

## EXAMINATION OF PERCEPTION OF INFORMATION MANAGEMENT IN LARGE AUSTRIAN COMPANIES

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**Abstract:** *This article reports on parts of an empirical study that investigated information management in large Austrian companies (banks, insurance companies, car manufacturing firms). In particular, the question of differences in the perception of information management will be addressed. It is assumed that there are two main perspectives on information management: one concentrates primarily on information content, while the other focuses mainly on information technology. The paper first elaborates on the two main dimensions of information management: information content and information technology. This is the basis on which the format of the study will be presented. The main part presents differences and common aspects of content and technology-oriented functions. These include aspects of organisation, interpretations of concepts of information management and the competitive implementations of IT.*

**Keywords:** *information management, information technology.*

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### 1. INTRODUCTION

With the advance of information technology during the 1970s and 1980s and the increasing awareness of the importance of information, demands for the appropriate management of information resources became ever stronger. It was not long before the first approaches to Information Management<sup>1</sup> (IM) emerged. For many writers, the "Paperwork Reduction Act" of 1980, which obliged the U.S. Federal Authorities to introduce information management, marked its birth. Even among those who do not share this opinion, it is still indisputable that the literature on information management has since become very extensive. But then, no one could ever say that information management is an unambiguous term or a clear concept.

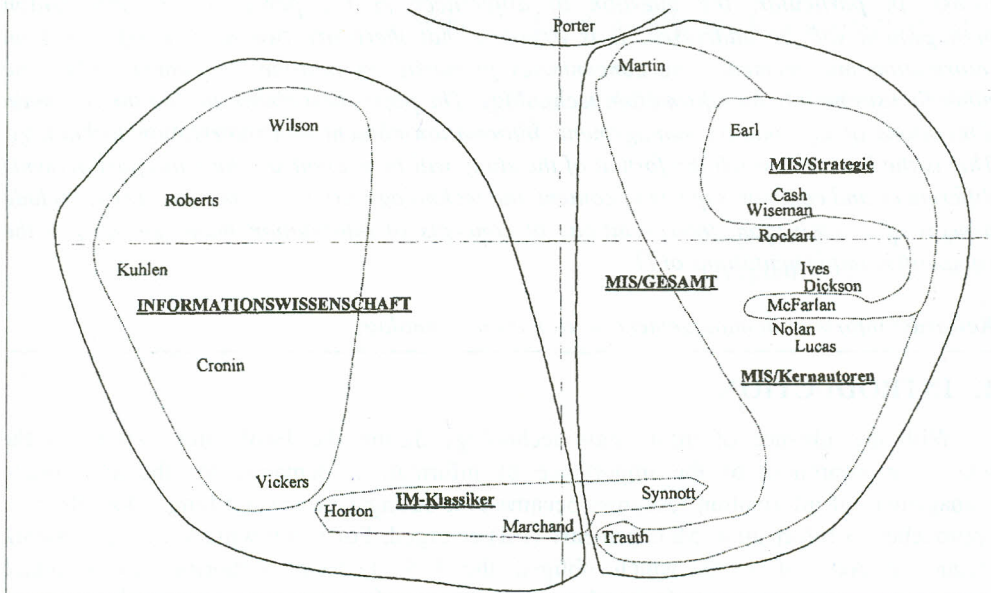
As part of a scientometric study, it is important to identify the main elements of information management. For this purpose, taking the Citation Database of the Institute for Scientific Information (Science Citation Index, Social Science Citation Index) as a basis, an author co-citation analysis was carried out. An author co-citation analysis ascertains how

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<sup>1</sup> The term "knowledge management" has recently been used to mean to some extent the same thing, sometimes in the sense of the "Management of Implicit Knowledge" (e.g. Nonaka/Takeuchi, 1997).

often two authors<sup>2</sup> are mentioned together. The idea behind this method is that frequently co-cited authors often have a close relationship with one another. On the other hand, authors who are not or rarely mentioned together have nothing or only a little in common.

Figure 1 shows a "Science Map", one outcome of the author co-citation analysis. As is obvious, three disciplines are preoccupied with information management issues. The science of Management or Business Administration itself has made no independent contributions to information management, but has instead worked out business administration principles for information management and in particular for MIS (Management Information Systems). MIS and information sciences are the two main disciplines grappling with information management issues. The focus for MIS is planning, the use of computer-based information systems and also the resulting opportunities for an organisation. The research focus for information science, on the other hand, is information per se and its use. Information and information technology, therefore, represent the two main elements of information management, with information sciences and MIS being the disciplines entrusted with them.



- MIS/Overall
- MIS/Strategy
- MIS/Key authors
- IM Classics

Figure 1: Science Map on Information Management (Source: Schlögl 2001)

## 2. STUDY FORMAT

One part of the empirical study was to investigate whether information management is also perceived differently in corporate practice. The focus of the investigation is on all

<sup>2</sup> The author co-citation analysis was conducted with the 25 authors most frequently cited by IM publications (containing the phrase "Information Management" or "Information Resource(s) Management).



those centres/departments, which, within the various companies, perform "information services" for other departments. They are henceforth usually termed as an "information functions". Arising from the results of the author co-citation analysis, differentiation was made between content- and technology-oriented information functions. The first have to do with the procurement, storage, appropriate handling and forwarding of information. Examples of this are a company library, a documentation department or a knowledge management centre. The second functions have to do with the planning, development and introduction of information systems, and also the operation of the information infrastructure. Normally, these tasks are carried out by the data-processing department, and in companies where there is an administrative department, in some case also by the staff there.

As it was assumed that information management only has relevance for larger companies, only large companies were investigated. As was indicated above, the term IM has a wide range of interpretations. To avoid or to be able to correct semantic inconsistencies, the data had to be collected in the form of an oral survey. However, for this reason, it was not possible to target a large population or sample. In the end, the population was defined as follows: all banks, insurance companies and automotive industry companies, which employed more than 1,000 staff in Austria. The survey was carried out in the spring of 2001.

Altogether, 42 people (from six banks, seven insurance companies and from five automotive industry companies) declared their willingness to take part in the investigation<sup>3</sup>. Only six declined to take part. That represents a high participation rate of 88%. Soon after the start of the investigation, it became clear that defining content-oriented centres involved great difficulties. For this reason, the following procedure was chosen. Initially, data-processing departments (and also those rare cases, where content-oriented functions were identified early on) were contacted. The (remaining) content-oriented information functions were then determined at the first, or, where necessary, the following interviews. This method appeared promising in so far as the managers of data processing or administrative departments generally know their company well. It is, however, not out of the question that some information functions were not identified.

### **3. RESULTS**

What follows are the results with regard to common features and differences of content and technology-oriented functions. The results<sup>4</sup> can be broken down into the following sections:

- organisational factors
- self-perception
- strategic use of information and information of technology

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<sup>3</sup> Once again, many thanks to all those who took part in the survey for their cooperation

<sup>4</sup> The following diagrams and tables were taken from Schlögl (2001).

### 3.1. ORGANISATIONAL FACTORS

20 of the 42 interviewees came from technology-oriented information functions, 22 from content-oriented functions. In the case of *technology-oriented functions*, the interviewees were mainly managers of data processing departments or sections of them. In exactly half of the companies, the data processing department is *outsourced*, with the proportion of outsourcing companies in the insurance sector above average, in the automotive industry, below average. Outsourcing can sometimes mean that, while application development and computing centre operations are carried out by two different, external companies, an outsourced computing centre, for example, may offer its services to two or more companies. Almost all outsourced data-processing departments are set up as subsidiary companies. But the interviews revealed that outsourced data processing is usually treated like an internal IT department. In those companies, where the allocation of the data processing service provider(s) was uncertain,<sup>5</sup> interviews were also carried out with staff from the administrative department, which liaised between the company and the outsourced data processing department.

Table 1: Information functions – sector-wise comparison

	Banks	Insurance companies	Automotive industry	Σ
Number of companies	6	7	5	18
Information functions (IF)	19	14	9	42
technology-oriented IF	6	9	5	20
content-oriented IF	13	5	4	22
Data processing outsourced	3	4	2	9

Compared to technology-oriented information functions, the *content-oriented* companies convey a very varied picture. Of the 22 content-oriented information functions, only two centres are *outsourced*. The reason for this low outsourcing rate is likely to be that basically it is less problematical to place management of the information infrastructure out-of-house. On the other hand, when the success of a company depends on information, this is only to a limited extent possible.

What is surprising is that there are scarcely any "traditional" information provision centres to be found. Only two companies have a (central) company library. Apart from pure *information provision*, practically all content-oriented information functions provide a good degree of informational added value in the form of stronger, specialist data handling. In such cases, expert knowledge is often required. If these departments are not directly under company management, then they are allocated to various specialist departments. Unlike data processing and administrative departments, content-oriented information functions are highly heterogeneous. Examples of such centres are enquiry desks, sector documentation, staff information and sales documentation.

In the automotive industry, the average *staffing number* in a data processing/administrative department<sup>6</sup> was approx. 45. It was only possible to make an

<sup>5</sup> In one company, the outsourced data processing company worked for two other firms. In one company, all data processing is carried out by two outsourced companies.

<sup>6</sup> One outsourced data-processing department was treated as an internal department.



approximate calculation for banks and insurance companies. This was because in some companies data processing was carried out by several technology-oriented information functions (e.g. the administrative department, an outsourced application development and outsourced computing centre) and not all were willing to take part in the study. Taking this into consideration, the average staffing figure in the data processing/administrative area of the insurance sector was well above 100. In banking, that figure was considerably higher.

It was similarly difficult to ascertain a corresponding figure for the content-oriented functions. As all information functions in the companies surveyed could not be accurately identified, no totally reliable figures were achievable at company level. In six companies, it was not even possible to identify a content-oriented information function. Four of these were foreign companies with the relevant centres located at company headquarters. It therefore makes sense to only make a mean value calculation at the information function level. The average content-oriented information function accordingly comprises eight workers.

### *3.2. SELF-PERCEPTION*

An important aim of the study was to investigate whether content and technology-oriented information functions have a varying self-perception vis-à-vis information management. The following indicators were used to this end:

- ranking of various IM definitions
- phase of the information life cycle regarded as paramount: provision of information or use of information
- information resources considered by information functions and
- types of information mainly under consideration.

In addition, investigations were made into whether information is regarded as a company resource.

#### **Preferred definition**

In their study, Lewis and Martin showed that various professional groups prefer different IM definitions<sup>7</sup>. In this study this claim was verified by asking the interviewee to rank three definitions. The first definition ("effective and efficient use of information technology") stresses technological factors. The second definition, ("procurement, storage, appropriate handling and forwarding of information"), however, puts the process of information provision more at the forefront. The third definition ("using information/information technology to open up new opportunities for the company / competition-oriented use of information / information technology") primarily addresses the strategic dimension of information management.

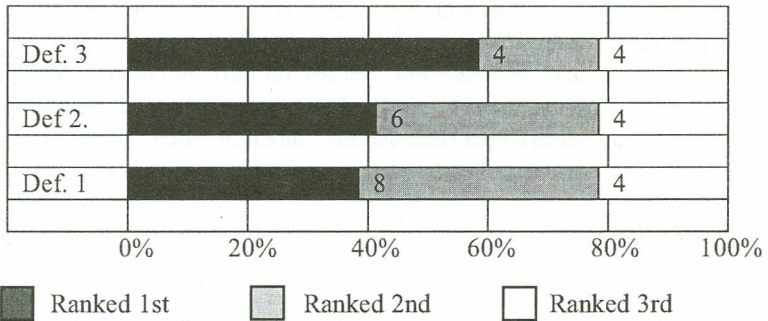
A comparison between Fig. 2 and Fig. 3 makes clear the difference between content and technology-oriented information functions. What is surprising is that in the case of the technology-oriented functions, more respondents preferred Definition 2 to Definition 1. The comment by a data-processing manager from the automotive industry to the effect that data-processing was increasingly about putting in place the technical infrastructure whereby knowledge transfer is effected, makes this ranking plausible. Although this result is mainly

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<sup>7</sup> Cf. Lewis/Martin 1989, pp. 238 ff

attributable to the insurance industry, where eight of the nine interviewees preferred the second definition, this puts into perspective the widespread view that data processing managers think mainly in technical terms.

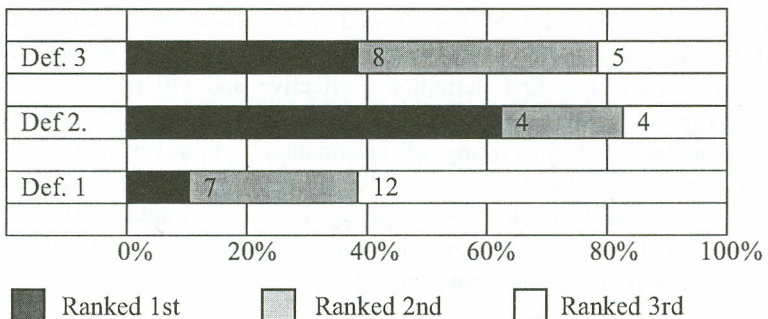
Definition 3, which stresses the strategic importance of information management accordingly received most approval. One of the interviewees supplemented this statement with: "... and help to maximise the success of the company". One data-processing manager from the automotive industry stated that by information management he understood not operational data processing, but mainly the strategic planning level.



- Def. 1: Effective and efficient use of information technology
- Def. 2: Procurement, storage, appropriate handling and forwarding of information
- Def. 3: Using information/information technology to open up new opportunities for the company / competition-oriented use of information / information technology

Figure 2: Technology-oriented information functions – preferred IM definitions

When the content-oriented information functions interviewees were surveyed, 14 ranked Definition 2 in first place and nine put Definition 3 in first place. Definition 1 was only rated as the most relevant by two department leaders.



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Figure 3: Content-oriented information functions – preferred IM definitions



**Provision of information v. Use of information**

If we see information management in the context of the management of the information life cycle, it is possible in general terms to differentiate between the provision and use of the resource, which is information<sup>8</sup>. One difference in the IM self-perception between content and technology-oriented information functions could be that each emphasises the other side of the information life cycle.

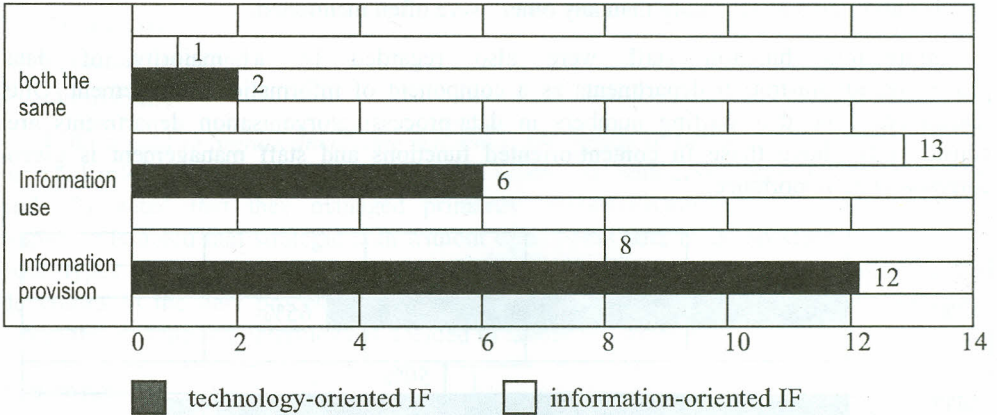


Figure 4: Preferred side of the information cycle

This is actually the case. Technology-oriented information functions tend to put the provision of information at the forefront (12 mentions). On the other hand, among content-oriented information functions, the use of information has a higher weighting (13 mentions). Among insurance companies, the above results were even clearer.

**Medium of information management (information resources)**

What we understand by information resources here are the main media of information management. Following on from Ortner<sup>9</sup>, what we are talking about here are hardware<sup>10</sup>, application software, data/information, information function(s) staff and end users<sup>11</sup>. Fig. 5 shows that data/information both for technology- (95%<sup>12</sup>) and also for content-oriented information functions (100%) are main components of information management. Wide agreement, although admittedly at a lower level (65% and 77%), exists for the inclusion of the end-user in the IM concept. Resonance in this respect was somewhat greater from managers of content-oriented information functions.

On the other hand, as was to be expected, hardware and software are, only for a majority of the technology-oriented information functions, a medium. The fact that agreement was not higher is related, on the one hand, to the special character of some

<sup>8</sup> Cf. Daniel 1991, following on from Bergeron 1995, pp. 439

<sup>9</sup> Cf. Ortner 1990, pp. 498

<sup>10</sup> Ortner uses the term Technology, by which he means hardware and also system software.

<sup>11</sup> For Ortner, the corresponding terms are "Operator- and user organisation".

<sup>12</sup> Only one technology-oriented information function, whose main duties are to do with data processing controls, does not regard data as an element of information management.

information functions (e.g. an administrative department, which liaises with an outsourced data-processing department). On the other hand, information management for some interviewees, is, as previously mentioned, less about operational data processing, but mainly about the strategic level. What was surprising was that a good few interviewees from content-oriented information functions (45% or 10 of those surveyed) attach great importance to software. This could have to do with the fact that computer-based information systems, even when it comes to information transfer, play an important role. Intranet and Lotus Notes, more than any other, were often mentioned.

Information function staff were also regarded by a majority of data processing/administration departments as a component of information management. One reason could be that staffing numbers in data-processing/organisation departments are considerably above those in content-oriented functions and staff management is given corresponding importance.

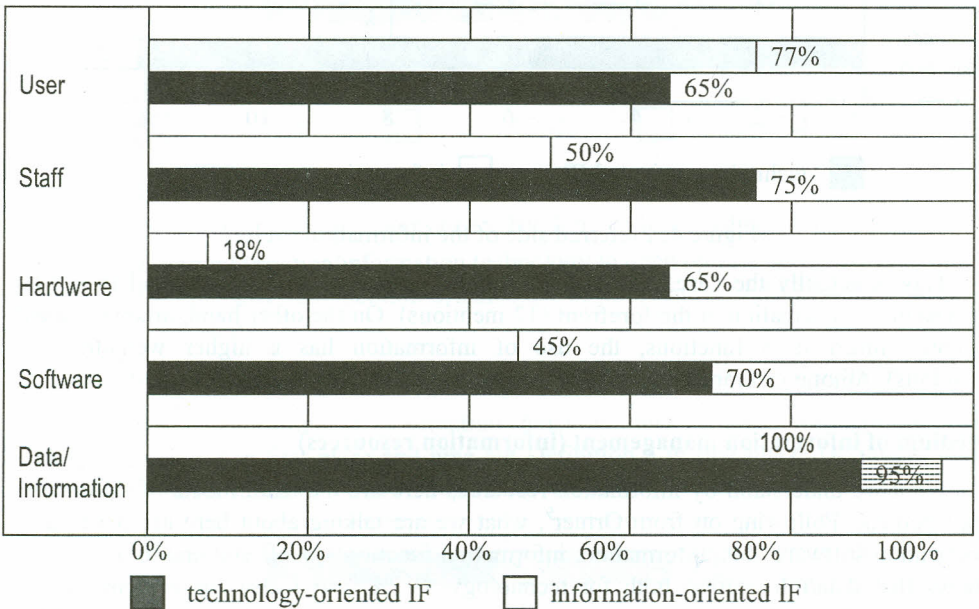


Figure 5: Information management media (information resources)

As a rule, the differences between content and technology-oriented information functions again emerge more clearly among insurance companies. In the area of technology-oriented information functions, the results closely coincide with the results of the O'Brien and Morgan study. According to this study, in which 36 data-processing staff (mainly managers) in U.S. companies took part, data/information at 97% and hardware, software and data-processing staff at 94% were an important or central element of information management.<sup>13</sup>

<sup>13</sup> Cf. O'Brien/Morgan 1990, pp. 8



**Type of information**

Differences between content and technology-oriented information functions need to be highlighted in relation to the type of information mainly under consideration.

The following differentiating characteristics were used:

- Significance/Time reference
- Origin of data
- Data carrier
- Structure level and
- Availability

With regard to *Significance/Time reference*, the results of the content- and technology-oriented information functions are relatively similar. In both cases, most interviewees (13 and 10) stated that they managed primarily operational/administrative data. Several respondents noted that strategic data without operational data made no sense and also that both types of information were relevant in equal measure. There were only sector deviations in the data processing/administrative departments of the automotive industry, where three of the five interviewees decided in favour of "strategic".

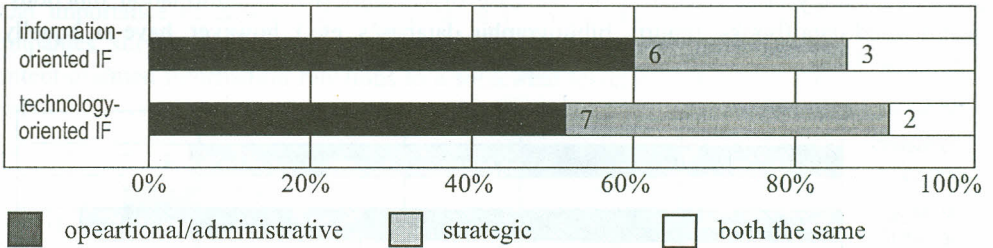


Figure 6: Type of information mainly under consideration – Importance/time reference

As for the *Origin of data*, there are, however, clear differences between content and technology-oriented information functions. In the former, most centres/departments (13 out of 22) have to do with external data. But, of course, there are also some, which deal mainly with internal data, such as "staff information" centres. For the majority of technology-oriented centres, internal data forms the major element. But here too the boundary is fluid and a separation of internal and external data is sometimes artificial. In the automotive industry, in particular, companies are so closely interlinked with suppliers and customers in data processing terms that the above differentiation is often only possible with difficulty.

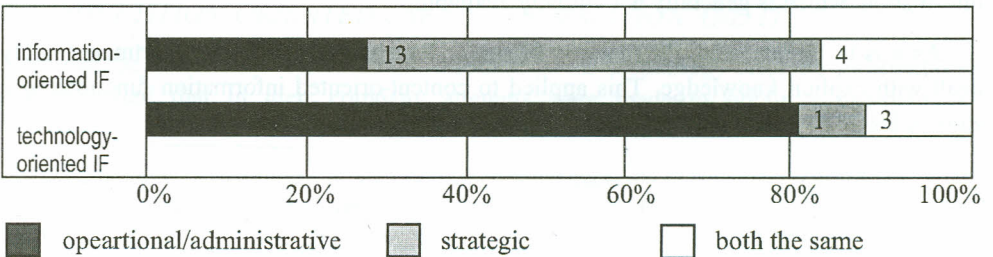


Figure 7: Type of information mainly under consideration – Origin

In almost all information functions, data is to be found on electronic *data carriers*. However, in content-oriented information functions, paper-based data (still) in some cases plays an equally important role. This particularly applies to company libraries and documentation centres, which continue to archive newspapers and journals, as electronic versions do not contain illustrations.

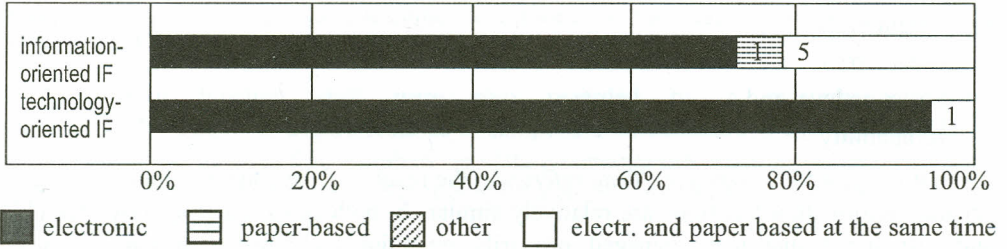


Figure 8: Type of information mainly under consideration – Data carrier

As regards *Structure level* of the data concerned, once again clearer differences emerge. Some 15 respondents from technology-oriented information functions stated that they processed mainly structured data. In the case of content-oriented information functions, unstructured data (books, reports, bibliographic databases, etc.), however, have an equally great importance.

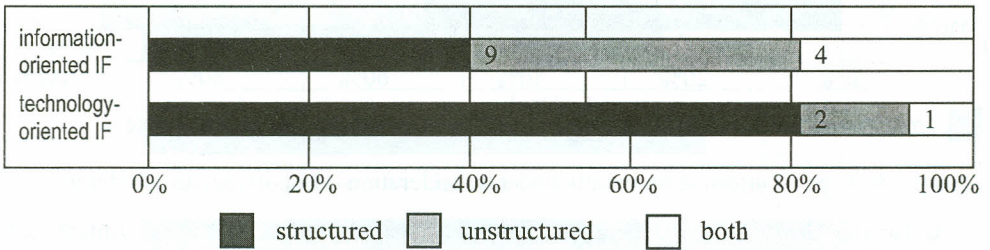


Figure 9: Type of information mainly under consideration – Structure level

In the case of *Availability*, it is possible to differentiate between explicit and implicit knowledge. The first is generally accessible in the form of computer-based information systems, documentations or external databases. Under implicit knowledge, we are talking here, for example, about the know-how and experience of individual workers, i.e. information, which is generally not publicly available.

As was to be expected, the majority of respondents stated that their department mainly dealt with explicit knowledge. This applied to content-oriented information functions to a slightly lesser degree.



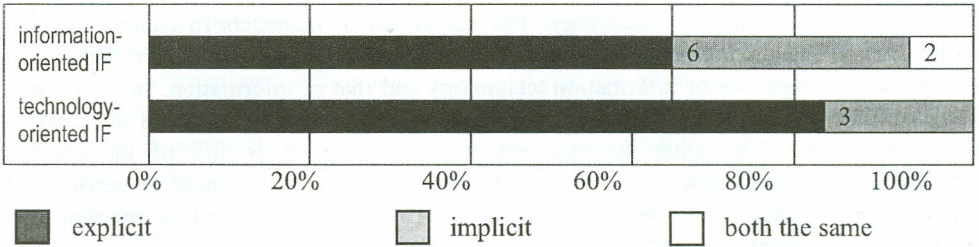


Figure 10: Type of information mainly under consideration – Availability

**Company resource information**

After various self-perceptions came to light in a greater measure with the above comparisons of content- and technology-oriented information functions, it should now be clarified, whether unity exists on whether information is a company resource, which is bestowed with the same importance, as, for example, resources such as labour and capital.<sup>14</sup>

As can be seen from Figure 11, the majority of respondents agreed with this assumption. The level of agreement among data-processing departments (yes: 19 mentions, tend to yes: 1 mention) is especially high. This is most likely to do with what is now the great importance of data processing. Without it the continued existence of none of the companies surveyed would no longer be conceivable. This conviction occurs among content-oriented information functions to a somewhat lesser extent (yes: 18, tend to yes: 1, tend to no: 1, no: 1).

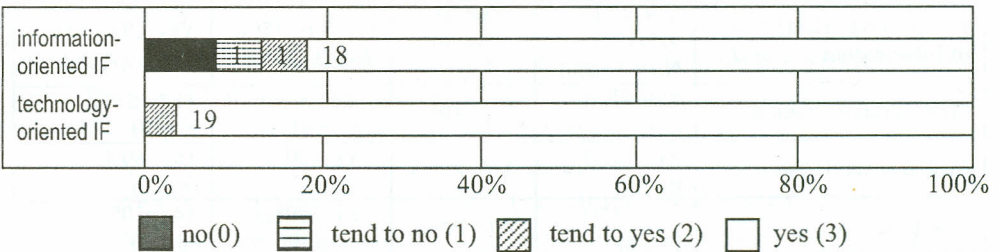


Figure 11: Information as a company resource

The above results are confirmed by Bergeron's study.<sup>15</sup> The study by Martin et al., in which the chief executives of mainly small and medium-sized enterprises in Great Britain were surveyed, produced similar results (93% agreed with the statement).<sup>16</sup>

**3.3. COMPETITION-ORIENTED USE OF INFORMATION AND IT**

As can be seen from Table 2, all respondents in technology-oriented information functions stated that in their company attempts were made to obtain a competitive

<sup>14</sup> In classic business management studies, information is not generally regarded as a specific production factor or as a company resource (cf. Benemann 1996; Bloech 1993, Col. 3412). One of the authors, who was one of the first to raise this assertion in German-language business management studies, was Wittman (1979). In business information studies, however, it is an assumption.

<sup>15</sup> Cf. Bergeron 1995, pp. 449

<sup>16</sup> Cf. Martin/Davis/Titterington 1991, pp. 213

advantage from information technology. The agreement of managers in content-oriented information functions was somewhat less (2 no responses). There are clear differences between the strategic use of information technology and that of information. In the former, cost reduction (19 times or 95%) has the top priority. In technology-oriented information functions, compared to other strategic action, cost reduction is still of the greatest importance. The latter, however, is primarily targeted at an improvement of service and customer service and also on the development of new products. Much less importance is attached to cost reduction. These results fit in with Olaisen's investigation<sup>17</sup>.

Table 2: Competition-oriented use of information and information technology

	<b>Insurance companies</b>	<b>Banks</b>	<b>Automotive companies</b>	<b>Σ</b>
Competition-oriented use of <b>IT</b> ( <i>No of IF</i> )	Yes: 6 (=100%) No=0	Yes: 9 (=100%) No=0	Yes: 5 (=100%) No=0	Yes: 20 (=100%) No=0
Product differentiation	3 (= 50%)	7 (= 78%)	0 (= 0%)	10 (= 50%)
Customer service/service	5 (= 83%)	8 (= 89%)	3 (= 60%)	16 (= 80%)
New products	6 (=100%)	8 (= 89%)	1 (= 20%)	15 (= 75%)
Supplier relations	2 (= 33%)	0 (= 0%)	4 (= 80%)	6 (= 30%)
Cost reduction	5 (= 83%)	9 (=100%)	5 (=100%)	19 (= 95%)
Niche markets	6 (= 100%)	3 (= 33%)	0 (= 0%)	9 (= 45%)
Cooperation with other companies	3 (= 50%)	3 (= 33%)	4 (= 80%)	10 (= 50%)
Competition-oriented use of <b>Information</b> ( <i>No of IF</i> )	Yes: 12 (= 92%) No = 1 (8%)	Yes: 5 (= 100%) No= 0	Yes: 3 (= 75%) No= 1 (25%)	Yes: 20 (= 91%) No= 2 (9%)
Product differentiation	8 (= 67%) (n=12)	2 (= 40%)	1 (= 33%) (n=3)	11 (= 55%) (n=20)
Customer service/service	9 (= 75%) (n=12)	4 (= 80%)	3 (=100%) (n=3)	16 (=80%) (n=20)
New products	7 (= 58%) (n=12)	4 (= 80%)	3 (=100%) (n=3)	14 (=70%) (n=20)
Supplier relations	1(= 8%) (n=12)	0 (= 0%)	1(=33%) (n=3)	2 (=10%) (n=20)
Cost reduction	6 (= 50%) (n=12)	1 (= 20%)	2(=67%) (n=3)	9 (=45%) (n=20)
Niche markets	9 (= 75%) (n=12)	1 (= 20%)	2(=67%) (n=3)	12 (= 60%) (n=20)
Cooperation with other companies	2(= 17%) (n=12)	1 (= 20%)	2 (=67%) (n=3)	5 (=25%) (n=20)

#### 4. CONCLUSIONS

From the above observations, the following conclusions can be drawn: In almost half of large Austrian companies, the data processing department is outsourced. In most cases, the outsourced department is set up as a subsidiary company. "Traditional" information providing centres, such as company libraries or central information points are only rarely found in most large Austrian companies. For this reason, content-oriented information

<sup>17</sup> Cf. Olaisen 1990, 208 ff.



functions are general hard to identify. Unlike technology-oriented information functions, their area of activity is much more heterogeneous, not least because its added value is often in content information handling and because of that are often located close to the relevant specialist departments. Clear differences are also to be found in department size. The data processing department in the automotive companies investigated has on average 50 staff members, in the insurance industry and, above all, banking, department size is well above 100. However, content-oriented information functions had on average only eight staff. In the case of foreign companies, it was difficult to identify such departments, as they were often located at group headquarters.

Various information functions see information management from their own perspective. Sometimes content- and technology-oriented information functions have a varying, sometimes a similar, self-perception with regard to information management.

The following differences were identified:

- Content-oriented information functions have a stronger focus on information use. They are preoccupied more closely with external and unstructured data.
- With technology-oriented information functions, the provision of information is at the forefront. They are dealing mainly with internal and structured data. Hardware, software and information function staff are given a higher priority.

What both types do have in common is that they regard data/information not just as material for information management, but as a production factor. They are dealing primarily with operational/administrative and digital data (but print media still play a part in some content-oriented information functions).

In almost all large companies, an attempt is made to achieve competitive advantage from the use of information and information technology. Depending on the subject (information or information technology), different strategies are chosen:

- With strategic use of information technology, "cost reduction" has the highest priority. "Customer service/Service" is given somewhat less importance.
- With the competition-oriented use of information, the primary focus is not on cost savings. Information plays a more important role in the "Improvement of customer service/service", in the "Introduction of new products" and also in the pursuit of a "Niche market" or "Product differentiation strategy".

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