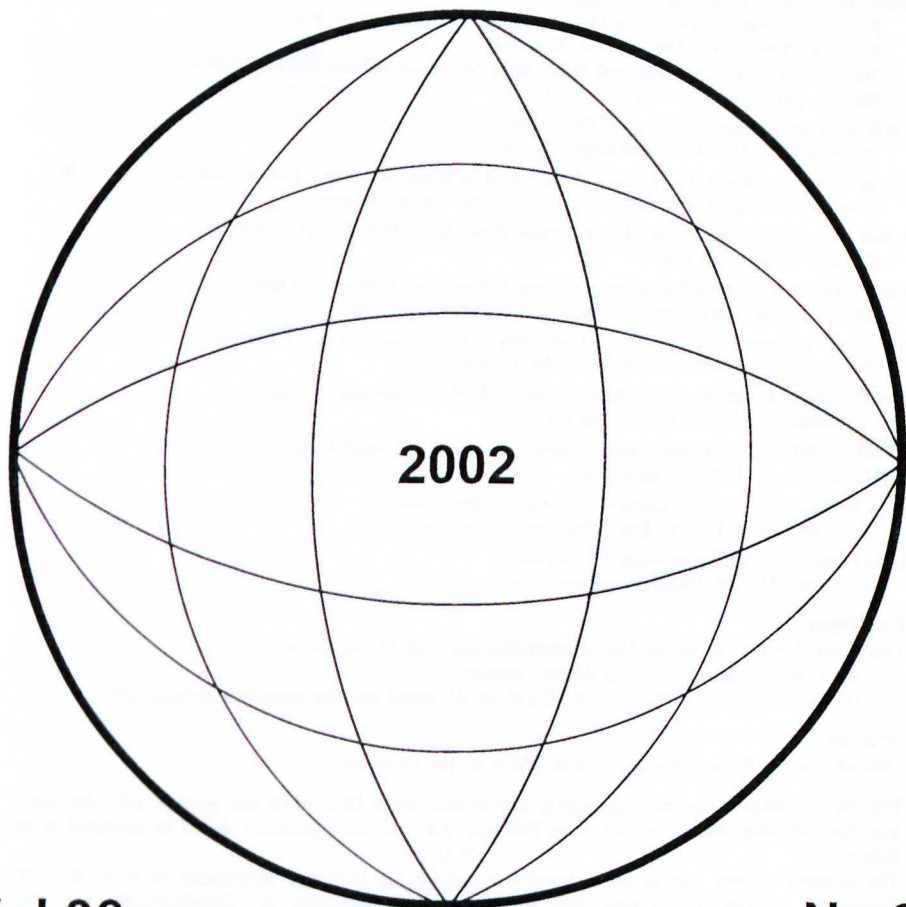


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Contents:

- Laila Marouf and Sajjad ur Rehman:
Emerging Digital Environment in the Private Sector: An Analysis of
Information Operations. 95
- Anselm Sickmann:
The Bundeswehr Scientific and Technical Information System and its
Historical Background 114
- Sharmila Ghosh and G Y Wesley:
*A special library for development research – the role of the ISS library in
managing information requirements for research.* 135

EMERGING DIGITAL ENVIRONMENT IN THE PRIVATE SECTOR: AN ANALYSIS OF INFORMATION OPERATIONS⁺

By Laila Marouf^{*} and Sajjad ur Rehman^{}**

Abstract: The purpose of the study was to profile the information activities in the Kuwaiti corporate sector and to find out if there were any differences between the current practices and the perspectives of corporate leadership about the future needs. One of the top executives or managers from each of the 39 Kuwaiti companies, which volunteered to participate in the study, was interviewed. Participant input was sought on a carefully designed instrument, containing 19 statements in four operational areas, covering the scatter of information operations in private companies. In the first part, each participant indicated the extent to which each of the information operations was performed in the organization. Then, they were asked to rank three most and three least important activities, based on their best judgment, disregarding the operational situation in their organizations. It was found that there is a marked difference between the current practices and the perceived importance of different activities in the areas of information organization, database development, data security, and the conduct of competitive intelligence. Low perceptions about the importance of Internet utilities and Web design also point to some issues of awareness about their use and availability of manpower.

Introduction

Information technology has influenced all the operations of management, production, sales, marketing, human resources and financial control in the corporate sector. Evidently, any competitive organization in this sector is becoming a rigorous user of information resources, systems, resources and services, as information runs like a life-fabric through each activity. The internal operations of a private company have been reconfigured and new approaches are applied to the operations related to data, documents, records, reports and communications. We also see a constant shift in adopting an aggressive approach in the outreach efforts of a private enterprise with its external environment, stakeholders, customers, public agencies and a number of other partners in diverse

⁺ This is revised version of the paper presented in the 9th Conference of the Arabian Gulf Chapter of the Special Libraries Association, Doha, Qatar, April, 2002 where it was given the best research award.

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spheres. A number of technologies have been employed for these activities in this fast changing work environment.

In order to manage information operations effectively, it is important to profile them so as to indicate the extent and depth of their conduct, which would in turn lead to the articulation of human resources needed in the emerging environment. It is understood that a given socio-economic and technological context would dictate the extent to which changes are introduced in information operations in the corporate companies. It is further assumed that the apparent expediencies of the change might be prompting certain information activities being conducted at a certain level. However, the executives of these companies may hold divergent views about the current practices. They may have their own insights about their priorities for future directions. Thus, it becomes a two-fold task; first, to determine the nature and extent of information operations in these companies, and, secondly, to examine if the current practices are at variance with the perceptions of the executives about the value and importance of these activities.

A number of variables related to geographic locations, socio-cultural context, operational focus, size, and public policies cause innate variations in the information operations of the private sector in any region. Kuwait is a small state in the Arabian Peninsula, with a small population of .83 million natives, but having the second largest petroleum reserves that give it a distinct prominence in the world community. It has an expatriate population of 1.7 million. During the last 60 years, its economy has evolved from the pre-petroleum phase of sea-trade and small domestic market to its post-petroleum integration with the international systems of production and multinationals. The latest drive is toward free enterprise, possibly through new sets of legislation, tariff provisions, and trade regulations.

The corporate sector of the nation has been quite active during the last many decades. It is evident from the fact that the net contribution of this sector to the GDP grew from 27% in 1997 to 31% in 1999, registering a growth of about 15% in two years. Some petrochemical industries have also been developed. Consumer-oriented industries in the areas of food technology, construction and development, and communication have flourished, catering for the needs of the local and regional needs. The nation boasts of being one with the highest figure for per capita automobiles. It also has one of the strongest service sectors in financial area, concentrated in banking, insurance and investments. The country has certain laws of import, export, investment and economic activity that favor the indigenous population. Many small and medium-sized enterprises have been in a rigorous competition for capturing the consumer market. This corporate sector is typical of

other countries in the Arabian Peninsula, all sharing certain points. These countries have a small industrial base; the industrial sector is concentrated in areas related to petroleum and minerals; there is little research and development activity; and the focus is on the consumer-oriented products and services. The Arabian Gulf region, under its existing organizational framework of the Gulf Cooperation Council (GCC), has six member nations and Kuwaiti private sector typifies the overall corporate activity in the region. It is worth exploring how the Kuwaiti companies are managing their operations with regard to their use of IT, information systems, and resources and services. Also, it is important to find out the variations between the current practices and the views the executives have about their priorities for future applications.

A number of studies have addressed similar questions in diverse settings. Bergeron conducted an extensive review of literature on the subject and noted that information, like other organizational resources, needed to be managed to help organizations improve productivity, competitiveness, and overall performance¹. The British Library Research and Innovation Center was engaged in a comprehensive study to identify the current and emerging positions of information managers in banking, pharmaceutical and information provision industries. They profiled the skills and competencies needed for first and second jobs in these sectors. They also examined how far academic departments were including these skills in their academic programs and curricula.²

Tchobanoff and Price examined the qualities needed in the library and information school managers to fill positions in corporate sector and key skills they expected to be included in the curricula.³ Rehman, Abu Baker and Majid came up with lists of competencies in different operational areas for the special library setting.⁴ Elkin examined the implications for the development of information professionals. She listed attitudinal attributes as well as those capabilities that were generally required of the future information navigators.⁵ Underwood listed core body knowledge for

¹ P. Bergeron, (1996). "Information Resources Management," *Annual Review of Information Science and Technology* 31 (1996): 263-300.

² A. Stenson., R. Raddon, and A. Abell A., *Skills and Competencies in the Corporate Sector*. London: British Library Research and Innovation, 1999.

³ J. B. Tchobanoff, and J. A. Price, "Industrial Information Service Managers: Expectations of, and Support of, the Educational Process," *Library Trends*, 42, no. 2 (1993): 248-256.

⁴ Sajjad Rehman, Ahmad B. Abu Baker, and Shaheen Majid, Defining Competencies for Special Library Professionals: Malaysian Experience, *Aslib Proceedings*, 49, no.6, (June 1997): 162-169.

⁵ J. Elkin, Information Navigators: Future Professionals? 1998. Available at: <http://www.ukloln.ac.uk/papers/bl/blri078/content/repor~12.htm> last access: April 20, 2001.

information technology professionals approved by the Australian Computer Society.⁶

Many of the listed items were quite relevant for application in the corporate sector. Joling also reviewed such competencies from a futuristic viewpoint and highlighted the trends and dynamics in the information workplace. She also discussed the preparatory aspects of these professionals.⁷ Rehman and Ansari provided detailed analyses about the perceptions of educators for the coverage of different areas and topics in the formal degree programs of information studies.⁸ Rehman and Marouf profiled information operations in the Kuwaiti corporate sector. They had noted the looming influence of information technology on the way these organizations were conducting business by using a variety of information sources, systems and services.⁹

Problem

Most of the studies reviewed above have addressed the need for defining the competencies that need to be developed among information professionals. In the context of corporate sector, there is a need to profile the information operations and activities that are being performed in different areas. Since the corporate sector of the Gulf countries located in the Arabian Peninsula has a peculiar context, a systematic examination of their information operations and activities would provide an understanding of the scatter and intensity of information work. As the situation of different companies requires diverse practices, a general understanding about the extent of these operations is needed. However, the current practices have been developed in response to a number of expediencies such as the human resource situation, strategic differences in different sectors of the corporate organizations, and organizational and operational profiles of these bodies. There is a strong likelihood that the executives in these organizations may have conceived their priorities for future development of information operations differently from

⁶ A. Underwood, "The ACS Core Body of Knowledge for Information Technology Professionals: Approved by Council on 20 September 1997." Available at: <http://www.acs.org.au/national/pospaper/bokpt1.htm> last access April 20, 2001.

⁷ C. Joling, *Competencies with a Message*. 2000. Available at: <http://www.idrc.ca/fidcan/acuril.html> last access: April 20, 2001.

⁸ Sajjad Rehman, and Husain Ansari, *Information Education in the Arabian Gulf Region for the 21st Century*. Research report submitted to the Research Administration, Kuwait University, 2001, unpublished.

⁹ Sajjad Rehman and Laila Marouf, "Information Operations in the Kuwaiti Corporate Sector: An Analysis." Paper presented at the 2002 Information Resources Management Association International Conference, May 19-22, Seattle, Washington, USA.

the way these have evolved. There is a need to find out what are the differentials between the current practices and the aspirations of the executives for future directions. This would help in creating a crucial understanding of the possibilities and opportunities in the future, as these could be viewed from the practice scene of today.

Research Questions

This study was designed to seek answers to the following two questions:

- What is the extent of operation of different information activities in the **Kuwaiti** corporate sector?
- What are the differentials between the current practices of information operations and the perceptions of the executives about the most and the least important activities, considering their future needs and aspirations?

Procedures

For this study, it was considered appropriate to identify companies that would represent the Kuwaiti corporate sector and collect data from them through a structured interview with one of the top executives of each of them, based on a carefully developed research instrument. In order to identify companies as population of the study, the directory, *AlMisbar: The Who's Who of Kuwait in State and Business*, 4th ed. (Delta: Kuwait, 2000) was used. Selection criteria used were (a) minimum number of employees must be 50, (b) the minimum capital of the company must be one million Kuwaiti dinar, and (c) it should be willing to participate in the study. Based on the first two factors, a total of 70 companies were identified. They were faxed an initial request in which the purpose of the study was stated and it was explained that one of the top executives of the company would be interviewed for about 45 minutes in case they volunteer to participate in the study. Telephonic inquiries and personal contacts were used to extract responses. Subsequently, fifty-four of them (77%) consented to participate.

Later, at the time of conduct of interviews, 15 of the 54 companies (27.8%) were unable to work out a mutually convenient interview appointment and thus they could not participate in the study. Thirty-nine companies which actually participated in the study belonged to diverse sectors and the following breakdown provides an overall picture of the wide spectrum of the scatter:

Financial Institutions

Investment	7
Banks	4

Insurance	2
Service Industry	
Hotel industry	4
Automobile	2
Pharmaceutical (import & sale)	2
Estate management	1
Warehousing	1
Travel	1
Communication	1
Financial information systems	1
Other Industries	
Construction and development	3
Petro-chemical	2
Food Technology	2
Other Industries	1
Business	
Conglomerates	3
Export/Import	1
Retail	1
<hr/>	
Total	39

Preparation of the research instrument was the most critical step. The intent was to have a brief, logical and well-designed instrument that would elicit the needed data without causing strain on the interviewees. As a first step, based on an extensive review of literature and scanning of competency studies, an initial list of information activities in the corporate companies was prepared. Then these activities were organized by merging those that had an element of overlap, deleting those that were considered unnecessary or redundant, and combining a number of them so as to have a logical set of activities. The instrument was also pre-tested.

The research instrument was designed to collect information about two dimensions: (1) extent of operation of each of the 19 activities in the four operational area, and (2) perceptions of the participants about the three most and the three least important activities. The participants were asked to do these rankings after they had given their judgment about the current practice, item by item, and they were able to make a sound judgment about their actual need vis-à-vis their current practice. Rankings was requested only for three items for both the most and least important dimensions, as longer lists were feared to create confusion in their responses. Also, the use of two measures of the most and the

least important was expected to add validity to the responses, obliging the participants to be more critical in their thought process.

A faxed request for interview, together with a copy of the research instrument, was sent to each of the interviewees. They were assured of the use of information exclusively for research and about the anonymous treatment of their responses. It also contained the proposed date and time of interview. The interviewee was requested to scan the research instrument before the meeting and frame his/her opinion and also mark any areas that deserved explanation. It was specified that none of them was expected to have filled in the instrument before the interview. Telephonic follow-up was made for confirmation in majority of the cases. A number of interviewees were contacted many times, yet it was not feasible to conduct the interview due to their non-availability, bringing down the final number of participant organization to 39 as compared to 54 who had initially agreed to participate.

The mode of conduct of the interview was that the researcher would briefly describe the purpose and significance of the study. The researcher would read out a statement and provide any explanation, if the interviewee wished so. Then the researcher would ask the interviewee to indicate the extent to which a particular activity was performed in the organization. The researcher would mark the response on the instrument she was holding. In the second part, the researcher attempted to bring them out of the mode of the current practice and focus on their needs in relation to their priorities for the development of information operations in the future. It was made overly clear that their responses to this part had nothing to do with their current practice. Then, they were asked to identify from those activities from the instrument that they considered most or least important. Thus, each participant was expected to mention six activities, three being the most important and another three being the least important.

Quite a few interviewees requested their colleagues, responsible for certain operations in the company, join them for providing input related to certain activities. In one company, it was realized that its two units performed in an autonomous manner and could have different responses for specific statements. It was agreed that in order to ensure validity of responses, two individuals for the company would be interviewed separately, resulting in two responses from the same company. Consequently, we had a total of 40 responses from 39 companies, based on this interview exercise. Amount of time spent on an interview was timed and it was found that an average interview consumed 45-60 minutes.

Analysis

Data about current practices were analyzed by using frequency counts and respective percentages. The respondents had given their judgment about the extent of operation of each activity in one of the four categories: no, little, moderate, and extensive levels of activity. Table 1 provides analysis of these results with frequencies and percentages in the four categories for each statement.

For the second part, each respondent had identified three statements as being either the most important or the least important. It means that each activity had a certain tally of 1st, 2nd and 3rd ranks, as indicated by the respondents. These tallies were then used to compute rank score of each activity, which was used to sequence them in the order of the most important and the least important in Tables 2 and 3, respectively. The rank score was computed by using the multipliers of 3, 2 and 1 for the ranks of 1, 2 and 3, respectively within each rank category and then adding them up together in order to get the overall rank score. For instance, if Activity A was ranked first by 5 respondents, second by 3 of them and third by one of them, the rank score would be:

Rank 1 Frequency: 5	Multiplier of 3,	score of	15
Rank 2 Frequency: 3	Multiplier of 2,	score of	6
Rank 3 Frequency: 1	Multiplier of 1,	score of	1

Total rank score of the statement: 22

Activities were arranged by using the descending rank score criterion. If more than one activity had the same score, the rank was determined by averaging out.

For each activity, results of the extent of operation from Table 1 were used. For perceptions about importance, results of Tables 2 and 3 for the same statement were used for the purposes of comparison and discussion.

Table 1: Information Operations in Kuwaiti Corporate Companies (N=40)

I Information Needs and Use, Resources and Services	None	Little	Mode- Rate	Exten- sive
1. Obtaining and using information sources for organizational work such as research reports, periodicals, books, manuals, standards, databases, Internet sites, reference materials, etc.	0 0.0%	3 7.5%	16 40.0%	21 52.5%
2. Supplying information to users in your organization in appropriate report formats and media	0 0.0%	9 22.5%	11 27.5%	20 50.0%
3. Conducting competitive intelligence for your organization such as finding information about competitive companies and their products, forecasting activities, etc.	2 5.0%	4 10.0%	17 42.5%	17 42.5%

4. Locating information sources about your organization such as statistical data, technical reports, company archives, publications, etc.	2 5.0%	9 22.5%	13 32.5%	16 40.0%
5. Determining information needs of users from your organization such as research and development staff, professionals, executives, etc.	2 5.0%	11 27.5%	14 35.0%	13 32.5%
6. Organizing internal information (memos, reports, etc.) and external information and documents by using appropriate techniques such as indexing, filing, tagging, categorizing or classifying them	2 5.0%	16 40.0%	13 32.5%	9 22.5%
II Computing Activities: Hardware, Software, Networking and Data Security				
1. Configuring computer software needs of your organization and selection and purchase of packages; troubleshooting of operating systems and software	0 0.0%	2 5.0%	4 10.0%	34 85.0%
2. Configuring computing hardware requirements of your organization and their procurement; maintenance and troubleshooting	0 0.0%	0 0.0%	7 17.5%	33 82.5%
3. Developing a LAN or an Intranet for your organization such as setting up servers and client stations, physical planning, assigning IP addresses and rights of access to	2 5.0%	5 12.5%	4 10.0%	29 72.5%
4. Ensuring data security in your organization through encryption techniques, firewalls, disaster recovery	4 10.0%	9 22.5%	10 25.0%	17 42.5%
III Computing Activities: Database, Information Retrieval and Internet				
1. Using Internet directories and search engines for retrieving relevant information and documents for the needs of your organization	1 2.5%	5 12.5%	11 27.5%	23 57.5%
2. Developing databases for organizing company data by using systems such as Access, Oracle, etc.	6 15.0%	9 22.5%	6 15.0%	22 47.5%
3. Searching, retrieving and packaging information from databases, both external and internal	5 12.5%	10 25.0%	11 27.5%	14 35.0%
4. Designing Web pages and sites for your organization using languages and utilities	16 40.0%	12 30.0%	7 17.5%	5 12.5%
5. Using Internet utilities like Telnet, Listserv, bulletin boards, FTP, etc. for your organizational needs	18 45.0%	15 37.5%	3 7.5%	4 10.0%
IV Management Activities				
1. Preparing financial and costing reports for your organization using different computing utilities such as spreadsheets, etc.	1 2.5%	0 0.0%	3 7.5%	36 90.0%

2.	Planning strategically for your organization such as writing mission statements, goals and objectives, benchmarking, roadmaps, etc.	1 2.5%	5 12.5%	10 10.0%	24 60.0%
3.	Communicating with individuals and groups within and outside the organization by using verbal and non-verbal skills; application of communication/presentation skills in public relations, marketing, etc.	0 0.0%	3 7.5%	13 32.5%	24 60.0%
4.	Training staff in information searching and use	9 22.5%	17 42.5%	4 10%	10 25%

Table 2: Ranking of The Most Important Activities (N=40)

Statement of Activity	Ranks			Score
	1	2	3	
1. Planning strategically for your organization such as writing mission statements, goals and objectives, benchmarking, roadmaps, etc	21	5	1	74
2. Organizing internal information (memos, reports, etc.) and external information and documents by using appropriate techniques such as indexing, filing, tagging, categorizing or classifying them	3	5	6	25
3. Conducting competitive intelligence for your organization such as finding information about competitive companies and their products, forecasting activities, etc.	3	3	4	21
4. Developing databases for organizing company data by using systems such as Access, Oracle, etc.	2	4	3	17
5.5 Ensuring data security in your organization through encryption techniques, firewalls, disaster recovery strategies, etc	2	1	4	12
5.5 Training staff in information searching and use	1	3	3	12
8. Obtaining and using information sources for organizational work such as research reports, periodicals, books, manuals, standards, databases, Internet sites, reference materials, etc.	2	2	1	11
8. Determining information needs of users from your organization such as research and development staff, professionals, executives, etc	0	4	3	11
8. Locating information sources about your organization such as statistical data, technical reports, company archives, publications, etc.	2	2	1	11

10. Communicating with individuals and groups within and outside the organization by using verbal and non-verbal skills; application of communication/presentation skills in public relations, marketing, etc.	0	3	4	10
11. Supplying information to users in your organization in appropriate report formats and media	0	2	5	9
12.5 Searching, retrieving and packaging information from databases, both external and internal	0	3	1	7
12.5 Designing Web pages and sites for your organization using languages and utilities	2	0	1	7
14. Using Internet directories and search engines for retrieving relevant information and documents for the needs of your organization	1	1	0	5
15.5 Developing a LAN or an Intranet for your organization such as setting up servers and clients stations, physical planning, assigning IP addresses and rights of access to users	1	0	1	4
15.5 Preparing financial and costing reports for your organization using different computing utilities such as spreadsheets, etc., roadmaps, etc.	0	2	0	4
17.5 Configuring computing hardware requirements of your organization and their procurement; maintenance and troubleshooting	0	0	1	1
17.5 Configuring computer software needs of your organization and selection and purchase of packages; troubleshooting of operating systems and software	0	0	1	1
19. Using Internet utilities like Telnet, Listserv, bulletin boards, FTP, etc. for your organizational needs	0	0	0	0

Table 3: Ranking of the Least Important Activities (N=33)*

Statement of Activity	Ranks			Score
	1	2	3	
1. Designing Web pages and sites for your organization using languages and utilities	8	5	1	37
2. Using Internet utilities like Telnet, Listserv, bulletin boards, FTP, etc. for your organizational needs	7	3	2	29
3. Configuring computing hardware requirements of your organization and their procurement; maintenance and troubleshooting	4	1	1	15

* Those who did not consider any activity irrelevant = 7 out of 40.

4.	Conducting competitive intelligence for your organization such as finding information about competitive companies and their products, forecasting activities, etc.	4	0	0	12
5.	Ensuring data security in your organization through encryption techniques, firewalls, disaster recovery strategies, etc.	2	1	1	9
6.	Developing a LAN or an Intranet for your organization such as setting up servers and clients stations, physical planning, assigning IP addresses and rights of access to users	0	3	2	8
8.	Locating information sources about your organization such as statistical data, technical reports, company archives, publications, etc.	0	2	3	7
8.	Using Internet directories and search engines for retrieving relevant information and documents for the needs of your organization	2	0	1	7
8.	Determining information needs of users from your organization such as research and development staff, professionals, executives, etc.	1	2	0	7
11.	Supplying information to users in your organization in appropriate report formats and media	1	1	1	6
11.	Training staff in information searching and use	1	1	1	6
11.	Communicating with individuals and groups within and outside the organization by using verbal and non-verbal skills; application of communication/presentation skills in public relations, marketing, etc.	1	1	1	6
13.	Searching, retrieving and packaging information from databases, both external and internal	0	2	1	5
14.5	Organizing internal information (memos, reports, etc.) and external information and documents by using appropriate techniques such as indexing, filing, tagging, categorizing or classifying them	0	2	0	4
14.5	Developing databases for organizing company data by using systems such as Access, Oracle, etc.	0	2	0	4
16.5	Configuring computer software needs of your organization and selection and purchase of packages; troubleshooting of operating systems and software	0	1	0	2
16.5	Preparing financial and costing reports for your organization using different computing utilities such as spreadsheets, etc.	0	1	0	2
18.	Obtaining and using information sources for organizational work such as research reports, periodicals, books, manuals, standards, databases, Internet sites, reference materials, etc	0	0	0	0
19.	Planning strategically for your organization such as writing mission statements, goals and objectives, benchmarking, roadmaps, etc	0	0	0	0

Findings

I Information Needs and Use, Resources and Services

The first area of information activities covered in the research instrument was related to information needs and use, resources and services, consisting of six statements. The activity dealing with *obtaining and using information sources for organizational work* was most extensively covered in the area where 92.5% of the respondents had marked the categories of extensive and moderate levels of activities. When the same respondents ranked the most and least important activities, it was found that it had 8th rank among a total of nineteen with the rank score of 11. It means that there exists a real differential between its actual level of performance and the perceived importance of the activity. On the other hand, in Table 3 for ranking of the least important activity, no respondent had listed it. Apparently, the respondents view it quite important, but there are other activities that are perceived to more significant in relative terms.

The second most extensively performed activity in this section was related to *supplying information to users*. More than 77% of the respondents had marked extensive and moderate levels of activity. However, on the dimension of perceived importance, it had 11th rank with the score of 9. Interestingly, three participants also ranked it least important with the rank score of 6. This indicates that despite having an extensive level of performance, there is a great deal of diversity about the perceived importance of this activity.

Conducting competitive intelligence was performed at extensive and moderate levels in 85% percent of the organizations, evenly split in the two categories. On the dimension of perceived importance, it received the third highest rank score of 21. Most interestingly, four participants perceived it to be the least important with a rank score of 12. It means that there are a number of organizations that do not find any value for this activity, yet majority of them is performing it at a reasonably extensive level. It has been noted that collection and application of competitive intelligence is normally done informally, using the local socio-cultural outlets and exchanges. Only those organizations that are in a tough competitive run-up feel as strongly about this activity whereas many others without any real competition may not be attaching much importance to it.

Locating information sources about the organization such as statistical data, technical reports, company archives, publications, etc. is performed extensively and moderately by about three fourth of the organizations. It received 8th rank with a score of 11. Interestingly, as many respondents also marked it for the least important with the ranking score of 7 with 8th position in the overall ranking,

implying that difference organizations seem to have divergent views about its importance.

About two third of the organizations performed the activity of *determining user needs* at extensive and moderate levels. It had 8th rank with a score of 11 for the perception about most important activities. Again, for the measure of least important, it had the 8th rank with the score of 7. It implies that while it is widely performed, there are a number of organizations that do not attach any significance to that.

About one fourth of the participants performed the last activity in this group related to *organizing internal information* extensively, about one third moderately, 40% at the minimal level, and 5% reported no activity. It seems that this activity is being performed differently in majority of these organizations. Overall, it was the least performed activity within this group of activities. However, it was noted that it received third position with the rank score of 21, marked by 10 participants. Thus, it indicates quite a significant differential between the actual conduct and the perceptions about its significance and usefulness. For the least important measure, it had the rank of 14.5 with a score of 4. These results indicate that this activity is not being performed at an extensive level in majority of the organizations, yet they find it highly important. The differential might be attributable to the unavailability of human resources and the need for using an aggressive approach toward developing the right resources and facilities for indexing, tagging, and cataloging such resources that are needed in the company business.

II Computing Activities: Hardware, Software, networking and Data Security

This section contained four statements of activities. Majority of the organizations performed these activities at an extensive level. However, the respondent perceptions about their importance appear to be quite at variance with their current practice.

Eighty-five percent of the organizations performed the activity of *configuring computer software needs, etc.* at an extensive level while another 10% at the moderate level, indicating that almost each of them is actively engaged in it. However, the sense of importance attached to the activity was very low, evident from its rank of 17.5 with the score of only one. On the dimension of least importance, it received the rank of 16.5 with a score of 2 implies that the activity is performed extensively; mostly the respondents do not think that it is unimportant, yet almost none of them attaches a great deal of importance to it. One possible explanation is that the companies might have already established their software systems and hence they do not find any pressure about their significance, as they might be managing them reasonably well.

About 98% of the respondents performed the other component of information systems related to *configuring hardware needs, etc.* at extensive or moderate levels. However, for the perception of importance, it had the rank of 17.5 with the score of 1. Concurrently, it received 3rd rank with a total score of 15 for being least important. It clearly indicates that while being performed in every organization extensively, employers do not attach much significance to its conduct.

The third statement in the section was about the *development and maintenance of LANs*. About three fourth of these organizations performed it extensively while 10% at the moderate level. Again, this activity was perceived to have the lowest importance with the rank of 15.5 with a score of 4. Conversely, for the scale of least important, it received 6th rank with a score of 8. These findings are more or less consistent with the preceding statement of activity.

The last activity in this section was about *data security facilities and tools*. This was being performed at quite a low level in these organizations in relative terms. Those performing it at extensive and moderate levels were 42.5 and 25% respectively, leaving about one third of them in the categories of little or no performance at all. On the dimension of perceived importance, it had the rank of 5.5 with a score of 12. It also received the same 5th rank for least important activities with a score of 9. These results indicate that quite a few organizations have not felt the need to install data security and encryption methods. It might be due to the fact that they are not engaged in any online sales, marketing and public contacts, which normally exposes to security breach and hacking problems. However, many of them perceive it quite important. But, concurrently, those organizations that have no such plans are as receptive to their importance. These perceptions might change when the normal business activities in the country turn into an aggressive approach for the use of Internet, EDI, globalization, and electronic business.

It has been noted that the differentials between levels of activity and perceptions about importance are quite high for three out of the four statements in this section. It is probably due to the fact that they feel little concerned about the conduct of these activities in the presence of well-established systems. It confirms this notion that the level of performance of an activity does not essentially reflect the perceived importance of a particular activity from the perspective of corporate executives.

III Computing Activities: Database, Information Retrieval and Internet

This section contained five statements of activities, all related to application of information technologies and systems in the organizational life. Three of the five activities were related to Internet and Web use and applications.

The activity performed most extensively is related to *using Internet directories and search engines for retrieving relevant information*. More than 57% of the companies performed the activity at an extensive level while 27.5% at the moderate level. Its rank order for the perception of importance was 14 with a score of 5. On the other hand, 3 participants marked it to be the least important with a ranking score of 7 in the 8th rank. It seems that majority of these organizations is actively using Internet for retrieving the needed information. However, it is being performed without having any strong views about its importance or otherwise.

The next activity in this area was related to *developing databases*. Respective percentages of 47.5 and 15 were noted for extensive and moderate levels of activity. It has been somewhat surprising that 37.5% of these organizations reported little or no activity on this end. Databases are the most important application for any organization and it is quite intriguing that such a large number of them are not using these applications. This activity received 4th rank for its importance with a score of 17, marked by 9 participants. Only two participants marked it on the measure of least important, giving it the rank of 14.5 with a score of 4. These two ranking positions are mutually supportive and indicate that there is a great deal of importance attached to this activity though quite a few of them are inactive on this front. This difference in the current practice and the perceived importance is quite noticeable.

The third activity in this section was about *searching and applying information from external and internal databases*. It was found that 62.5% of these organizations were active at extensive and moderate levels while the remaining 37.5% were inactive, meaning that more than one third of them are not engaged in these crucial activities. The activity received 12th with a score of 7 on the measure of the most important. For the least important dimension, it received 13th rank with a score of 5. The inference is that those who are not engaged in the activity are not much excited about its real potential while others are just managing it the way they wish. Since this activity is based on databases, these results would be more meaningful if studied together with that activity.

Designing Web pages was performed at extensive and moderate levels by 12.5 and 17.5% of these organizations, leaving the other 70% being inactive or showing little activity. For its perceived importance, it received the rank of 12.5 with a score of 7, marked by three participants. Quite importantly, it received first rank for the perception for being the least important with a score of 37. Evidently, majority of the organizations is inactive in this area and they do not find much reason to give it importance. The explanation to this otherwise indifferent outlook is that many of them are outsourcing to specialists for the design of these facilities

and they do not wish to have any major operation in-house. Secondly, since the Kuwaiti companies are not yet aggressively pursuing e-business to the desktop of consumers, developing and maintaining these facilities might not be a priority in their view.

Using *Internet utilities* for communication received the lowest performance assessment in this category. Only 17.5% percent of them reported the activity at extensive or moderate levels whereas respective percentages for little or no activity were 37.5 and 45%. On the dimension of importance, it had the 19th rank with the score of zero. Likewise, there was a strong perception of its being least important with its 2nd rank and a score of 29, marked by 12 participants. All the three results are mutually corroborative. These are important utilities in the networked environment of today's business world. However, there appears to be a general lack of awareness about their real potential and application in these organizations.

When we compare the results of the 2nd and 3rd categories, a striking difference is noted. It seems that all the companies are quite active for hardware, software and telecommunication aspects, but they are not as aggressive about the use of these utilities for databases, information searching and retrieval, use of Internet, Web design and applications and use of Internet utilities. The activities in the third section require a great deal of professional input by experts in these areas. Also, the current cultural practices in the country may not be as favorable for aggressive design and development initiatives.

IV Management Activities

This section contained four activities where information processes and technologies can play a pivotal role in their conduct.

Information technology and processes have had a significant bearing on financial planning, management, control and reporting. Ninety percent of the organizations were engaged in the activity extensively and only one reported no activity in this area. For the measures of most and least important, this activity received the ranks of 15.5 and 16.5 respectively. It means that while this activity is performed in almost every organization, the participants failed to perceive any degree of significance with it. It needs to be examined whether it is due to their approach of doing it anyway without really looking into different aspects of its conduct where it could be improved in many ways.

Strategic planning was the second most extensively performed activity in this section; 60% and 10 percent of the organizations had it at extensive and moderate levels. Five out of the total 39 organizations reported little and one no activity in this area. Apparently, most organizations have a critical dependence on the quality

of information service for their strategic planning. It was worth noting that it received first rank among the total of 19 with a score of 75. It is yet to explore how the information activities are really integrated with the process of strategic planning in these organizations.

The third activity, heavily overloaded with information content and media, was related to *communicating with individuals and groups and communication/presentation capabilities*. More than 92% of the organizations performed it extensively and moderately. It had the 10th rank with a score of 10 for the measure of the most important. Even on the measure of least important activities, it had 11th rank with a score of 6. It can be inferred that almost each organization is actively engaged in the activity, yet they are doing it without any particular regard to its significance.

The last activity in the group was related to staff development in information searching and use. The fact that only 25 and 10 percent of the organizations were performing it at extensive and moderate levels was quite noticeable. Majority of them was inactive in this area. Empowerment of staff through adequate development strategies is one of the most important considerations. This anomalous situation was evident, as it received the rank of 5.5 with a score of 12. Only three participants assessed it on the scale of the least important with a score of 6 in 11th rank. This activity stands out as being one of the striking areas where the current practice and perceptions about the importance are quite at variance.

Conclusion

It is recognized that the information needs vary from organization to organization, necessitating diversity in their operations, which in turn would require different sets of capabilities among the human resources. The real need is to have a clear conceptualization of the points of consensus and divergence in relation to the diversified needs and expectations.

The areas in which the differentials between the practice and the priority are most noticeable are related to organizing internal information, database management, ensuring data security, conduct of competitive intelligence, and staff development. It has been noted that these activities are being conducted at a lower level, but the participants strongly felt that these would take precedence. Information organization though indexing, tagging, annotation, cataloging and databases seems to be the primary concern of these executives. Likewise, they seem to be feeling deficient about their current practices in these areas. The executives are most concerned about the availability, development and sustenance of manpower for these areas. However, they are not as aware about the potential and application of

certain utilities. This point was further reinforced when we see both the levels of activity and perceptions about the importance of Internet utilities on a highly low side.

Apparently, information applications in management are conducted aggressively in these organizations. On the dimension of importance, planning stood way ahead of all other activities, indicating the strong desire among the executives to integrate strategic planning with intelligent information application. Likewise, communication also figured as one of the priority areas in the view of the participants. The finding about a low consistency for the current practice and the expressed need for the design and use of Web facilities was a bit surprising. It was noted that many of these companies were yet not opening up to the outside world through e-commerce channels, employment of EDI technologies, globalization, and any widespread use of public transactions. Other possible reasons include the practices of outsourcing, non-availability of human resources, and a general lack of awareness of the real potential.

This study has answered few questions and raised quite a many that need to be further investigated. These results are expected to help in conceiving the human resource requirements for this sector and the multitude of capabilities that need to be developed among this workforce. Then, it would also be worth considering who is providing education or training in this area, how adequate these opportunities are, and what needs to be done in order to meet the needs of the future workforce for this sector. A real headway is apparently the need of the hour, if the information study programs gear up to exploit the tremendous career opportunities so keenly felt in the corporate sector.

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THE BUNDESWEHR SCIENTIFIC AND TECHNICAL INFORMATION SYSTEM AND ITS HISTORICAL BACKGROUND¹

By Anselm Sickmann

1. Introduction

The Library Service and the Documentation Service of the Bundeswehr certainly are not at the center of the general library-related or documentary interest. This is illustrated, for example, by the fact that the last paper about documentary or library life in the Bundeswehr was published almost 10 years ago.² And that publication consisted of impressions by an insider, rather than being a status report. As major changes have taken place in this field in recent years, it now seems reasonable to draw the attention of the community of experts to the Bundeswehr again.

Even outside the Bundeswehr, the relationship between the library and documentation communities in the Federal Republic of Germany has not always been entirely without tensions. The focus of attention was more on the differences, rather than on the commonalities with regard to tasks and activities.³ Accordingly,

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² Fassbender, Wolfgang: "Einzelkämpfer – Bibliothekare in der Bundeswehr," in *Bibliotheksdienst* 26 (1992) 7, p. 1014–1017.

³ An example of this is the polemic controversy between Hanns Wilhelm Eppelsheimer and Karl Fill. Cf. Eppelsheimer, Hanns Wilhelm: "Bibliotheken und Dokumentation," in *Zeitschrift für Bibliothekswesen und Bibliographie* 1 (1954), p. 3–14; and: Fill, Karl: "Dokumentation und Bibliothekswesen," in *Nachrichten für Dokumentation* 5 (1954), p. 119–122.

these two communities have not always merged in those public institutions where both exist.⁴

Statements like those made by Berndt von Egidy – who, as the chairman of the *Verein Deutscher Bibliothekare* (Association of German Librarians), was interviewed in 1997 by the *UNI-Magazin*, which covers vocational aspects relevant to students – also rather seem to suggest a separation of library and documentation institutions: "The most important task of librarians is to manage the scientific material in libraries. In this context, their interest focuses primarily on the "book" as an information carrier. (...) – Documentalists, by contrast, deal primarily with the analysis of new literature. In doing so, they go much deeper into the subject in order to describe the relevant contents in meaningful catchwords and to make them available to the user. Retrieval and gathering of information, and buildup of databases, are thus the central tasks of documentalists."⁵

If this statement were also true for the Bundeswehr (and only here are we in a position to make a statement), the libraries and documentation offices in our sphere of competence should have maintained good neighborly relations, rather than merging. However, the Bundeswehr has – not altogether voluntarily – come to a different assessment and thus to a different solution, which seems practicable to us. In the following, we would like to present this solution – and the way that led us to it.

2. History of the Bundeswehr Scientific and Technical Information System

2.1 Structure and Equipment of the Former Bundeswehr Library Service

When the Bundeswehr was conceived and established from 1950 on, there was also the question of how to provide the new armed forces with a library service. Partially patterned on the *Wehrmacht* and *Reichswehr* structures, an essentially decentralized concept was chosen, which, of course, could only be based on the technical opportunities of that time. After an extended period of discussion, the overall technical responsibility for the Bundeswehr Library Service was not delegated to a civilian directorate in the Federal Ministry of Defense (FMOD), but to the Military Science Section of the Bundeswehr Staff (later: Armed Forces Staff).

⁴ An example of an institution, in which the "library" and "documentary" working areas are separated – even if they are part of the same superior organizational unit – is the *Bundesforschungsanstalt für Fischerei* (Federal Research Institute for Fishery), Hamburg (cf. offer of employment for the library service #35 (2001) 1, p. 132).

⁵ "Im Zentrum der Information. Wissenschaftlicher Dokumentar im Industrieunternehmen," in *UNI-Magazin* #21 (1997) 5, p. 30–35; here: p. 33.

Agencies (administrative offices, command headquarters, special research institutions, schools) with certain literature requirements were usually provided with a technical library of their own, mostly a small one. Not every technical library was consistently staffed with qualified librarians; in smaller libraries, even the management function frequently had to be assigned to semi-skilled personnel.

In order to supply agencies that have no technical library of their own, major Wehrbereichsbibliotheken (Military District Libraries) were set up in each of the six military districts of the Federal Republic of Germany. They were assigned to carry out the functional supervision and to look after special subject fields according to a prespecified plan. In addition, Military District Library III had to maintain the "Bundeswehr Central Catalog" – to which the other Bundeswehr libraries reported their bookstocks – and it controlled the Bundeswehr lending system; collected the military-scientific literature published before 1945; and issued the "Militärwissenschaftliche Quellenkunde" (Military-Scientific Source Study) – a technical bibliography, which later appeared quarterly. For these reasons, it was also officially designated as "Zentralbibliothek der Bundeswehr" (Bundeswehr Central Library). – From Military District Libraries I and VI emerged the Universitätsbibliotheken der Bundeswehr (Bundeswehr University Libraries) between 1972 and 1973, while they also continued to carry out the tasks described above.

Functional supervision was basically structured along regional lines: The Military District Libraries principally carried out the functional supervision of the technical libraries within their respective military districts. However, there were numerous exceptions. For example, the technical branch in the Ministry not only exercised direct functional supervision of the military district libraries and the Bundeswehr University Libraries, but also of the libraries of important agencies, such as that of the Bundeswehr Command and Staff College, and that of the Federal Ministry of Defense.

According to the latest figures, the total number of Bundeswehr libraries is 111, most of which are libraries staffed with one, two or three persons, and which have a total personnel strength of 355 posts. Of them, however, the Bundeswehr University Libraries alone account for 92 posts.

Even if the Bundeswehr Library Service was, in principle, capable of accomplishing its mission, it showed, among other things, the following performance deficits:

- Inefficient structure in the field of functional supervision, with longstanding insufficient staffing of the competent technical branch within the Ministry;

- Lack of acquisition procedures carried out according to uniform guidelines and of a uniform formal and content-related bibliography system for the entire Bundeswehr;
- Lack of a suitable reporting system applied according to uniform criteria and of a consistent determination of the personnel requirements; and
- Deficits in the user-oriented cooperation between the libraries in the field of information transfer and document provision, because of obsolete technical equipment,⁶ in particular, also in terms of the efficiency of the Bundeswehr Central Catalog, resulting in considerable supply delays in the Bundeswehr's inter-library lending system.

2.2 Structure and Equipment of the Former Bundeswehr Documentation Service

The Bundeswehr Documentation Service, also referred to as "Defense Documentation" and, as from 1988, "Documentation and Technical Information System,"⁷ began to operate in the early 1960s. From 1961 on, the *Referat "Militärwissenschaft"* (Military Science Branch) of Command Element B of the Ministry of Defense was concerned with the planning for the new Documentation Service, the design of which had to be started from scratch, and from where, as mentioned above, also the functional supervision of the Library Service was exercised. Following a decision by State Secretary Hopf, the *Dokumentationszentrum der Bundeswehr/DOKZENTBw* (Bundeswehr Documentation Center) was set up in 1963 and, in 1988, renamed *Dokumentations- und Fachinformationszentrum der Bundeswehr/DOKFIZBw* (Bundeswehr Documentation and Technical Information Center). The mission of this agency, which was independent from 1975 to 1993, was the centralized implementation of the Defense Documentation in the form of a collection, retrieval and information bureau for documents and studies with politico-military, strategic, defense-technology-related or other contents of interest for the defense community. The material analyzed especially consisted of studies, research and test reports, and

⁶ Until 1992, the Bundeswehr University Libraries were the only Bundeswehr libraries where electronic data processing was used on a large scale. The equipment of the other Bundeswehr libraries, e.g. with regard to typewriters, catalog card duplicating machines, copiers, later also for personal computers, was poor.

⁷ Cf. "Das Dokumentations- und Fachinformationssystem der Bundeswehr" (The Bundeswehr Documentation and Technical Information System), an informational publication, 3rd edition (as of: December 1989), Bonn, 1989; Annex 1, p. IV. – For the sake of simplicity, the designations "Defense Documentation" and "Bundeswehr Documentation Service" will consistently be used in the following.

article literature from professional journals. The documents were usually made available to the users as a fulltext copy.

Moreover, local documentation offices were set up in 14 Bundeswehr offices and training activities. The essential reason for this probably was faster access to the documents in secondary document collections, which were set up in the documentation offices. But the tasks of these agencies also included the intake of documents relevant to description, which had been prepared or processed in the respective offices or activities. In addition, some of the local documentation offices supported the DOKZENTBw/DOKFIZBw by carrying out the description of documents and the development of information services.

In order to ensure even better description and analysis of the literature, "documentation networks" for various subject fields were set up, where staff from various Bundeswehr institutions took over the document analysis work in secondary function. But because they did not prove to be efficient, they were disbanded after 1984. In addition, the document analysis work of the DOKZENTBw/DOKFIZBw was supported by "contract documentation offices" from the civilian sector, e.g. by the documentation office of the *Deutsche Gesellschaft für Ortung und Navigation* (German Society for Detection and Navigation) and by professionals that worked on a free-lance basis (so-called "freelancers").

Also the so-called "documentation liaison officers", who acted in secondary function within the FMOD and at command headquarters, offices and schools, were supposed to promote the Defense Documentation. Unfortunately, this function was not always performed as desired; the problems associated with secondary functions are widely known. Sometimes, even a Bundeswehr librarian served as such a "documentation liaison officer"...

Functional supervision of the DOKZENTBw/DOKFIZBw and of the other elements of the Defense Documentation was exercised in a branch of the Armed Forces Staff within the FMOD. Together with the directive "to make use of the results of the Defense Documentation," the structure and tasks of the Defense Documentation were defined in a decree issued by State Secretary von Hase on 07 May 1968.

The DOKZENTBw/DOKFIZBw was led by a service member, and also in the areas of stockbuilding and subject indexing, it was staffed, to a large extent, with military personnel. The main reason for this was the special task of the Documentation Service, which essentially consisted of the analysis and transfer of documents relating to special military subject areas, defense technology and security policy.

When, in 1992, the decision on the merger with the Library Service was taken, the Defense Documentation had 152 posts. 99 of them existed in the DOKFIZBw, and the remaining ones in the 14 local documentation offices, with a personnel strength of 2–14 posts each.

All in all, the technical equipment of the Defense Documentation was always better than that of the Bundeswehr Library Service, and was, for a time, excellent. For example, a projection printer was used in the DOKZENTBw as early as in 1964.

From the time when the DOKZENTBw began to operate, an emphasis was placed on Electronic Data Processing (EDP). But only in 1974 was it possible to use the EDP system STAIRS (Storage and Information Retrieval System), which had been developed by IBM and was highly advanced at that time, and which permitted information retrieval by on-line dialog – mostly via dedicated lines. In addition, databases from outside the Bundeswehr had been used for searches since 1973.

Although the Bundeswehr Documentation Service was capable of completing its mission, following performance deficits identified in 1992 included the following:

- Obsolescence of the STAIRS retrieval system, which no longer offered any updating possibilities;
- Too long delivery periods for document copies ordered from the DOKFIZBw [unless these were rush orders];
- Considerable time lag from the publication of the documents to the retrieval of the documents in FIDOS;
- Too low frequency of publication of Bundeswehr documentary information, rendering data in the information booklets obsolete;
- This resulted in a declining demand for document copies.

2.3 Was the Coexistence of the Bundeswehr Library Service and the Bundeswehr Documentation Service objectively justified?

The question of why a structure within the scope of the existing Library Service was not created already in 1963 – the year of the foundation of the DOKZENTBw – becomes clear if one considers that the BRH (*Bundesrechnungshof*, Federal Audit Office) had recommended in an advisory opinion published in 1962 to build up separate documentation offices, because, in its view, the tasks of libraries and documentation offices did not overlap, but complemented each other. In this context, let me quote an appropriate passage from the advisory opinion of the BRH: "Libraries primarily collect the literature and make it available to the user, but they do not go into its contents. A documentation office, in contrast, mainly

processes the contents of the publications."⁸ A harsh and inadequate judgment on the analysis work in libraries... The advisory opinion, which generally referred to the scientific documentation in the Federal Republic of Germany, at least recommended close cooperation between libraries and documentation offices. According to this opinion, their organizational amalgamation is desirable, but not absolutely necessary.

The organizational interrelationship or intensive cooperation between libraries and documentation offices, which had been suggested by the BRH, obviously was not the intention of the Bundeswehr librarians. In 1957, for example, it was planned to extend the Bundeswehr Central Library to a "real" central military library, with a comprehensive collection mission for German military literature and prompt acquisition of the essential foreign specialized publications. Even seven months after the beginning of the preparations for the establishment of the Defense Documentation – within the same technical branch of the FMOD – existed the intention to issue an abstract bulletin edited by librarians as of 1962. In addition, the Bundeswehr Central Library was to develop a uniform classification method for the systematic catalogs of the Bundeswehr technical libraries. However, these projects were later not implemented due to shortages of personnel and other resources.

Particularly close cooperation with the Library Service was not envisaged on the documentary side either: Just as other documentalists of that time, the pioneers of the Bundeswehr Documentation Service were inspired by the idea to build up, within their sphere, an independent, efficient institution providing scientific and technical information by means of effective tools and methods of "intellectual and technical order" and of information transfer. The relevant ministerial mission was based on the positive vote by a ministerial review group and on the abovementioned advisory opinion of the BRH. In addition, NATO recommended its member nations to build up their own defense documentation centers, where this had not yet taken place.

Thus, Carl Hans Hermann wrote in the Bundeswehr journal "Truppenpraxis": "If (...) [by introducing documentation in the sphere of the Bundeswehr] an urgent requirement (...) can eventually be met, the organizational solution created within the Bundeswehr Staff permits, in a narrower sense, to tackle a task, the importance of which can probably only be appreciated by experts. (...) The undoubtedly most

⁸ "Untersuchung über die wissenschaftliche Dokumentation in der Bundesrepublik Deutschland," (Survey of the Scientific Documentation in the Federal Republic of Germany.) *Präsident des Bundesrechnungshofes* (Director, Federal Audit Office). Pr. 2 – 1011/16-01/2.62. Frankfurt a. M., 1962, p. 6. (The words are marked in the original text.)

important complex [in this context] is that of differentiating between the working fields of librarians and those of documentalists. In this area, the Bundeswehr is groundbreaking. (...) In all relating areas of planning, the Federal Ministry of Defense has consistently assumed that, if both documentalists and librarians exclusively concentrate on their own tasks, any competition that might have negative effects will no longer occur, while meaningful cooperation in both working fields is extremely useful".⁹ Hermann defines "meaningful cooperation" as follows: "If (...) [the user] needs books, journal volumes or individual copies, he will have to ask a librarian. However, if he needs current information on certain fields of topics, he will have to ask a documentalist. In case of doubt, he will have to ask either of them. His query will then be forwarded to the correct sector".¹⁰

The fact that, within the Bundeswehr, the matter at issue was the "pioneering" separation of the responsibilities of librarians and documentalists, rather than an intensive interrelationship between both fields, was perhaps due to the initially outlined, general climate concerning occupational policy of the first post-war decade, which had just ended. A point that was always emphasized in publications written or edited by Bundeswehr documentalists was the independence of documentary tasks and methods, and that, hence, a differentiation from the Bundeswehr libraries was necessary: libraries, in general, were "(not a) relic of the past," but "indispensable also in the future"; however, they could only provide "passive information and answers on request," while documentation increasingly tended to "actively inform" and to support military commanders or scientists, when completing their tasks, with information and documents.¹¹ Obviously, the motto of the Bundeswehr documentalists was "Pour new wine into new bottles," in conjunction with the effort to distinguish themselves as visibly as possible from the Bundeswehr Library Service.

In this context, two things were overlooked: First, the technical libraries of the Bundeswehr already dealt with specifically documentary tasks; second, the documentation offices of the Bundeswehr themselves were libraries. The reasons for this are as follows:

(1.) If documentation merely consisted of the collection, analysis, distribution and use of articles, reports and studies or also ... books (!), all libraries would

⁹ Hermann, Carl Hans: "Dokumentation im Verteidigungsbereich," in *Truppenpraxis* 8 (1964) 5, p. 336–338; here: p. 337.

¹⁰ Hermann, Carl Hans (Footnote 9), p. 337.

¹¹ Cf. Arntz, Helmut: "Die Dokumentation als Zeichen unserer schnellebigen Zeit," in: *Verteidigungs-Dokumentation*, Munich, 1976, p. 22–34; here: p. 25.

pursue documentation.¹² If documentation merely consisted of the "efficient listing of all intellectual documents"¹³ (e.g., by the buildup of databases¹⁴), it would be a quasi synonym of "bibliography".¹⁵ What distinguishes "documentation" essentially from "librarianship" and "bibliography" is the solution to specific information problems of concrete customers by means of relevant documents retrieved and provided using diverse retrieval instruments.¹⁶ This is exactly what many librarians in smaller technical libraries of the Bundeswehr regarded as their special task. For example, Edwin Latzel said in his presentation held in Freiburg during the German Librarians' Congress in 1959: "Our librarians are responsible colleagues working within the scope of the military tasks of the agency to which their library belongs. They must always know what is 'going on' in their surroundings and which major projects are planned, so that they can provide literature for them in good time."¹⁷ Many technical libraries of the Bundeswehr were, thus, special libraries, i.e. libraries offering special services for the tasks and the personnel of their respective institutions.

¹² "The term 'documentation,' which was coined around 1900, and which was, in 1960, defined more precisely by the FID [author's note: *Fédération Internationale de Documentation*] with the words 'the collection and storage, classification, dissemination and utilization of all types of information,' refers, on closer examination, to the librarianship, as well". Gisela Ewert and Walther Umstätter: "Die Definition der Bibliothek," in *Bibliotheksdienst* 33 (1999) 6, p. 957–971; here: p. 961. The definition of the term "documentation" cited by Ewert/Umstätter and formulated by the FID is too general and its date is not correct. Cf. Footnote 15 below.

¹³ Vorstius, Joris: "Der 10. Internationale Bibliographische Kongress im Haag 1931," in *Zentralblatt für Bibliothekswesen* 48 (1931), p. 552–554; here: p. 671.

¹⁴ Following Berndt von Egidy's statement quoted above in: "Im Zentrum der Information" (Footnote 5), p. 33.

¹⁵ Ewert/Umstätter (Footnote 12) give a clear definition of "library" (p. 996), but they adopt an unspecific definition of "documentation" (p. 961; wording in Footnote 16), which, besides, does not date from 1960, but from 1930, and does not originate from the FID, but from a predecessor institution, the *Institut International de Bibliographie*. Cf. Schürmeyer, Walter: "Aufgaben und Methoden der Dokumentation," in *Zentralblatt für Bibliothekswesen* 52 (1935), p. 533–543; here: p. 543. The founders of this institute, Paul Otlet and Henri de Lafontaine, called "documentation" what would actually have had to be termed "bibliography". They had founded the institute in Brussels in 1892, in order to develop a world bibliography by means of the Universal Decimal Classification. Cf. Lafontaine, Henri: "The International Institute of Bibliography," in *Library Journal* 29 (1904) Conf. No., p. 101–104; here especially p. 101 and 103.

¹⁶ In terms of its content, this definition originates from a librarian, who was, at the same time, one of the pioneers of documentation in Germany during both World Wars: Albert Predeek. Cf. Predeek, Albert: "Die Dokumentationsstelle für das technisch-wissenschaftliche Schrifttum in der Bibliothek der Technischen Hochschule zu Berlin," in *Zentralblatt für Bibliothekswesen* 52 (1935), p. 607–626, here: p. 608.

¹⁷ Latzel, Edwin: "Der Aufbau der militärischen Fachbibliotheken," *Referat auf dem Bibliothekartag 1959* (Presentation given during the Librarians' Congress of 1959), Freiburg, in *Zeitschrift für Bibliothekswesen und Bibliographie* 7 (1960) p. 14–27; here: p. 22.

In order to provide these specific information services to their customers, the special libraries felt compelled from the beginning to add also component parts of bibliographically independent works, or other media, to their stocks, and to include detailed statements of contents.¹⁸ The technical libraries of the Bundeswehr followed this example, both in terms of stockbuilding and in terms of subject indexing.

Content analysis of these documents must be conducted in close cooperation with the experts of the institution, the tasks of which a special library is to support. In this fashion, the librarians can utilize the specific knowledge of the experts of their agency, which they themselves may lack. Occasions for this present themselves within the scope of customer-oriented information transfer, as has also been reported from the practice at the Army Officer School and the technical libraries of Military District VI. This approach obviously also seemed to be much more user-friendly than that of referring the user to the DOKZENTBw, as had once been demanded by the FMOD.¹⁹ – On such occasions, a special library can also verify documents that have been created within its agency, or within the task area of the latter. Thus – as far as anything that has been recorded in writing is concerned – a special library becomes the "memory" of its institution.

All this was not considered by the BRH in its fundamental Advisory Opinion on Scientific Documentation published in 1962. Its analysis was primarily based on larger, general libraries, which, indeed, can usually offer their users only "help for self-help".

(2.) If the nature of "documentation" consists of solving concrete, qualified information problems, it is usually insufficient to furnish only bibliographical data about documents. "Users not only want bibliographical references, but they want the full texts, and they want them immediately".²⁰ The documentalists of the Bundeswehr followed this insight already from the very beginning, in that they regarded the "storage" of analyzed documents or "proper documentary extracts" (articles, book extracts) and their promptest provision possible as an essential part of their work. This applies both with regard to the DOKZENTBw/DOKFIZBw and with regard to the local documentation offices, which had an auxiliary memory of the documents indexed in the Defense Documentation. However, any institution

¹⁸ Cf. Brigham, Herbert O.: The Special Libraries Association. A historical sketch, in *Library Journal* 54 (1929) p. 337–340; here: p. 339–340.

¹⁹ Cf. text at Footnote 10 above.

²⁰ FIZ Technik: "Nach massiven Veränderungen Aufschwung und neue Herausforderungen," an interview mit Peter Genth, managing director of FIZ Technik, in *Password* (2001) 2, p. 2, 4–5; here: p. 2.

that collects all sorts of publications, analyzes them, takes them into its stocks, and provides them for use, can be described as a library.²¹ Thus, the DOKZENTBw and the local documentation offices were special libraries in the full sense of the word, because also the other abovementioned definition features of this type of library applied to them.²²

Thus, the coexistence of libraries and documentation offices within the Bundeswehr was only due to the circumstances of a particular period of time. As a matter of fact, an organizational and procedural merger would already have been necessary from the very beginning.

2.4 Working-level Cooperation between Bundeswehr Libraries and Defense Documentation Institutions

At the practical level existed numerous opportunities for cooperation between libraries and documentation offices, which were also pointed out in basic publications serving the information on the Library Service and the Defense Documentation. However, they depended on the individual commitment of the librarians and/or documentalists in each particular place, or on that of the users themselves. For a user, there was often the disadvantage that he could not obtain all the needed information and documents together from a single agency, but had to contact two different institutions. As stated earlier, this disadvantage was, at the beginning of the Defense Documentation, even praised as a benefit.²³

Despite these difficulties, cooperation did take place. For example, the Bundeswehr technical libraries used the DOKZENTBw and its services as an information source for searches and the processing of inter-library loan request forms. By early 1993, 25 Bundeswehr libraries were already equipped with an on-line port to the databases of the Defense Documentation (FIDOS).

2.5 Reorientation: Merger between the Library Service and the Documentation Service rather than Dissociation

Over the many years of coexistence of the Bundeswehr Library Service and the Bundeswehr Documentation Service, numerous suggestions and initiatives for

²¹ Cf. Ewert/Umstätter (Footnote 15), p. 966. If all technical requirements are met, any library can also collect/index digital publications, while it does not depend on its geographical location (cf. *ibidem*, p. 968).

²² Local documentation offices, which do not conduct stockbuilding or stock exploitation on their own, could typologically be described as "subsidiary offices of the special library DOKZENTBw/DOKFIZBw".

²³ Cf. text at Footnote 10 above.

organizing the relationship of both areas to each other had been developed, which, however, were not implemented. But this changed in 1989: After massive criticism of the state of the Bundeswehr Library Service by the Committee on Public Accounts of the German *Bundestag*, State Secretary Dr. Carl set up a Bundeswehr ministerial working group, which was tasked to examine the Bundeswehr Library Service as a whole and to develop proposals for an "effective and, at the same time, economical full-coverage provision of scientific and technical information for all Bundeswehr agencies," using information and communications technology.²⁴ This working group developed a model structure for the merger between the Bundeswehr library service and the Bundeswehr documentation service, because – in contrast to the general view previously held – it identified a host of overlaps between the tasks and fields of activity of Bundeswehr libraries and documentation offices. With regard to the personnel strength, considerable cuts had to be made, among other things because of the obligations to achieve economies in the course of the Bundeswehr reduction within the scope of German reunification. The model comprised a total of 335 posts for the Scientific and Technical Information Center and, in addition, 102 special libraries of different sizes across the Bundeswehr, and another 92 posts for the two University Libraries of the Bundeswehr Universities. – The libraries of the former East German Army formed the basis for building up the Bundeswehr Scientific and Technical Information System within the new *Länder* (former East Germany).

3. Current Structure and Equipment of the FIWBw (*Fachinformationswesen der Bundeswehr*, Bundeswehr Scientific and Technical Information System)

3.1 Organizational Structure and Structure in Terms of Functional Supervision

- The Bundeswehr Library Service and the Bundeswehr Documentation Service have merged to a uniform FIWBw (Bundeswehr Scientific and Technical Information System).
- For efficient management of the FIWBw and for full-coverage provision of scientific and technical information, technical literature and other specialist media for all Bundeswehr agencies that have no technical information office of their own, the FIZBw (Bundeswehr Scientific and Technical Information Center) – a technical division within the Armed Forces Office – was formed out of the DOKFIZBw on 01 April 1995.

²⁴ Federal Ministry of Defense – State Secretary/Org 1 – Reference No. 10-02-06 dated 28 November 1989.

As a central institution of the Scientific and Technical Information System of the Bundeswehr, the FIZBw has, since 1997, maintained the computer-assisted Central Stock Record of the literature on stock at the technical information offices of the Bundeswehr, with uniform formal description and subject indexing. With a central editorial department, the FIZBw monitors the compliance with the sets of rules and the quality of the analysis work. The FIZBw is entitled to direct participation in the German inter-library lending system. It controls the inter-library lending system within the FIWBw (Bundeswehr Scientific and Technical Information System) and is the coordinating library for those Bundeswehr technical information offices that have no permission to take part in the German inter-library lending system. Apart from the "FIWBw Central Stock Record" database (*Zentraler Bestandsnachweis FIWBw*), it has also other retrieval instruments for this purpose at its disposal: for example, the Bundeswehr Central Catalog (*Zentralkatalog der Bundeswehr*), which was completed in the form of cards by 31 May 1997, and the data of the former Bundeswehr Documentation Service, previously indexed in a STAIRS database (recently also in a database on the Bundeswehr Intranet). – As a successor to the Bundeswehr Central Catalog, the FIWBw Central Stock Record is one of Germany's central technical and scientific catalogs.

The FIZBw is – as the DOKZENTBw/DOKFIZBw were already – represented as a permanent member of the Information Management Committee of the NATO Research and Technology Organisation (NATO RTO; formerly: "AGARD") (homepage: <http://www.rta.nato.int/>). In addition, in the year 2000, the function of national distribution center for publications of the NATO RTO was transferred from FIZ Technik, Karlsruhe, to the FIZBw. – Since 1995, the FIZBw represents the Bundeswehr Scientific and Technical Information System within the executive committee of the APBB (*Arbeitsgemeinschaft der Parlaments- und Behördenbibliotheken*, Association of Parliamentary and Governmental Libraries).

- The institutions that are functionally subordinate to the FIZBw are the *Fachinformationsstellen* (technical information offices) and small-scale technical libraries.
- Technical information offices replace the former libraries and local documentation offices, which were amalgamated where both existed at the same agency. A technical information office is a special library, an "institution of a new nature, which – with its diverse services – is to ensure efficient provision of scientific and technical information for its users".

- Those technical libraries of the Bundeswehr that were real OPLs (One-Person Libraries) and that were operated by a civil servant of the Intermediate Service (equivalent to NCOs) at "agencies with low information requirements" received the name *Fachbücherei*, which sounds somewhat obsolete in German and may be translated with "small-scale technical library". The fact that they were to obtain no access to the integrated system was a real deficiency, but – for financial reasons – an unavoidable parameter. Most small-scale technical libraries are also special libraries. In order to improve their efficiency, we make every effort to give them at least the opportunity for indirect participation in the integrated system.
- At some agencies that had a technical library until 1992, headquarters libraries without any specialized personnel had to be established, because of the manpower reduction parameters. Headquarters libraries are – like reference libraries – managed in secondary function, but the latter have separately allocated funds at their disposal.
- The body responsible for the management and implementation of the Bundeswehr Scientific and Technical Information System was, for the time being, the technical section (within the Armed Forces Staff), which had, up to then, been responsible for the Bundeswehr Library Service and the Bundeswehr Documentation Service. This task was transferred to the FIZBw (within the Armed Forces Office) as of 01 June 1994, which, at that time, still carried the name DOKFIZBw. Through an appropriate element within the Armed Forces Staff, it is integrated into the organizational procedures within the Ministry.
- The FIZBw and two of the technical information offices are – as Regionale Fachinformationsleitstellen (Regional Technical Information Control Centers) – in charge of the functional supervision of the other technical information offices and small-scale technical libraries in the regions assigned to them.
The functional supervision within the Bundeswehr Scientific and Technical Information System (FIWBw) "comprises the support and monitoring of activities of technical information offices in the selection, acquisition, indexing, transfer and provision of scientific and technical information; ensuring the reporting system within the FIWBw; the cooperation of the agencies exercising functional supervision in establishing the acquisition funds requirements of the technical information offices by staffing the budget estimate; the involvement of the agencies exercising functional supervision (...) in personnel measures at the technical information offices ([e.g.] performance ratings, the involvement

in initial, extension and follow-on training of the specialized personnel".²⁵ In all technical matters, the technical information offices are entitled to directly contact the responsible agency exercising functional supervision.

In addition, the three regional technical information control centers are responsible for the provision of technical advice to the agencies that have headquarters libraries.

- The Bundeswehr university libraries enjoy a special status. Because of their university-specific tasks, they have no management or functional-supervision tasks within the FIWBw. De facto, they are not submitted to any functional supervision.
- Following a decision by the Ministry, the library of the Federal Ministry of Defense (FMOD) is not submitted to the functional supervision by the FIZBw either. The library of the FMOD cooperates with the other institutions within the FIWBw and is to become an active participant in the integrated system as soon as all technical requirements are met.
- The technical information office of the Bundeswehr Academy for Information and Communication in Strausberg, which took over, inter alia, stocks and catalogs from the former *Militärbibliothek der DDR* (Military Library of the German Democratic Republic) and from the former military district libraries, performs, in addition, the task of an archive library and that of a duplicate collection and exploitation agency for the entire FIWBw.

3.2 Information Marketing

"Just like every retailer, for example, first has to 'entice' customers into his shop in order to be able to sell him something, a library must make itself attractive for its 'customers'".²⁶ Accordingly, information marketing at Bundeswehr technical information offices gains particular importance, which reflects in the fact that theoretical bases are elaborated and that this topic is repeatedly dealt with at the annual conferences for the professional development of directors of Bundeswehr technical information offices.

A special aspect of information marketing (and also of stockbuilding) is information verification, i.e. the verification of documents that are not released onto the

²⁵ SKA (*Streitkräfteamt*, Armed Forces Office) – *Amtschef* (Director) – Reference No. 52-01-00/52-50-00 dated 29 December 1995, No. 10 ("Fachaufsichtserlass FIWBw" [FIWBw functional-supervision decree]; on file at the FIZBw).

²⁶ Kortzfleisch, Hermann von: "Rationalisierung in Behördenbibliotheken aus betriebswirtschaftlicher Sicht," in *Bibliotheksarbeit für Parlamente und Behörden. Festschrift zum 25jährigen Bestehen der Arbeitsgemeinschaft für Parlaments- und Behördenbibliotheken*, Munich, 1980. p. 255–278; here: p. 259.

market ("gray literature"). Material of particular interest to the FIWBw is especially documents created within the Bundeswehr and containing valuable information. Their inclusion in the stock of a technical information office, and their recording in the FIWBw Central Stock Record, promotes information interchange between agencies and persons working on the same topics and issues. Therefore, the Bundeswehr technical information offices are obliged to devote their special attention to this "acquisition marketing".

3.3 Formal Description

The set of rules serving as a framework is the "Descriptive Cataloging Rules for Scientific Libraries" (RAK-WB). Supporting the participants of the integrated system is a demanding and laborious task for the *Zentralredaktion Formalerschliessung* (Central Editorial Department for Formal Description) of the FIZBw: In a shared catalog, data record duplicates can only be avoided if the central office insists on strict adherence to the rules. This requirement is directed at those technical information offices that have, up to now, only pursued alphabetical cataloging for internal use and where minor breaches of the rules had no serious consequences. Some participants of the integrated system still must acquire detailed knowledge of the RAK-WB.

3.4 Subject Indexing

As a particular feature, the FIWBw pursues subject indexing within the scope of its Central Stock Record, which is maintained and monitored by a central editorial department. Two separate indexing systems are applied in this context: a classification and a thesaurus. The "FIWBw classification" is a cross-subject mono-hierarchical broad classification system with up to four hierarchy levels. It serves the subject-specific order of the documents. The "FIWBw Thesaurus" has been developed on the methodological and objective basis of the "Defense Documentation Thesaurus". The maintenance and use of the classification as well as of the thesaurus are supported by the aDIS/ BMS software. – At a significant number of Bundeswehr technical information offices, classification for the Central Stock Record also constitutes the basis for types of shelf classification, which are individually maintained on the spot.

Subject indexing for the Central Stock Record is complemented by abstracts. Within the FIWBw, the indicative abstract is mandatory, unless a suitable statement of contents of a different type already exists. In the case of longer treatises (for example, in book format), tables of contents or outlines can be used for the abstract.

3.5 Information Transfer/Document Provision

Apart from information transfer on request, which is traditionally a focus of most Bundeswehr technical information offices, there are active information services in the form of initiative information specially tailored to the user, literature compilations, and information services that have the nature of publications. The most important ones to be mentioned are the "Zeitschriftenverzeichnis FIWBw" (FIWBw List of Periodicals) created with the support of the technical information offices and the 16 thematically differentiated serial publications of the Bundeswehr technical information as well as special editions (*Sonderhefte*) about current topics, which contain an up-to-date selection of bibliographical references to publications that are indexed and available in the databases of the FIZBw.

Increasingly important media for publication and retrieval of information services have, since the year 2000, been the Bundeswehr Intranet and agency-internal networks. Apart from the FIZBw, also other Bundeswehr technical information offices – including the technical information office of the Federal Office of Defense Technology and Procurement or the library and technical information office of the Bundeswehr Institute for Underwater Sound and Geophysical Research – have their own homepages on the Bundeswehr Intranet. For example, from the FIZBw Homepage on the Bundeswehr Intranet, it is possible to download the latest editions of each series of Bundeswehr technical information publications and the latest special editions as a PDF file, in some cases even the full texts of the documents shown among the special editions.

Last year, an Intranet-OPAC was newly developed, which enables every user of the Bundeswehr Intranet to search the entire document pool of the FIZBw: Not only can the stock of the integrated system be accessed through OPAC, but we were also able to render the entire legacy data stock of the former Defense Documentation, which unfortunately could not be integrated into the integrated system, directly accessible to the user. The user is thus able to view the result of his search in the form of the catalog entry, each including the associated abstract, and download it into his computer. The document will then be delivered either as a conventional inter-library lending item (book and/or hardcopy) or in electronic form.

Electronic Document Pool/Electronic Document Delivery

As mentioned above, the FIZBw has, since 1998, been digitizing the full texts of many documents that were internally indexed, considering copyright parameters parallel to the collection on microfiches, using the Codufidex-Mudis system. About 70,000 fulltext copies are currently available in the PDF format. Since August 2000, these documents have been delivered to the requesters by e-mail; at

the moment (in March 2002), the proportion of the electronically provided documents is about 60 percent of the total.²⁷ The time needed for processing the request until the electronic delivery takes place now usually takes only 30 minutes or less, which meets with a positive response by our users.

3.6 Information Technology

Within the scope of the data processing project FIDOS, the STAIRS application which to date has been employed in the documentation service, was replaced. It was originally planned to fully introduce the new application by 1998, which is called FIDOS-NEU. Because of scarce budget funds, however, the implementation was delayed. Eventually, the aDIS/BMS library management system of the a|S|tec company was procured. Unfortunately, this software could not be used without any problem: for example, not all modules were fully operational.

As of November 1998, after having ensured a relatively stable operation of the aDIS/BMS library management system at the FIZBw, implementation of the integrated library system was started. A total of 64 participants will be linked to the system, 58 of which have already been connected. The Central Stock Record currently comprises approximately 270,000 catalog entries. Our integrated system concept envisions a two-tiered network with common authority and master data. The individual participants in the system have the option to carry out additional subject indexing that only relates to their local stock records.

Each participant in the integrated system will have the ability to work on their local stock independently of the network center, to access all authority and master data updated on a daily basis, and to make use of the data included in the *Gemeinsame Körperschaftsnamendatei* (Common Corporate Names File) and the *Deutsche Bibliothek* (German Library), which are offered in the external data pool. Intakes, however, can only be made following a duplication check at the FIWBw Central Stock Record. The integrated system stock always provides a current record of all documents of the connected technical information offices available under aDIS/BMS. This requires a constant automatic adjustment of local stocks with the Central Stock Record and vice versa, for the holdings and authority data processed by the central editorial department at the FIZBw also have to be automatically distributed to all participants in the integrated system. To monitor these replication processes and the data backup system, which is crucial to the entire integrated system, check routines were developed. Thus, the integrated system administrators are capable of responding to any problems immediately. These tasks, which by themselves are already quite demanding, were considerably

²⁷ In August 2001, their proportion was still about 25% (with about 40,000 fulltext copies in the PDF format).

aggravated by the initially relatively unstable and low-performing Bundeswehr communications network. But not only was and still is the technical implementation a demanding task. The buildup of an integrated system with participants who, for the most part, have never worked with a data processing system before also is a difficult undertaking.

Prior to the introduction of the aDIS/BMS software and, henceforth, with each new software release and/or each upgrade of the functional scope, intensive tests were and are required to be carried out by the FIZBw. On the one hand, this constituted an enormous increase in the workload of the in-house personnel, since duty routine continues to have to be discharged as well. But on the other hand, it is a quite considerable advantage for internal cooperation. Never before had the "librarian group" and the "documentalist group" to work on a common cause and the opportunity to learn about the problems of the "other side". In this context, it was ascertained that, regarding this task, they have never been worlds apart, an idea still present in some minds.

Despite all the problems outlined above, the following is to be stated: An integrated system designed in such a way is unique in Germany. When breaking new ground, it is to be expected that not everything straightaway goes according to plan. Even though much remains to be done, we can be proud of what we have accomplished to date.

3.7 Personnel

The entire FIWBw is characterized by a climate of good cooperation. This was accomplished in part by information briefings and professional-development events, which provided the opportunity to give technical presentations and exchange ideas. In this context, especially the annual professional-development meetings for directors of the Bundeswehr scientific and technical information offices are to be mentioned. – To provide staff members with current information between the annual meetings of the FIWBw, the FIZBw issues the "FIWBw Newsletter" several times per year, which includes an overview of the status of the introduction of FIDOS-NEU, as well as vacancies in the Bundeswehr technical information offices.

While the positions with the Bundeswehr University Libraries are normally occupied by librarians only, the positions for civilian personnel at the FIWBw are usually open to both librarians and documentalists. Some positions, mainly those at the FIZBw itself, are reserved for officers and field-grade officers whose documentary training, e.g. at the Institute for Information and Documentation of the *Fachhochschule Potsdam* (Potsdam Technical College), is supplemented by practical training carried out in special libraries and other technical information

offices. This syllabus is not yet the ideal integrated library-documentation education and training. Therefore, we are very interested in the plans conceived to install new postgraduate library and information science studies, e.g. at the University of Applied Sciences, Cologne.

As already mentioned above, the introduction of the new FIWBw was tied to concrete requirements in terms of personnel reduction. It is and was carried out on a step-by-step basis and parallel to the buildup of the integrated system, and, as of today, has been largely completed. However, the FIWBw will not escape the general reduction requirements, e.g. within the scope of the reorganization of the Bundeswehr. The Concept for the Bundeswehr Scientific and Technical Information System also requires to determine the personnel requirements under an analytical approach as soon as the integrated system has worked on a routine basis for a sufficient period of time. A tool for determining the personnel requirements and for technical evaluation and organization development of the FIWBw is an efficient reporting system, which has, in recent years, been implemented in cooperation with the technical information offices.

4. The Future of the Bundeswehr Scientific and Technical Information System

The projects of the Bundeswehr Scientific and Technical Information System to be implemented in the coming years include:

- Electronic provision of service regulations on the Bundeswehr Intranet;²⁸
- Provision of the data of the Central Stock Record on the Internet (except for data about documents meant for internal official Bundeswehr use only);
- Expanding the FIWBw to the Bundeswehr Knowledge Management Service on the basis of a "Technical Concept for Joint FIWBw Tasks," which is already available as a draft copy and is to be issued by the Bundeswehr Chief of Staff;
- An improved quality management including user surveys;
 - Replacement of the "Collection of Decrees for Libraries with Organic Personnel" by a collection of "Special Directives for the Bundeswehr Scientific and Technical Information System (BesAnFIWBw)"; for this purpose, considerable preparatory work has already been carried out;

²⁸ Assigned to the FIZBw by decree; cf. *Ministerialblatt des Bundesministeriums der Verteidigung* (Federal Ministry of Defense Gazette) (2001), p. 123. In the course of this task, the regulations will, in the medium term, be indexed as documents, included in the Central Stock Record of the FIWBw and, thus, made searchable.

- The retrospective digitization of all items on stock at the FIZBw on micro-film/microfiche.

5. Conclusion

If U.S. market studies prove that every employee spends an average of one hour on the search for information causing an annual deficit of 13 million U.S. Dollars in a company with 1,000 employees,²⁹ special libraries will be afforded with a wide range of activities as the "eye" and "memory" of their respective parent institution, also within the Bundeswehr.

"Consistent cooperation between documentalists and librarians is in line with the professional reality in the information sector."³⁰ From the perspective of the Bundeswehr Scientific and Technical Information System, we can only confirm this assessment of the German associations for librarianship and documentation service: We are working together so consistently that we have found a new common identity.

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²⁹ Cf. Bosch, Ruth: "Knowledge Management: Hype oder Notwendigkeit?" in: *Informationstechnik* (2001) 1–2, p. 36–38, here: p. 37.

³⁰ Statement by the *Bundesvereinigung Deutscher Bibliotheksverbände* (Federation of German Library Associations) and the German Society for Documentation, in: *Bibliotheksdienst* 32 (1998) 1, p. 10.

A SPECIAL LIBRARY FOR DEVELOPMENT RESEARCH - THE ROLE OF THE ISS LIBRARY IN MANAGING INFORMATION REQUIREMENTS FOR RESEARCH

By Sharmila Ghosh & G Y Wesley

Scope of the paper

- Today more and more organisations are involved in research, action-research and advocacy on various development issues, particularly in the Social services and Human Development sector.
- Most of these issues and themes are inter-disciplinary in nature and are characterised by overlapping subject boundaries. Research on such areas therefore generates information which are consequently inter-disciplinary in nature.
- In order to manage such information and also to make more information available, special libraries and thematic, issue-based information centres have come up. Such libraries are peculiar as far as their collection, users, services, queries and information processing are concerned.
- The Institute of Social Sciences, New Delhi has a special library which tries to establish a synergy between the research focus of the Institute and the information cropping up from research.
- The library and resource centre has a computerised information management system, which promotes a collaborative and symbiotic relationship between research and information (i.e. between research staff and library professionals).

In the context of the growth and development of the Information society, and increasing awareness among the people about *development issues* and related information, we notice a remarkable increase in the number of organisations focussing on research and action-research in social, economic, socio-economic and human development issues with special emphasis on the improvement in the quality of life and with the primary objective of making a serious impact on public policy. This **inter-disciplinary and issue-based research** has contributed to the growth and development of special libraries and information-resource centres which are very different from conventional libraries in their organisation, composition, functioning and services.

In the event of a gradual transition, from the library as a storehouse of books to the information centre as the information *processor-cum-provider*, has emerged a new breed of information specialists, aiming at fulfilling the information needs of the users in a **multi-disciplinary information environment**. Their mission is to produce a constant flow of value-added, *customised* information services. They go by the motto 'just in time' and 'just for you'. In today's electronic information environment, the role of the special librarian has evolved to meet the demands of both the *technology revolution* and the *information revolution*.

New technology is being increasingly utilised not only for automation of library functions but also for enhancement of information access and delivery of items **not** physically contained within the library boundaries. Most libraries now offer an online public access catalogue (OPAC), public PCs equipped with CD-ROM drives, scanners or public terminals connected to the Internet. More and more libraries are building homepages on the Worldwide Web from where users have access to a variety of services without physically entering a library.

Information and knowledge management is at the center of business and society in the 21st century. The use of knowledge within an organisation rests primarily on the attainment of two objectives;

- **effective management of information resources, and**
- **the establishment of a learning environment.**

An integral component to achieving both of these is an intimate understanding of the information flows within an organisation. As keepers and disseminators of information within organisations, information specialists make substantial contributions to the successful implementation of knowledge management projects. Special librarians function as change agents and leaders providing the information needed to help their organisations achieve their goals. In addition to identifying and acquiring external sources of information, they help to organise internal sources of information. They provide vital information services by preparing abstracts and indexes of current periodicals, organising bibliographies or analysing background information and preparing reports on areas of particular interest. They are best positioned to monitor the information products and needs of different departments and deserve a central role in the development of processes and policies that harness an organisation's knowledge base.

The Institute of Social Sciences - Research and Information

The Institute of Social Sciences studies contemporary social, political and economic issues in an inter-disciplinary perspective and makes available its

findings and recommendations to policy makers, social scientists, people's organisations and activists' groups. The evolution of an informed and action-oriented public opinion is the primary objective of the institute.

The **library, documentation and resource centre** of the Institute is closely related to the Institute's research and training programmes, and grassroots activities in the development sector. The resource base covers all major areas and issues relating to the Institute's ongoing and planned programmes and activities, and specifically decentralised governance, urban studies, economic affairs, social studies, gender studies, human rights and related topics. Since the Institute's work in the area of local self-government (*Panchayati Raj*) has attracted wide acclaim nationally and internationally, the library & information centre has developed a specialised collection of resources on this topic, including its sub-systems - *rural and urban local governance, decentralisation, federalism, women's empowerment* and related issues. The information resource centre has a networking arrangement with institutions (like Rajiv Gandhi Foundation, National Institute of Rural Development, Society for Participatory Research in Asia, to name a few) engaged in similar and allied areas of study, and acts as nodal agency for exchange and sharing of information in the focal topic.

The library & documentation centre provides *customised* user-oriented services to assist professional and research staff to get their information quickly, accurately and comprehensively, through 'profile-matched and identified needs' in relation to their functional needs. These include

1. an electronic Catalogue of the library resources on OPAC terminals
2. a computerised circulation and loan system
3. periodicals indexing service, with an annual articles index
4. reference and information services - query answering, information retrieval and dissemination, data packaging and compilation of document lists, etc.
5. access to Internet and CD-ROM databases, and audio-visual resources
6. documentation services - Current Awareness and SDI services
7. inter-library borrowing and information interchange
8. on-demand selective acquisition of new resources
9. newspaper clipping services
10. photocopying and document delivery services

The Library & Documentation Centre (LDIC) coordinates the bibliographic and information retrieval activities with the information storage and records

management functions as well as all information transfer and dissemination activities. The library helps to promote and implement the transfer of the Institute's research accomplishments to the Social Science research community, state and local governments and to NGOs through appropriate dissemination of information. Some of the activities carried out by the library and resource centre which directly contribute to research activities of the Institute are -

- Acquiring new resources and information as per requirements / recommendations from faculty,
- Preparing research reports and state-of-art reports in response to queries and project support,
- Verifying and checking out on data, facts, statistics for external and internal reports and publications
- Identifying research needs of staff members and providing *guided* reference services through documents and files,
- Creating databases for accessing stored information
- Evaluating and comparing software and sources of data prior to purchase,
- training other staff to efficiently and cost-effectively use on-line databases and internet resources
- Generating information products (like reading lists, articles index) for researchers and external members
- Promotion and sale of Institute's publications, and
- Customisation of the information system with occasional suggestions from research faculty.

As a result of all this, the Institute is benefitted in the way of taking major decisions and deciding the course of action. The library saves both time and money for the organisation. Research staff need not waste their time in visiting other libraries to acquire needed information. Expenses involved in such activity can be avoided. Research staff writing articles, papers, reports are provided with information which saves upon their research time. This information is provided by way of bibliographical references, statistical data, information sources and metadata, and referral services.

What is 'special' about the ISS Library?

There are five unique features of the ISS Library & Documentation Centre which make it very different from any conventional library. These are :

1. Nature and type of RESOURCES and the coverage of interdisciplinary topics and themes

2. Nature of library **USERS** - their academic/professional background, their information requirements
3. Nature of information processing and **INFORMATION MANAGEMENT** activities - in the 'combination' environment (i.e. partially computerised and partially manual operations)
4. Nature of **QUERIES** - reflection of research requirements of special users
5. Nature and types of **SERVICES** provided - particularly in the electronic environment with the fast progress of IT

1. Nature of collections

The library collection is multi-faceted and reflects the Institute's research interests in the following subjects/themes :

- Democratic decentralisation
 - urban local governance
 - rural local governance (*panchayati raj*)
- Governance issues, civil society and federalism
- Welfare economics - development issues
- Sociology and social research
- Gender studies - women's political empowerment
- Human rights, police reforms
- Rural development
- Urban development
- International studies
- Culture, political philosophy, nationalism

1.1 Newspapers - Important national newspapers and some regional papers are meant for thematic marking by research staff. Newsitems are classified on the basis of research issues of the Institute. and is therefore customised. The Institute's monthly publication "*Panchayati Raj Update*"* is compiled from information available in the papers.

1.2 Journals & magazines - The library subscribes to thirty-five journals & magazines. Current issues are processed for SDI services and back issues are bound. Some of the scholastic journals are indexed for specific themes/topics of relevance to the Institute's research focus. Some significant articles are circulated to research staff as part of Current Awareness Services. At the end of a calendar

* The Panchayati Raj Update is a monthly report of happenings and news about *panchayats* (the elected representatives for rural decentralised governance) all over the country, individual state situations and special features written by practitioners.

year, a bibliography is compiled with 'Author' and 'Keywords' index for selective searching of articles.

1.3 Books & reports - Books are acquired mostly on the basis of recommendations and approvals from senior faculty of the Institute. Some reference tools are acquired by library - like Census reports, Economic survey data reports, Budget and Plan documents, documents pertaining to important legislations, Development reports, Institutional reports from other organisations, latest titles from the publishers' catalogue on issues related to the Institute's research. Book reviews appearing in newspapers and journals help in acquisitions. Duplication of resources are generally avoided. List of new acquisitions are compiled every month as part of Current Awareness services.

1.4 Unpublished monographs, research reports, project reports of varied nature are obtained on complimentary basis, through exchange programmes and from staff members attending seminars/workshops or conferences. Government publications are sometimes purchased or received through public relations promotion.

1.5 Electronic documents available on the Net, full-text articles, graphical data etc. are downloaded, printed and packaged to look like complete documents. They are treated at par with books and reports.

2. Nature of users - six categories:

- staff members (inhouse and local), researchers from branch offices
- visitors (both casual and specific)
- temporary / long-term affiliates of the Institute
- external members (individual and institutional) on subscription
- representatives from funding agencies, NGOs and government
- students (particularly those at doctoral level, whose research topic is related with those of the institute)

The nature of library reference and use depends on their assignment and the time available at their disposal. Their queries are sometimes defined but mostly needs to be refined. A detailed interaction with the library staff is therefore required at times to make the query pinpointed for quick retrieval of information. Researchers working on inter-disciplinary areas (for example, 'gender issues and panchayati raj', 'fiscal devolution', 'urban sociology', 'decentralisation issues', etc) will not benefit if they go to a public library. Then there are students pursuing their doctoral studies, who often end up delimiting their research topic while browsing through the library collection. Freelance journalists require information to

supplement their article. Research scholars use the library to prepare a project proposal. It has been observed that most users are focussed on a particular topic or an issue instead of a broad generic subject.

3. Nature of information processing and information management activities

3.1 Classification and coding - Books and reports acquired through defined procedures (see section 1.3) are technically processed in the database. Both the subject classification and the physical arrangement system are theme-based / issue-based and sometimes even project-defined, and customised as per research issues of the Institute. (Example: 'rural development', 'governance', 'human rights', 'panchayati raj', 'social studies', 'economic studies', 'Indian Sociological Society', 'Constitution Review Committee', 'Women's Empowerment Celebrations', etc)

It may be mentioned that although the Dewey Decimal System is followed, some essential modifications are carried out (for example, instead of the place numbers of Dewey Table 1, we use alpha-numeric codes for countries and 3-letter codes for Indian States and Union Territories). Also, broad numbers are assigned to documents which are inter-disciplinary in nature. The basic objective is to keep the class numbers as short as possible, particularly the digits after the decimal point.

3.2 Keywords/descriptors form a very important component of the documents processing activity and is the basis for document retrieval. In fact, keywords searches are carried out while preparing documentation lists. The well-known database software "*Alice for Windows*" (AFW) is used for information recording, storage and retrieval. This programme helps not only in OPAC searches, but also in compilation of 'on-demand' reading lists, meant to aid in research and proposal writing. Most information searches/queries are dependent on appropriate keywords, and therefore technical processing is not complete without assigning relevant keywords. It may be mentioned here that the keywords chosen/defined are unique to the research queries followed in the Institute and therefore do not follow any standardised list of subject terms or thesaurus. A notable feature is to assign a descriptor/keyword from the name of a Committee (for e.g. The Committee on Decentralisation was constituted and one "Sen" had headed the committee. The report of this committee is referred to as the 'Sen Committee Report') The most common query is "Can I have a look at the Sen Committee Report?" Another unique aspect of keywords is by the name of a tribe, or a movement or a conference or simply the acronym for a programme or scheme (e.g. 'Narmada Bachao Andolan', 'Bhils', 'Beijing Conference', 'TLC' for Total Literacy Campaign, etc.). So **assigning appropriate keywords or descriptors** is a very crucial part of the processing activity.

3.3 **Shelf location** - The records database has another component: 'location', this is also important because quick retrieval is dependent on the shelf location of a book. Grey literature like handouts, pamphlets, booklets, training material, etc are organised in vertical boxes with thematic labels.

Journal articles related to Institute's research programmes are indexed in a database and supported by appropriate keywords. Newspaper markings are filed in topic files. On-demand documentation lists are prepared to meet staff requirements on particular topics. Information available from the Net are processed in the same way as books and reports. (Section 1.5)

3.4 **Indexing** of journal articles and newsclips - articles are selected from scholarly journals which relate to the Institute's research areas and processed in a database with appropriate keywords. An annual bibliography is compiled at the end of a year which helps the researcher to find articles on pinpointed topics. With regard to newsclips a list is generated each month topicwise and circulated. On-demand newsitems are photocopied and distributed.

3.5 **Project documentation** - all of the above, combined with research assistance for projects.

4. Nature of queries and requests for information

Since the Institute covers inter-disciplinary topics and development issues for its research, and the nature of library resources being a resultant follow-up of the research focus, it is but natural that reference queries will be very unique and specific and not the kind that we come across in a public library. Queries and information requirements are of the following nature:

- statistical data on states [e.g. State Finance Commission reports, data published in the Institute's monthly publication "panchayati raj update", election related information, 'fact file' extracted from a premier national newspaper, economic data from CMIE (Centre for Monitoring Indian Economy) reports, etc]
- demographic data, census tables, population totals
- committee / commission reports (Sen Committee report, Sarkaria Commission report, Balwant Rai Mehta Committee report)
- availability of particular titles (author query, title-query)
- journal articles on a specific issue/topic (e.g. poverty, scheduled castes & scheduled tribes, South Asia, urban poverty, and so on)
- institute's unpublished study reports (reference by the name of the funding agency, e.g Unicef study, Danida report, etc.)

- availability of documents on a particular theme/issue/topic (this helps the user to decide whether he/she needs to consult any other library)
- pinpointed questions like - full form of acronyms, date of a particular event, which states have not conducted panchayat elections, how many farmers committed suicide? How many cases of human rights violations, etc.

Then there are some **functional queries** -

- which international journals do we get in the library?
- which paper carried out a particular article written by a faculty or anyone known to the Institute,
- what is the price of a specific publication?
- what type of library membership is available and who can become a member,
- what are the ongoing research projects of the Institute?
- which is the latest publication of the Institute?
- who in the institute should I consult for information on 'gender issues'?
- what are the library working hours, and, is photocopying facility available?

5. Nature of services provided to meet research needs of users

The library provides a variety of reference services. Direct patron assistance is available always at all times. Telephonic and mail information requests are handled whenever possible. The library acts as a referral point for subject experts or organisations more qualified to respond to a specific request.

Circulation - books and reports processed are available only to staff for issue. If there is only a single copy of an important document, then it is given on short loan (i.e. for a day or two).

Inter-library borrowing facilities are provided.

Membership services - Students pursuing their doctoral research, academic faculty from universities/colleges, NGOs and Voluntary organisations, people known to the Director or senior faculty of the Institute, are eligible for day/week/month membership. About 4-5 external members are attended to by library staff at one time. They are assisted in the use of the OPAC, locating their desired titles from shelves, and necessary photocopying.

SDI and CAS to staff members - information on specific themes or topics available in current issues of journals, newspapers or newly-acquired books, are provided to the research staff as per his/her research area/interest. Copies are made of news items, review articles, statistical data or fact sheet and are passed on to the respective staff member. List of new resources are compiled every month. Net searches are undertaken on demand-based topics and relevant information is

downloaded for the respective staff member. List of relevant articles (from journals) on specific topics are provided to both the external member and the staff. Sometimes a particular information is conveyed verbally to a staff member. Senior faculty (who have placed orders for books) are duly informed about the arrival of such books.

Sale and promotion of Institute's publications - The library functions as the sale counter for Institute's publications. The printed catalogue of publications is provided to the visitor who selects which titles to buy after reading the annotations. In some cases, the visitor may be confused and seek help from library staff.. Occasional reports about sales and revenue is provided to the Director.

Conclusion

The ISS Library & Documentation Centre provides a brilliant example of the collaborative and interactive **relation between research and information within the electronic environment** and the increasing recognition by the research community of modern trends in library documentation and information services. The need for research, that addresses the changing role of libraries, is being felt both by the academic community and the information society for three distinct reasons.

1. We offer services for those users who want to be guided to the most suitable information resources, we are **Information Access Providers**. Making use of current technologies, we organise electronic resources in a logical, easily understandable manner, integrating documents and services that relate to each other. The purpose of value-added services is not only to save the researcher time and effort, but also to provide him/her with a pre-assessed, semi-ordered list of resources which match the targeted group's information requirements.
2. We are **Research Assistants** - we provide research assistance for those who prefer to conduct searches themselves and only approach us in case they have not been successful in their attempts. No resource, be it electronic or paper, is complete and so, if we do not find a particular information on the Net, this does not mean that it does not exist. We should be able to identify which sources can be queried to make a search as complete as possible. Information that is not available in structured publications may be available in 'grey literature', and hence retrieval becomes complex. This involves both skills in locating information and technological skills. Research assistance in such context includes training users to learn new technologies. For instance, distance support by telephone/email, printed or on-line manuals and face-to-face end-user training have all become so popular.

3. We are **Technology-User Intermediary** - we closely collaborate with Information Technology (IT) departments for information retrieval. Often users report problems to us which they encounter while using a system or we recognise what needs to be redesigned while explaining a system. While IT designers and System specialists design programs and user interfaces to us, we should be able to explain language, typography, layout and design requirements so as to achieve the ultimate functionality.

The advent of the Internet and other online services has changed the library from a mere entity to an information system. In other words, libraries are no longer limited to the information they house; they have become facilities that provide electronic access to **global information resources**. James Michael suggested a blueprint for the library that consisted of

- Interconnectivity - networking, uniformity of data storage and location, etc
- Interoperability - several computers talking to each other
- Integration - internal and external resources into one single user interface
- Intermediation - reference services, guided research assistance and instructions for users
- Interdependency - resource sharing and information exchange, because one library cannot have everything that might be required by users.

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