final questionnaire. Moser and
Kalton [18] have emphasized that choosing between
acceptable forms of questions depends upon the
common sense and the past experience of the
researcher. Also, Stacey [25] stresses that it is
necessary for the researcher to relate his/her work to
that of others and build on what that have done.

2.3. The Sample Banks

In order to properly explore IM, IT and their impact
on the Korean banking industry, it was necessary that
companies selected for the sample have different IT
environments but similar functions and, so far as
possible, similar organizational profiles. Based on these,
the five sample banks have been chosen, they all
offer a full range of commercial financial services
across the country and they all have international
networks of branches.

However, their performance differs, where one
sample bank was top among its domestic peers for
fiscal year 1992 and 1993 according to the report which
was carried out by the Office of Bank Supervision
(OBS) in Korea to assess the results of commercial
banks' performance and financial status [4]. Although

wage levels at that bank are higher than average for a
Korean bank, so is the level of employee productivity.
The profit per employee ratio at the bank is four times
the average for all Koran commercial banks [3].

3. Data Analysis

3.1. Distribution and Collection of Questionnaire

The information to be presented is based on data
collected at five Korean banks. Data were distributed
and collected by two methods from April to July in
1992 - personal interviews and questionnaires. It was
necessary to telephone the controller at the five banks
regularly, and to make frequent personal visits to
encourage and check the progress. For the managerial
survey, a total of 285 questionnaires were distributed,
158 being completed, all valid: a response rate of 55%.
For the employees' sample, 380 questionnaires were
distributed and 198 collected but four were not valid,
the valid response rate being 51%. In relation to the
trade union representatives' sample, 125 were
distributed and 70 were collected, all valid: a response
rate of 56%. Overall the aggregate response rate is
53% (790 distributed and 422 valid responses).

3.2. The Statistical Method of Analysis

The methods of analysis used in the present
study were facilitated through the use of computer
programs available in SPSS (Statistical Package for the
Social Sciences) for Windows Professional Statistics
package [19]. The data were coded, inputted and
subjected to statistical treatments as follows:
1) Descriptive statistics,
2) Pearson Product-moment correlation,
3) Cross-tabulation,
4) t- test, and
5) One way analysis of variance tests.

3.3. Literature Information Sources.

Among various information sources, literature sources
are the most traditional, are accessed most easily and
conveniently, and used most. A 14-item questionnaire
was formulated to find out how many people had used

literature sources to acquire information, and of these sources, which were regarded as the most important one for their jobs. The result<Table 1> was rearranged from the original questionnaire order of lists according to the descending order of importance measured by mean values. Choices in the degree of

Bank's projects, reports and plans and 4) Material from Head Office- are internal sources, banks which safeguard security, should make their internal sources, with well constructed formats, more easily accessible to their employees. Among the 14 listed literature sources, only 8 items were listed as actually used by

<Table 1>. Experience and Degree of Importance of Literature

	Experience		Importance	
	yes	%	mean	S.D.
1)Bank's internal documents	373	88	4.303	0.786
2)My own memo or notebooks	340	81	4.197	0.751
3)Bank's projects, reports and plans	272	65	4.050	0.812
4)Materials from Head Office	303	72	3.903	0.808
5)Newspapers/News	361	85	3.889	0.825
6)Books, Manuals	271	64	3.866	0.830
7)Other banks' projects, reports and plans	143	34	3.643	0.832
8)Articles in journals or trade magazines	309	73	3.437	0.807
9)Bibliographies at the end of paper or book	184	44	3.419	0.858
10)Government documents(publication, statistics etc)	195	46	3.264	0.885
11)Directories	153	36	3.260	0.835
12)Materials published abroad	125	30	3.201	0.855
13)Advertisements in journals or magazines	247	59	3.088	0.868
14)Manufacturers literature(catalogues etc.)	192	46	3.057	0.822
weights: 1-not at all important, 2-not important, 3-average, 4-important, 5-extremely important				

importance were given as follows:

1 - not at all important, 2 - not important,

3 - average, 4 - important, and

5 - extremely important.

As shown in <Table 1>, 'Bank's internal documents' were ranked first both in importance and in experience, thus they are very desirable. Although it is very natural that the most important literature should be used the most frequently, another reason in obtaining this result is that the qualities of its contents are crucial to members in an organization.

All the fourteen items listed were felt to have some importance. But some were particularly so. These were bank's internal documents, own memo or notebooks, banks' projects, reports and plans, and materials from head office. The questionnaire also asked to indicate their usage of, or experience with, these sources. Here there was wide variation. Sources could be important but not accessible. For example this shows up in other banks' projects, reports and plans, and materials published abroad. <Table 1> shows clearly that people attempt to use readily accessible and important sources more than others, and that the most important literature is used most often where accessible.

Since the first four literature sources -1) Bank's internal documents, 2) My own memo or notebooks, 3)

over half the respondents. This suggests that many people still do not recognize the importance of information in their jobs. Therefore it is incumbent upon management to make their employees aware of the importance of information. They should make information available and provide them with a high-level awareness of the information requirements of the organization, relating them to specific business functions, and documenting their interrelationships.

Successful management of any enterprise requires wise planning, and in today's environment depends upon being able to keep abreast of facts relevant to the enterprise's vital functioning. One-way analysis of variance tests were conducted to investigate differences between importance ratings attributed by different job levels. Only three group comparisons were significant at the 5% level. These were 'Bank's projects, reports and plans', 'Meeting with colleagues in the bank' and 'Materials published abroad'. A Duncan's Multiple Range Test was conducted on the data to establish the importance of these three sources to various job levels of staff respondents. The Duncans Multiple Range Test is a post-hoc multiple comparison technique. For all significant one-way analysis of variance- tests, such comparisons were conducted. <Table 2> provides full details by way of an illustrative example. However, in

<Table 2> Impact of Job status on Literature Information Sources

Job Status / Level	Freq	Mean	Std. Dev	Duncans Multiple Range Tests			
				1)*a	2)*b	3)*c	4)*d
Bank's projects, reports and plans :DF=3; F-Ratio = 3.344; F-Prob. = 0.019							
1) Top and middle management	10	4.300	0.674				
2) Junior management	142	4.190	0.771			*	*
3) Senior clerk	71	3.859	0.780				
4) Junior clerk and caretaker	157	3.993	0.851				
Materials published abroad : DF = 3.567; F-Ratio = 3.567; F-Prob. = 0.014							
1) Top and middle management	10	3.600	0.516			*	
2) Junior management	120	3.317	0.889			*	
3) Senior clerk	64	2.937	0.753				
4) Junior clerk and caretaker	144	3.194	0.863			*	

a - Top and middle management, b - Junior management, c - Senior clerk, d - Junior clerk and caretaker
(* indicates significant differences between groups at p<.05)

future analysis the level of detail will be reduced due to the large number of statistical tests conducted in this thesis As shown in <Table 2>, in 'Bank's projects, reports and plans', the multiple range test indicates that 'Junior management' (mean importance value of 4.19) is significantly higher than 'Senior clerks' (mean value of 3.86) and 'Junior clerks' (mean value of 3.99). Hence, junior managers think that 'Bank's projects, reports and plans' are more important than do clerical workers. Therefore, managers think that 'Bank's projects, reports and plans' are more important than do clerical workers. Similarly in 'Materials published abroad' managers have higher mean values than clerks. This suggests that managers are more inclined than are clerks to emphasize the importance of 'Materials published abroad'.

'Newspapers/News' scored second in experience but only fifth in importance. Similarly, 'Articles in journals or trade magazines' ranked fourth in experience but ninth in importance. This reflects their easy accessibility but only minor importance as information sources. In this sense, they are somewhat exceptional because, generally speaking, less important sources are less frequently used. For example 'Trade Fairs and Exhibitions' ranked last under both experience and importance <Table 1>, though this may reflect lack of accessibility which is of course a basic prerequisite for actual experience and even for knowledge of importance. Business information is only valuable if it is relevant and up-to-date. Because people have to make informed decisions quickly, they must have knowledge of what information is important and have ready access to it. With the development of IT, people

can access large numbers of reports and articles through online information services. People can have vital business information from around the world relayed to their desks in seconds. All that this requires is a PC, a telephone line and access to online information services. At the touch of a button vital data becomes accessible on key people, companies, competitors and potential markets. With this information people can make the right decisions ahead of the competition.

As the development of telecommunications has removed the barriers of distance and time, the competitive world has changed and the roles of bank personnel must also change to take a 'global' view. This will call for increased use of foreign information sources. The participants were asked to answer 'Yes' or 'No' to the question whether they had used foreign materials for their jobs. Of all respondents, 26% indicated that they had used foreign materials. Among management the figure was 37%, and both employee and trade union representatives 20%. This difference was statistically significant (chi-square= 15.49, D.F.= 2, p<.001). It shows that management were more keen or had more need to have wider information sources and make an effort to get updated information from abroad than did the other respondents. Of those with foreign materials experience, 82% indicated experience with US materials, and 56% with Japanese materials. However, only 9% indicated experience with British materials and 2% with French and 1% with German. It shows a striking deficiency in view of European countries' importance in world financial and business affairs. In the question, "What is the main hindrance to accessing

<Table 3> Causes of Lack of Access to Foreign Literature Sources

	Level of Difficulty *a				Importance
	1	2	3	4	Respondents(%)*b
1)Language Difficulty	81	15	3	1	69
2)Difficulty in finding sources	46	40	12	2	52
3)Too expensive	14	12	52	22	36 .
4)Not Interesting	16	10	19	55	34
a. : 1= extremely difficult, 2= very difficult, 3= not very difficult, 4= not at all difficult					
b - % of respondents among total participants					

foreign materials", five items of hindrance were given. When more than one factor was shown, respondents were asked to rank them in order of difficulty. <Table 3> shows the results of responses. Of the total sample, 69% gave 'Language Difficulty' as the main decisive difficulty in using foreign information. Of these, 81% indicated it as 'extremely difficult', which could partly explain why French and German materials at 2% and 1% respectively were virtually not used at all. The second one (52% of the total sample) was 'Difficulty in finding proper sources'. Of these, 46% put this reason first. Thus to motivate members to make use of more foreign materials, banks should require, encourage or in different ways induce their employees to learn foreign languages by providing language training or education opportunities.

3.4. Communications

Communications can involve one or many colleagues internally or externally. Allen [1] says that as far as information was concerned, no great consideration was made of the number of different people with whom an individual communicated. It was recognized that communication involves the interchange of facts, thoughts, value judgements and opinions. The communication process may take many forms;

face-to-face conversations, memoranda, letters, reports, tabulations, VDU transmissions and so on. This part was aimed at finding out how much importance managers give to various communication methods. Respondents were asked to give importance on a scale of 1 to 5 as follows:

1 - not at all important,   2 - not important,
3 - average,   4 - important,
5- extremely important

For ease of understanding and clarity of explanation scales 1 and 2 have been combined into a single category showing "low important", and 4 and 5 into a single category showing "high important". The results have been listed in the <Table 4> by higher mean values.

'Colleagues inside the bank' was the most important and 'Relevant branch or departments in H.Q.' - another internal source - ranked second. Allen [1] found in his study that internal communication was of overwhelming importance as a source of information and also that on the average the best source of information was a colleague in the organization. Pelz and Andrews [21] in their extensive study reported that job performance was strongly related to the frequency and variety of an individual's contacts with organizational colleagues. Since these two are internally controllable sources, the bank must pay careful

<Table 4> Communication Methods

	Importance				
	Low important (%)	average (%)	high important (%)	Mean	S.D.
1)Colleagues inside the bank	-	8	92	4.427	0.693
2)Relevant branch or depts in H.O.	3	9	88	4.206	0.734
3)Customers	9	19	72	3.914	0.983
4)Vendors or manufacturers	9	21	70	3.856	0.94
5)Outside consultants	6	31	63	3.719	0.872
6)Alumni/Alumnae	15	40	45	3.38	0.917
7)Other banks' colleagues	11	47	42	3.366	0.772
8)Librarians	30	46	24	2.914	0.878
9)Members of religious organisations	42	39	19	2.677	1.026
weights: 1=not at all important, 2=not important, 3=average, 4=important, 5=extremely important					

attention to them. The remaining seven methods are external sources and thus less controllable. 'Customers' ranked third in importance. They play two roles; they give information as buyers and spread information of the products and the company image, good and bad. Modern businesses especially tend to give high regard to market orientation, that is, one of the main components is customer satisfaction, rather than production orientation [12]. Therefore, to succeed in this situation, banks need to follow two strategies:1) consider the needs and wants of the customers; and 2) advertise to and continually contact current and potential customers with specific key features and benefits of products/services. Banks can thereby generate and strengthen customer confidence and loyalty. One-way analysis of variance tests were conducted on the communicative items in order to identify if perceived importance ratings differed significantly between respondents from the five sample banks. Only one item: "Colleagues inside the bank" yielded a significant result (F-Ratio=4.701, DF=4, p<0.001), with CBK indicating a lower perceived importance rating than the remaining sample banks.

3.5. Information Technology

Information Technology is concerned with using technology to provide information in an efficient and useful manner and has an impact on individuals, organizations and society [13]. The information gathering, processing and presentation which is taken for granted in business today would probably be impossible to perform manually. The use of electronic data communication techniques to transfer and disseminate information, and sophisticated electronic methods to present it have revolutionized data processing. Because of these advantages, with the rapid development of technology, more emphasis is being put on the importance of IT. <Table 5> classifies the responses of participants to questions:

a) Are you personally well experienced in the use of IT facilities?

b)Do you consider yourself well informed about the function of IT facilities as they relate to your job?

c) How important do you believe the IT facilities are to you in your job?

<Table 5> arranges the IT facilities according to their importance. As shown in <Table 5>, 90% of the respondents give the 'Personal computer (PC)' as the most important equipment in obtaining information. This result supports the findings of Deloitee Touche Tohatsu International [9] on senior manufacturing executives from more than 1,300 world leading manufacturing business in 11 countries "Personal computers are becoming increasingly used for shop floor management and control and the paperless factory. Every global region feels that it is proficient with the use of PCs. PCs are the basis tool of today's organization" (p.32). However, the second most important equipment - 'Facsimile'- is ahead of the PC in both experience and functional awareness, which is probably explained by the fact that the operation of facsimile is easier and cheaper than the PC.

<Table 5> I.T. Facilities

	Experience		Function*a		Degree of importance			
	Yes	%	Yes	%	Low important (%)	High important (%)	Mean	S.D
1)Personal computer(P.C.)	326	77	307	73	10	90	3.436	0.830
2)Facsimile	395	94	365	87	9	91	3.403	0.801
3)Online Information Service (agency/company)	181	43	178	42	20	80	3.042	0.794
4)Telex	98	23	145	34	25	75	2.986	0.931
5)Electronic Mail	63	15	93	22	31	69	2.824	0.956
6)Microform(Film/Fiche)	81	19	79	19	31	69	2.789	0.859
7)CD-ROM	40	10	46	11	31	69	2.757	0.821
8)Teletext	10	2	26	6	37	63	2.697	0.871
9)Videotext	20	5	36	9	37	63	2.668	0.855
9)Teleconferencing	7	2	75	18	40	60	2.668	0.907
a. - perceived knowledge of function 1=not at all important, 2=not important, 3=important, 4=extremely important								

The third in all categories, experience, functional acknowledgement and importance is 'Online information service'. However, though 'Online Information Service' has a relative advantage in the timeliness of information, less than half of the respondents listed it in experience and awareness of function categories. The other five remaining facilities, except for 'Telex' in functional awareness, gained less than one third of respondents both in 'Experience' and 'Functional recognition'. Electronic mail, Microform, CD-ROM, Teletext, Videotext, and Teleconferencing - were used by very few, as shown in <Table 5>. In general, people have not realized the importance of these new IT facilities to obtain information, although most of them are not very expensive. Thus banks should have a policy to encourage their employees, especially managers, by education and training to use these new IT facilities to be familiar with and to get useful information.

When asked about the kind of software used at their work places, clearly ahead of all other systems is 'Word-processing', used by 63% of respondents. Next but with only 24% of the sample using it is 'Data base', a system that controls efficiently large quantities of information helpful in decision-making. 'Spreadsheet' which is useful for many things from simple text or numerical values to financial planning or statistical analysis, obtained only 17% response rate. The other four software types received response rates of 9%, 5% or less than 1%. In particular, although the using of 'Modellings' would include such benefits as simpleness, cheapness, less risk and providing insights into problems, only four participants actually made use of these. Clearly banks have a major task ahead in familiarizing their members with the wide range of currently available IT facilities. Since new facilities are constantly coming on to the market, managerial education and training will continue to call for major investment layouts by banks.

4. Summary and Further Research

This research attempted to find bank staff's attitudes towards information resources management in the banking industry. It was revealed that internal information sources were regarded the most important and most frequently used. Clearly people attempt to use important and readily accessible sources more than others and the most crucial literature is favored by most people. For the use of foreign materials, the most difficulty in using foreign materials is language problems followed by difficulty in finding sources. This suggests that banks should take more positive action to encourage members to learn foreign languages and provide suitable foreign materials for their staff. Regarding communication methods, like literature sources, internal communication sources were considered most important. Frequent contact with colleagues in the bank, and relevant branch or departments in head office are strongly recommended to improve information levels. IT facilities are becoming important sources because their prices are falling dramatically while their functional usefulness and usage is progressively increasing. PCs and facsimiles were used most frequently and regarded as the most important in obtaining and storing information. A very high percentage of respondents indicated experience and awareness of the function of these facilities, which shows that people are familiar with these two facilities.

With regard to the use of software to obtain information, word-processing was used by about two-third of respondents while other methods were rarely used. This indicates that the use of various types of software in the developing countries is far below their use in developed countries. These two results show that most people still do not recognize the importance of information technologies and software, not knowing how to use the facilities, or not having access to them. It leaves further research to identify what the main reasons are that hinder people in using them.

The limitations and further research can be suggested as follows: first, since there is no empirical data in Korea on this area, it is almost impossible to set up clear hypotheses to test them. Thus this study took as its starting point exploratory assertions resulting from a questionnaire rather than strictly formulated hypotheses. Further research could be well conducted by setting hypotheses based on the research findings of this study. Second, due to the limitations of

time and cost, comparisons could not be made between developed and developing countries in this study. Studies are needed to explore the similarities and differences between developing and developed countries regarding their experience with IT. These will give valuable information to industry management, to government policy makers, academic researchers and students in these vital areas.

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