4. Information Quality Case Studies

Chapter Overview

In this chapter various real-life examples are presented which illustrate means of analyzing and improving information quality in the context of knowledge-intensive processes. The chapter concludes by formulating propositions and conclusions derived from the six case studies.

4.1 Overview of the Case Studies

Purpose of the Case Studies

The following case studies illustrate the application of the framework developed in chapter three. Specifically, the following case studies are used to *highlight authentic problems* of assuring information quality in knowledge-intensive processes (in the problem section of every case), to specify what the quality *criteria* mean in real-life situations (there is a criteria table in every case study), to illustrate effective means of *implementing* the IQ-principles, and to elicit key *success factors* that enable high quality information products. The key success factors are addressed in each case study and they are examined in a cross-case study manner in the last section of this sub-chapter.

Consistent Case Study Structure

The following case studies are all organized in the same way. This will enable the reader to make comparisons between the individual cases. In addition, the 'replication logic' of these multiple cases allows for an easier detection of common themes and topics (or crucial differences) and consequently increases the external validity of the documented research (see Yin, 1994, p. 33). The structure that is used to describe the company cases is as follows.

Every case study begins with a brief description of how the case information has been gathered. Then, the company's context and *background* is outlined. This includes a brief history of the firm and its development, as well as information on its current size and scope. Thereafter, the *products*

and services are described and how they are managed to increase the quality of information. After that, the actual production *process* and its *problems* are discussed. The problem discussion is followed by a brief overview on *competitors* and by statements of *customers* on what they like or dislike about the company's information services. To conclude the case study, I outline possible *future developments* and recap the *main insights* regarding information integration, validation, contextualization and activation. Crucial *contextual factors* that foster information quality in the described context are also summarized at this point.

Two Types of Case Studies

There are two types of case studies included in this section to present empirical evidence on the usefulness and applicability of the information quality framework. The first type is *action research case studies*. They have been researched through active participation in the problem solving process at the described company (the first and the second to last case are of this type). The second type of case study material has been gathered through personal interviews, document analysis, and product or service tests.

Company	Key Product in the Case	Problem	Solution	Case Methodology
1. IHA·GfK	Market research reports	Make the reports more useful to managers; offer knowledge, not just data.	Improve the knowledge transfer to the client by activating the information through value-added infor-mation services.	Action research over a period of three years (1998-2001) with the company.
2. get Abstract	Business book summaries	The often high time investment to read a business book and under-stand its main ideas and concepts.	Have professional writers produce concise, five page summaries with a consistent rating, structure and style.	Interview with the CEO, several customer inter-views, press analysis, extensive tests of the services, website analysis (June 2001).

Company	Key Product in the Case	Problem	Solution	Case Methodology
3. Gartner Inc.	Research and analyst reports	Increase the value and impact of IT-research reports.	Provide a client extranet and concise research notes with reoccuring elements.	Interview with the Country Manager of Gartner Inc. Switzerland, several customer interviews, test of the services and products, website analysis (August 2001).
4. Giga Information Group	Research and analyst reports	Increase the value and impact of research briefings.	Provide a client extranet and concise research notes.	Interview with the managers of Giga Switzerland, several customer interviews, test of services, website analysis (August 2001).
5. UBS	Financial services	Increase the quality of business-related internal communication.	Establish a set of concise and consistent communi-cation guidelines	Action research over a period of three years (1998-2001) with the company.
6. EIU (Economist Intelligence Unit)	Country Risk Reports	Guarding and further improving the information quality of the expert reports while growing the buisiness strategically.	Recruit highly experienced analysts, install various quality checks and provide versatile interaction with the content.	Interviews with EIU managers and experts, as well as customers in 2003 and 2004. Extensive tests of the services.

Table 22: Overview of the case studies in this section

Conclusion

The six case studies documented in this section highlight information quality criteria, problems, solutions, and contextual factors. They show specific ways in which the quality of information can be improved. The case studies also illustrate why information quality is a decisive factor in many competitive markets.

4.2 Activating Knowledge: The Added Value of Market Research Reports at IHA·GfK

The data business is saturating and becoming a commodity. The knowledge business knows no limits.

PETER HOFER, CEO, IHA·GfK

Case Study Sources

This case study is based on action research with the company over the course of three years. The action research took the form of over fifty personal interviews with employees, numerous workshops with various teams and departments of the company, and an analysis of its products and services. In addition, we analyzed the Internet and intranet sites and evaluated the local infrastructure and working practices. The dominating element of the action research, however, was a bilateral project between our competence center at the University of St. Gallen's Institute for Media and Communications Management (=mcm *institute*) and the company's management. In working together with the company for this project, we analyzed its *information process* (from the client briefing and first offer through survey construction, survey use, survey codification and analysis, to the final survey interpretation and client feedback) as well as samples of the final information *product* (the market reports) and the *infrastructure* (such as the company's client extranets, the local IT-system). Besides these direct sources, we have analyzed a number of competitors.

Company Overview

IHA·GfK[119] (see www.ihaGfK.ch) is the largest Swiss market research company with one of the highest market shares in the national market research and market information services domain. It is part of the international market research group GfK (Gesellschaft für Konsumforschung) which is headquartered in Nuremberg, Germany, and which is the eighth largest market research company in the world in terms of annual sales. The organization in Switzerland has over 300 employees and thus qualifies as a medium-sized company. In addition to its own staff, the company owns several smaller Swiss companies in the area of empirical market and social research. IHA·GfK was founded in 1959. In 2000, its annual sales were 70.9 million Swiss Francs.

[119] The company name is an abbreviation which written out translates into "Institute for Retail Analyses / Society for Marketing."

The Core Product

The main products of this company are market research and public opinion studies, market data and statistics, and market and (food, non-food, near-food, pharmaceutical, and media) sales analysis tools, such as media monitoring tools, category management tools or sales analyzer applications. IHA·GfK is a classical market research group that works for multinational consumer good manufacturers, pharmaceutical companies, retail stores, and the media industry (e.g., newspapers, radios, and TV-stations). The Swiss federal government, specifically the federal bureau of statistics, is also a key client of the company. Typical questions that IHA·GfK answers are: 'How many people are watching our program?' 'What does the general public think of our image?' 'Are our clients satisfied with our products?' 'Where is our market going in terms of pricing and promotions' 'How many units have we sold in this region?' 'Where do we lose customers?' or 'What is our market share in the upper price segment?'

Additional Services

Besides the traditional market research services, such as surveys, sales data, store checks or mystery shopping (e.g., analyzing points of sales), customer or employee satisfaction surveys, and focus groups, IHA·GfK also offers *consulting services* that help clients interpret and follow-up market findings. These consulting services often take the form of a workshop or executive coaching. The workshops, which go beyond the mere presentation of market research findings or sales data, try to create new knowledge by bringing together various experts (and sometimes even competitors) from an industry domain. Examples of such additional services are 'prosumer' forums (discussions with customers about product improvements), trend workshops (seminars about future industry developments), or car clinics (where automotive issues are discussed).

The Crucial Role of Information Quality

Since this company's main products are in fact information products, the quality of information is a crucial competitive component. Until recently, however, the quality of information was mainly viewed in terms of accuracy, consistency, correctness, timeliness and currency (i.e., getting the numbers right). But in 1999 (as market data became more and more of a commodity), the company realized that a higher margin business could only be entered if other quality criteria such as applicability, convenience, conciseness, clarity, or maintainability started to become relevant to them. This, however, meant a change in the available infrastructure and in the qualifications of its staff who –until then – were mostly trained in statistical analysis and not always proficient in information design and effective client communication.

The New Strategy

The changing business environment also meant a change in strategy. Simply reacting to customer inquiries and delivering the data they asked for was no longer enough. IHA·GfK needed to re-bundle its market data creatively to generate customer value beyond the mere delivery of sales data. It needed to think about the strategic issues in the markets of their clients. This signified a new role that was often as close to consulting as to market research. It also signified investments in knowledge management to better use the available tools and know-how and make them continuously available to employees and clients. The CEO of the company, Peter Hofer, formulated this strategy as follows:

Flipping the Information Pyramid

> We want to keep and extend our market leader position in Switzerland through a professional *project engineering*, *optimized standard processes*, and through a focus on *added value* behavior, which means that we develop information concepts that help our clients pursue their strategies.

In order to provide such 'information concepts', the company realized that it had to understand the strategies of its clients and adapt its data accordingly, so that the provided information could be directly useful for strategic decision-making. In explaining this strategy to his employees, the CEO used the picture of a pyramid made up of data on the lower, information on the middle, and knowledge on the top level. He called the new strategy a 'flipping' of the pyramid: whereas IHA·GfK used to focus on the lower level of the pyramid, mainly selling data as raw, un-interpreted market statistics, it should now focus on providing actionable advice and market know-how with corresponding analysis tools and techniques. This would not only ensure customer loyalty and competitive differentiation, but, as stated above, also a higher margin business, since the relationship with the clients would consequently evolve from a 'data supplier' to a 'solution partner.'

The CEO summarized this view with the phrase: "The customer defines the rules of the game." How IHA·GfK has reacted to these new rules and how it changed from a *data supplier* to a *knowledge broker* is described in the next paragraphs, where we outline some of the actions taken to increase the quality of information for both the employees of the company and its clients.

Activities to Improve Information Quality

As so often, no single activity is enough to dramatically improve the quality of information and re-position a company as a provider of high-quality content. Rather, a mix of *technological*, *behavioral*, and *organizational* changes has to be initiated. This was also true in the case of IHA·GfK. There,

these changes affected most information quality criteria and improved the perceived value of the offered information products.

Technological Changes: Client and Knowledge Portals

As far as *technological* changes are concerned, they deal primarily with the improved *access* of clients, partners, and employees to market information. A key vehicle for this greater accessibility is of course the Internet. Selected clients were given direct access to data analysis tools over a dedicated *extranet* that bundles relevant data and applications. In this way, IHA·GfK was no longer just a supplier of data, but in fact an application service provider that hosted various analysis tools (and their content). With these on-line tools, a client can run individual analyses and use not only the standard market data, but generate individual views on specific market segments. Instead of a finalized and neatly printed market report, the client has the possibility to explore the gathered data interactively and generate views that fit his or her profile and tasks. In consequence, the technological change that consisted of moving data on-line and giving customers access to it with the help of sophisticated applications has also increased the *interactivity* and *applicability* of the information.

As far as the employees and their access to internal information is concerned, a *knowledge portal* has been created that provides a concise overview on over seventy available internal tools and information sources. This overview on the intranet has the format of an interactive knowledge map.[120] The map is depicted in the figure below. It shows the various tools and information sources that an employee can use when gathering, analyzing, organizing or communicating information.[121] Underlined items are tools or applications that are

[120] For the qualities and functions of such interactive maps see also Peterson (1995).

[121] Another element in the knowledge portal besides this map and various links and directories is an *interactive balanced scorecard*. In order to make the vision of the CEO, formulated on the previous page, come alive, we needed to make it more accessible to employees. For this purpose, we developed an interactive, flash-based, application that showed what the strategy meant to employees. With the metaphor of a tree, the four perspectives of the balanced scorecard (a concept developed by Kaplan and Norton, 1992) and their connection to the strategy was demonstrated. The employees had the possibility to interactively explore the strategy in terms of IHA·GfK's know-how (the roots of the tree), its core processes (the trunk), its clients (the leafs), and its financial performance (the fruit of the tree). Every perspective was

directly sold to clients; hence, the map also includes some of the products and services. When an employee clicks on one of the items, he or she can read about the tool's application (when to use it), its functioning (how to use it), and its evaluation (how well it works), as well as who is an expert on the tool at IHA·GfK (the so-called 'tool owner'). The main problem with the map in its current format is its *maintainability*, since a graphic map is not as easy to maintain as a central database. The main advantage is its *conciseness* and *interactive* and *convenient* use. To compile the information for the map, we conducted over thirty interviews with specialists and project managers. The reason for establishing such a map was partly the new strategy (and its emphasis on value added consulting tools), and partly because of the problems that employees had in finding cross-departmental information. We will look at the problems that occur in the knowledge-intensive process of market research after the behavioral and organizational changes have been described and their impact on information quality has been discussed.

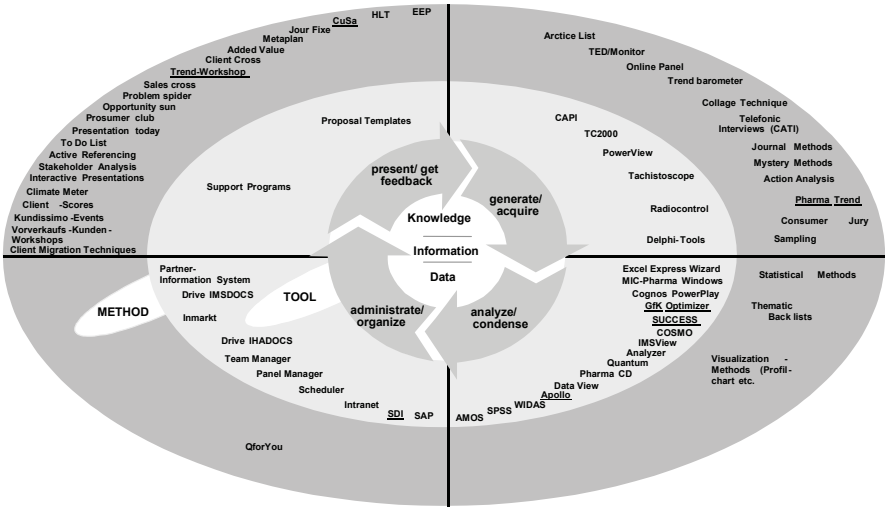

Figure 28: IHA·GfK's interactive knowledge map of tools and information sources

commented through audio by the CEO and linked to specific indicators and goals. In this way, the information on the company's strategy was made *interactive*, *entertaining*, and *understandable*.

Behavioral Changes: Consulting Know-how

The technological changes described above, e.g., the client and knowledge portal, were not easy tasks to get under way. They required systematic co-ordination across various departments of the company. The same was true for the behavioral changes that needed to take place. They consisted of two main elements, namely fostering *consulting* as a key activity to provide added-value information, and using sophisticated added-value *tools* in the process. For the first aspect various training formats were devised and implemented. One of these training formats was closely coupled with real-life consulting projects of IHA·GfK project leaders, where market data was just one element of a comprehensive customer solution. Various team leaders were coached over the course of a year regarding their presentations, reports, and client interactions were concerned. These selected team leaders[122] also had the chance to meet regularly and share their experiences. In these meetings, the sharing of examples of high-quality information was emphasized. The examples themselves came from actual projects of the team leaders and from external consultants who contributed best practices from other companies. Another type of behavioral 'tool' (which was quite close to the first one) was what IHA·GfK calls "clientissimo". Clientissimos are role playing workshops where difficult or critical situations with clients are actively acted out and simulated and then discussed in a group of client managers. Through these workshops, the account managers can anticipate comprehension difficulties or criticism. In this way, the managers can test out their ideas and findings with neutral colleagues that provide them with *instant and direct feedback*. This can help to focus the information and avoid 'overloading' the customer in a presentation on market data.

The third 'behavioral' aspect stressed methods and tools that relied on the combination of data from various sources in new ways. Examples of such methods are national and international market surveys that are coupled with market entry strategies or employee satisfaction surveys that are coupled with measures to improve personnel loyalty. The basic idea behind all of these tools was to combine data with follow-up measures in order to increase the value of the provided information. This higher value or quality of information was the result of a focus on making the findings *actionable*, that is

[122] The group of team leaders was limited to a maximum of seven. These team leaders, however, were expected to share their insights with their peers and thus act as multipliers.

to say combining insight with action steps that are tailored to the situation of the client. Although this was quite a new approach for a market research company, the first experiences were encouraging, and after two years IHA·GfK decided to institutionalize this approach with a permanent consulting unit. Other such organizational changes are described in the next paragraph.

Organizational Changes: Consulting Unit, Interdisciplinary Teams, Joint Ventures

Changing an organization is like cooking an elephant: you cannot do it all at once. You need to start with easily separable elements. In the case of IHA·GfK this meant that three experienced senior managers left their departments and formed an interdisciplinary consulting unit, IHA *Consulting*. The team's mission was to provide various departments with the skills and tools to deliver value added solutions to clients. In this way, the quality of information should increase by the deliberate crossing of departmental frontiers. On a less senior level, high-performance teams were given the same mission, namely to combine market data from various departments to solve specific customer problems. The same idea of combining data from various organizational units to increase the value of information for the customers was also applied in the global GfK group, of which IHA·GfK is a national subsidiary. There, management teams were formed to exchange experiences and findings on common topics such as Internet user statistics or the retail sector. Another organizational measure to extend both the comprehensiveness of the offered market data and its added value consisted of various joint ventures, for example in the domain of Internet measurement and media monitoring.

The following table summarizes, how these technological, behavioral, and organizational changes have affected the criteria that define information quality.

Information Quality Levels	Information Quality Criteria	Activities to improve IQ-criteria
Community Level (Relevance)	Comprehensive-ness	In order to increase the comprehensiveness of the information provided to clients, the company created interdisciplinary teams within the company and the global group. It entered various joint-ventures to enlarge its scope of market and user data.
	Accuracy	No specific measures were taken since the present label was seen as sufficient. The company had implemented a (certified) quality management system for its survey processes earlier.
	Clarity	Different layout templates were introduced that should make the information clearer and more easily interpretable. Presentations were introduced to make the information contained in market research reports clearer to the client.
	Applicability	In addition to merely reporting the market data, reports now include interpretations of the data, further analysis and cross references, and recommendations for action. The reports are not only presented, but discussed with the client to determine its internal use. The project managers are trained in consulting tools in order to improve the impact of the gathered information.
Product Level (Soundness)	Conciseness	All reports now include executive summaries. Many reports have the statistical information in the appendix and focus on the key results.
	Consistency	All market reports that a client receives have a similar structure, layout and logic.
	Correctness	No specific measures were taken in regard to correctness.
	Currency	The use of ad hoc on-line surveys was intensified to provide more up-to-date consumer data to clients.

Information Quality Levels	Information Quality Criteria	Activities to improve IQ-criteria
Process Level (Optimization)	Convenience	The market report is not only delivered as a document, but also as PowerPoint slides, as a CD-ROM, and in the future also in an updated form on the client extranet.
	Timeliness	Pre-tests were intensified in order to eliminate time lags or possible errors early on in the process. Through the client portal information is available almost instantly.
	Traceability	A knowledge map was developed and put on the company's intranet which makes it possible to trace back any tool or method to a tool owner or tool specialist.
	Interactivity	Clients are given more opportunities to provide input (via briefings, e-mails, presentations, telephone conferences etc.) during the information gathering process, before the report is finished.
Infrastructure Level (Reliability)	Accessibility	The client extranet can be accessed from any computer with Internet access anytime of the day or night. Employees have access to valuable information in the knowledge portal (supported by an interactive knowledge map).
	Security	The client extranet is protected through a password and a hidden link. The intranet is protected through a firewall.
	Maintainability	Specialized key accountants are assigned to the client extranets where the market reports are updated or cleansed.
	Speed	No specific measures were taken since the available infrastructure was seen as fast enough.

Table 23: IHA·GfK service features and their impact on information quality criteria

As the table above shows, the described changes have affected many information quality criteria. The criteria that are particularly affected by the new strategy are the following ones:

Most Affected Information Quality Criteria

1. Applicability: IHA·GfK no longer just delivers a report with enormous tables of data, but rather helps its clients to interpret the findings and use them for their planning activities. Market data are combined with actionable strategies that take the findings into account.

2. Interactivity: Some of the market data is provided on-line, allowing the customers to interactively explore details that are relevant to their segment of a market. Workshops are another way of making information more interactive, allowing customers to ask questions about the delivered data. For the employees, an information and tool directory was provided as an interactive map.
3. Conciseness: Every market research report begins with an executive summary that highlights the crucial findings of a study. Diagrams are used to summarize central insights. Methodological details are now often described separately in an appendix.
4. Convenience: The report is not only delivered as a print product, but also as a CD-ROM with slides and backup material which may include the actual database files. The convenience of internal information access was improved by installing an intranet-based knowledge portal, where crucial information sources are bundled in a graphic format.

Added Value

The main added value that results from these activities is that the client does not only receive an amorphous mass of market data, but tailored, contextualized market insights that he can directly apply to make marketing decisions. IHA·GfK defines its vision of 'added value' as the net benefit that results from increased market knowledge for a company. In one of its European managers meetings it defined this value for the customer as follows:

$$Value = \frac{Quality \times Service}{Cost \times Time}$$

This formula can be read as follows: the value of IHA·GfK's products for the customer is directly related to the information quality and the level of service it provides and is inversely related to the cost and time investments that the client has to make. This implies that the value for the customer is the bigger the higher the quality of the provided information and the higher the level of service that accompanies the information. In contrast, the value that IHA·GfK provides is lower when the costs and the required time for the provided information increase.

IHA·GfK now understands that providing knowledge is very different from providing data. In order to foster effective knowledge transfer, IHA·GfK has to provide high-quality

information that goes beyond mere accuracy or timeliness issues and results in informed decisions. Providing knowledge means activating the information in the heads of the client by presenting it interactively, reducing it to its essence, and showing what the information means in terms of next steps. If IHA·GfK succeeds in this transfer of knowledge, it can ask for higher prices for its market data. The pricing scheme and business model of the company is briefly described in the next paragraph, before we turn to the remaining problems in managing the knowledge-intensive market research process.

The Business Model and Pricing Scheme

Generally speaking, market research prices vary greatly according to their (technology and population) scale and (geographic and thematic) scope. Given the high price levels of IHA·GfK in comparison to the industry average, the strategic move toward value added services and high-quality information seems a logical one (since a price leader strategy would reverse the current image). Thus, IHA·GfK is consciously positioning its services in the upper price segment of market research companies. It can do so because it is the biggest market research company in Switzerland, offering all available marketing research methods and infrastructures (for example the possibility to combine regular panel data with ad-hoc research results). IHA·GfK is also one of the most experienced research companies in the business and has an impressive list of references and long-term key clients.

As far the pricing schemes are concerned, one has to distinguish between on-going multi-client studies (called 'buses'), and ad-hoc single-client studies, where a particular customer inquiry leads to a dedicated research project. The multi-client studies are based on regular surveys in which IHA·GfK clients can include their own questions. The prices for this service depend on the number of questions and the type of questions that are asked (e.g., yes/no questions are cheaper than open questions). Through the 'buses', a client can include his question or test material (e.g., advertising campaign material) in a regular round of 500 consumer interviews. In general, this form of market research is quite inexpensive (a couple of hundred Francs per question) compared to a single-client study that can easily amount to a budget in excess of one hundred thousand Swiss Francs, sometimes even reaching one million Francs (as in a nation-wide health survey or in the calculation of TV ratings). The costs of a single-client study depend on the form of research (a focus group discussion for example can be organized for below 10'000 Swiss Francs), the geographic scope, the length of a

questionnaire or interview, the size and availability of the target groups and the form of data analysis (e.g., with or without recommendations). An average business-to-business or business-to-consumer market research project with standardized interviews of fifteen minutes each may amount to a total of 40'000 Swiss Francs, including 300 standardized interviews at a cost of 120 Franks each and an analysis and interpretation of the resulting data. Such a project may reveal qualitative insights such as the purchasing behavior of a target group or quantitative results such as the level of brand recognition.

The key insight that one can derive from the description of the pricing model is that the mere delivery of market data offers a much lower revenue potential than an on-going customer relationship that is based on a variety of services and consulting activities. Hence, the quest for comprehensive, value-added information is also a quest for a more profitable business model.

In spite of the promise of the consulting business, the basis of the IHA·GfK business model is still (and probably always will be) the market research process. How that process works is briefly described in the next paragraph.

The Report Production Process

The way that IHA·GfK produces a market report depends, as does the price, on the type of assignment, i.e., whether the report is part of an on-going multi-client study or whether the report is part of a special project for one particular client. If a market research study is done for one particular client, the following five steps are usually completed in sequence (see the figure below).

Figure 29: The market research report production process

The Individual Steps

In the *proposal* phase, IHA·GfK analyzes the information requirements of the client and chooses an adequate set of research tools. It estimates the costs for the chosen research approach and tailors its services to the needs of the client. The result of this step is a 2-10 page project proposal. Once, the client has accepted the proposal, *field preparation* begins. This step involves the design of a survey or an interview series and their pre-tests. The result of this step is a research design that is pre-tested and can yield the desired results. The

third step in the process is the actual *field work* where the target groups are questioned and their answers registered (through telephone interviews, group discussions, on-line questionnaires, or written surveys). In the subsequent *coding* phase, the answers are converted into a machine-readable format that can then be analyzed statistically through the help of programs such as SPSS or Systat. These programs are actually used in the last two steps to codify and *analyze* the gathered data and check whether the identified patterns and relationships are significant, reliable and representative, or if they are not. The final step of the production process, the data *analysis*, usually involves the contextualization of the gathered insights, that is to say an interpretation of the findings in light of the customer's situation. Adapting the results to the client's needs is not an easy task and demands a great effort of information filtering and aggregating. One potential problem in this last step is leaving out too much (e.g., not giving the client enough insights), or not leaving out enough (i.e., overloading the client). Other problems that arise in the described process are outlined in the next few paragraphs.

Problems in the Production Process

In six workshops with the company's project managers[123] we gathered and analyzed the challenges in the area of information quality which they saw in this process (and became aware of through their client satisfaction surveys) and we tried to find ways to improve the identified deficits in these five steps. The reoccurring themes or challenges in terms of information quality were the following five issues: First, the *timeliness* of the information that the company provided to its clients was seen as sometimes inadequate (still too many market research reports were not delivered on time). Second, the *accessibility* and *convenience* of the information for clients was judged to be insufficient (it was argued that the new media were not yet fully used for the benefit of the clients). Third, the *applicability* of the information for clients was seen as a great improvement area (here it was argued that more added-value needed to be provided with the market data, such as benchmarks from other companies, comparisons with similar industries, trend analyses, recommendations, consulting services such as workshops etc.). Fourth, finding the right *scope* for information in order not to overload clients was seen as a constant challenge. Finally – because of the relative autonomy of the various units of the company –

[123] The first such workshop was held in January of 1999 with about fifteen participants. The last was held in March 2001 with twelve participants.

the project managers considered it a major challenge to provide information in a *consistent* structure and layout. This issue of consistency was also a problem because many clients requested their market reports in a very specific format that at times did not comply with the IHA·GfK standards.

Genuine Information Quality Problems

In a separate workshop, twelve IHA·GfK project heads were asked about the most pressing problems of the company (in the context of knowledge work). Fifteen percent of all answers related to information quality issues. In the follow-up to the workshop we categorized these issues into four levels: problems relating to the community of information producers, administrators, and users, problems relating to the information product (e.g., the study, report, CD-ROM, etc.), problems relating to the production and delivery process, and problems relating to the (information technology) infrastructure.

As far as *community*-related problems were concerned, it was noted that useful documents cannot be highlighted as such by the members of a particular community. There is no rating of the documents, which makes it difficult to identify high-value contributions. In regard to the information *products* there was a general lack of common templates to structure the reports and presentations. Many problems also revolved around the production and delivery process. They ranged from lacking process standards, to inconsistent data storage and file naming conventions. Some participants noted that in the market research production process, not enough quality gates or peer checks on the produced results were in place. The infrastructure problems ultimately related to inadequacies of the used ERP (enterprise resource planning) system for retrieving documents and the lacking context of the documents found in the system. Another major criticism related to the infrastructure's maintainability, which was seen as too time-consuming. Overall, many employees stated that they viewed the lacking quality standards as potential problems and that there was a qualification gap in providing high-value information. Skills such as workshop moderation, visualization, mediation and negotiation, were not sufficiently developed.

These numerous problems were the main reason why IHA·GfK has initiated the technological, behavioral, and organizational changes described above (infrastructure improvements, process standardizations, common templates, training in value-added behavior, etc.). Another reason, however, is the increased competition that IHA·GfK faces in

today's market place. In the next paragraph, we briefly describe some of the key competitors.

IHA·GfK's Competitors

As far as competitors are concerned, a number of Swiss and international companies offer similar products to similar clients, among them a spin-off of IHA·GfK called Link, the international market research group Nielsen, and the Swiss market research companies Prognos, WEMF, Demoscope, M.I.S. Trend, Publitrend, or GfS. Of all of these companies, IHA·GfK enjoys the highest national market share. It is, however, closely followed by Nielsen. Nielsen can leverage its global network and offer truly global solutions to marketing departments that themselves have an increasingly global horizon.

As a market research company with global reach, and especially in regard to ad-hoc on-line market research, IHA·GfK is thus facing competition from NIELSEN, for example with its NetRatings product line. Nielsen[124] was founded in 1942 by ARTHUR NIELSEN who wanted to measure what people actually did and not what they thought or said they did. Nielsen NetRatings has an explicit information quality policy as far as its Internet-related research is concerned. It defines information quality as a measure of *how valid and reliable data is*.

Nielsen cites the following four minimum standards for high-quality information in the market research context: Information must be free from systematic *bias*, which means the sample must be representative of the population being measured and the resulting data must be projectable. Second, to be *accurate*, data collection must be *consistent* across all computing platforms and be as unobtrusive to panelists as possible. Third, to be *useful*, data collected must be a *complete* picture of online user site and advertising activity. Finally, to be *reliable*, data must be *free from* random *error*. In its on-line presence, Nielsen not only outlines what information quality means to the company, it also provides a checklist of how information quality can be assured. This shows that information quality is not only used as a marketing gimmick, but actually functions as a standard-setting device to improve processes internally. However, unlike its competitor IHA·GfK, Nielsen seems to view information quality only in terms of validity. It does not seem to address the crucial criteria of applicability, accessibility, or conciseness. Nielsen, as a

[124] The following statements are based on information provided at Nielsen's net rating website at www.nielsen-netratings.com/products_IQ.htm [8.2.2000].

global integrated group, does however have a clear advantage over IHA·GfK when it comes to providing comprehensive information. Since IHA·GfK has only recently joined the global GfK network, its global data sourcing is not as advanced as Nielsen's worldwide collaboration and information sharing. The closer collaboration of IHA·GfK with GfK organizations in other countries is in fact one of the crucial future developments at IHA·GfK. Other key developments are described in the next paragraph.

Future Developments

The major future trend at IHA·GfK towards the *knowledge-based business*, e.g., providing clients with a portfolio of value-added services rather than just delivering market data, implies several other developments. These other developments focus on two main aspects, an internal and an external one. Firstly, to further increase the value of the knowledge transferred to the clients. Secondly, to optimize the allocation of knowledge internally. For the first goal, the customer perspective, one of the future goals of IHA·GfK may be to *help its clients improve their information quality,* so that the data generated by the client can be used more effectively in the decision-making process. Having improved its own information quality, IHA·GfK can now use this knowledge to advise other information-intensive companies or departments (such as R&D, marketing, or strategic planning) on how they can get more value out of their generated information. This may also require additional infrastructure which IHA·GfK provides for its clients, such as a hosted market or competitor database. In effect, IHA·GfK would be acting more like an *application service provider* than an external marketing consultant. For some clients, this is already the case today, where IHA·GfK not only provides the data, but also hosts the application that allows clients to directly analyze these data sets.

In terms of the internal focus, IHA·GfK has realized that it requires a more systematic transfer and combination of cross-departmental knowledge. As more inter-departmental processes start to take shape, the capture and re-use of the knowledge *about*, *within*, and *derived from* these processes becomes a crucial task.

Case Summary

We can summarize the main lessons from this case study with the help of the four information quality principles. They highlight crucial activities that IHA·GfK has undertaken to increase the quality of its information.

- Integration: Almost every major market report now contains a concise and systematic executive summary and an on-site presentation where the main consequences of a market study are presented in overview. For key accounts all studies or relevant data are integrated in a client extranet portal.
- Validation: Almost every market research report contains an appendix that explains (in detail) how the data was gathered, analyzed and condensed. The production process is documented in a quality manual and contains various reviews and quality gates, as well as forms for client feedback and the elimination of errors. Various workshop formats help a client manager to validate his findings and his style with peers first, before facing a client.
- Contextualization: Most market reports now refer to related reports or provide links to other available information or benchmarks that may render the information more meaningful by putting it into perspective and enabling comparisons. Besides the actual data, IHA·GfK at times also provides general market data to complement the individual items. This context is sometimes provided personally by a market analyst who presents the findings and relates them to the client's context.
- Activation: Many market reports are now not just sent to the client or just presented in a management meeting, but actually discussed and analyzed in a workshop-like setting where clients can ask questions or probe deeper together with the market research consultants. IHA·GfK has invested heavily in this 'data activation' process, especially in the area of training and tools.

As in other industries, market research companies have begun to understand that merely delivering correct data is no longer a competitive advantage. Convenience, accessibility, and applicability have become crucial quality elements of market insights.

Conclusion

This case study has shown that information quality improvements cannot be achieved by simply focusing on *technological* improvements. The IHA·GfK case shows that *behavioral* and *organizational* changes may play an equally important part in increasing the value of the delivered information. A technological solution for improved information quality is the internet-based client and employee portal that aggregates information and applications in one interface. A behavioral measure may consist of training and experience sharing regarding value-added communication skills and tools. An

organizational solution may consist of a task-force that combines information that is usually dispersed in the organization, thus creating high-value insights. Improving information quality not only helps IHA·GfK to increase the margin on its data business, but it could also develop into a separate line of business where IHA·GfK helps its clients to improve the quality of their own information.

4.3 Compressing Knowledge: The Integration of Business Books at getAbstract

We have the biggest and most unbiased information quality control board there is … the entire Internet community

.

THOMAS BERGEN
CEO and co-founder of getAbstract Inc.

Case Study Sources

This case study is based on five sources, the first and most important one being a face-to-face, three-hour long interview with the CEO of getAbstract, THOMAS BERGEN (who is also one of the two founders of the company). The interview was held at the headquarters of getAbstract in Lucerne, Switzerland, on the 12th of June 2001.[125] The second source of information was a collection of newspaper and journal articles that reported on getAbstract. The third source was the company's extensive Internet site and the Web sites of its competitors (see www.getAbstract.com, summary.com, summaries.com, or meansbusiness. com). Another important source was a series of interviews with five individual getAbstract customers, who discussed their experiences with the company's services. Finally, knowledge for the case study was gathered by being an actual customer of the company for four months.

Company Overview

getAbstract is a knowledge compression and rating company based in Lucerne, Switzerland with an additional office in Fort Lauderdale, and representations in Paris, Hamburg, Beijing and Hong Kong. It has about 20 full-time employees and a network of approximately 120 part-time collaborators who are mostly professional writers or translators. getAb-

[125] The case study was read and checked for accuracy and correctness by Thomas Bergen and by a member of the US management team of getAbstract. Detailed questions concerning the production process were answered by the head of the editorial team.

stract is, according to the company itself, a "leading provider of compressed knowledge" mainly in the area of business books. It states its mission as follows:

> To get the latest business trends and knowledge into the hands and heads of executives, managers and business students worldwide through concise Abstracts (summaries) of the newest and most important books on the market.

getAbstract was founded in 1998 by ROLF DÖBELI (formerly a manager at SWISSAIR) and THOMAS BERGEN (formerly a member of management at the banking branch of the retail group MIGROS). The two founders originally conceived getAbstract as a small company with the goal of 200`000-300`000 Swiss Francs in sales and with a product offering of about one hundred abstracts per year. However, when the organization became incorporated in 1999, it became clear that the initial business idea (summarizing business books) required more legal backing (e.g., formal contracts with the book publishers) and thus a greater investment in terms of financial resources. Since then, getAbstract has received major funding (totaling 14 million Swiss Francs) from two Swiss banks and various institutional and private investors. This has allowed the company to establish a legal department, which has since negotiated agreements with over 120 publishers. This gives getAbstract the legal right to produce summaries of the books offered by these publishers. At the moment, the company is run by the two founders and four other partners. This team of six colleagues (all between 32 and 34 years of age) still holds the majority of shares in the company.

The Core Product

The company provides its (currently about 3,000) private and more than sixty corporate clients or subscribers with concise, five-page summaries of business books, available in four languages (English, German, Spanish, and Chinese) and across multiple platforms (as Adobe PDF files or Palm Pilot files sent by e-mail, as audio abstracts, or in the form of a file repository as part of a company's intranet). The summaries of current and classic business books are written by a network of 120 professional writers and edited by three editors in Switzerland and the United States. These editors also rate each book according to its *overall appeal*, *applicability*, *innovation*, and *style*. Every book abstract has the same generic structure: A thumbnail of the book's cover next to the title and the detailed publishing information (sub-title, author, publisher, year, number of pages), a focus table that indicates the overall topic area of a book (such as technology, strategy,

or leadership), a half-page of key take-aways in bullet-point format, a rating on a scale of five to ten (books that receive a rating below five are not summarized), a brief review and recommendation of the book, the actual abstract itself (which is about three pages long), and background information about the author(s) of the book. The last two lines of every abstract provide a list of buzz-words used in the book. This generic structure of every book abstract is represented in the table below.

1. **Book Cover Thumbnail**	2. **Book Title**
	3. **Subtitle and Publishing Information**
4. **Focus** area of the book (highlighted in a series of possible areas ranging from corporate finance, marketing, production and economics, to self improvement	5. The main **Take-Aways** (key findings) of the book (about ten main insights of the book on one half-page)
	6. **Rating** of the book (10 is best) in the following categories: Overall, Applicability, Innovation, Style
7. **Review** (including a recommendation for a specific target group)	8. **Abstract** with main concepts and comments on style and implementation guidelines
9. Original **Quotes** from the book in the margins of the abstract	10. **About the Author** (four lines of background information on the writer's position, reputation, and education)
	11. **Buzz-Words** (a short list of new terms coined or frequently used by the author)

Table 24: The generic structure of getAbstract's book summaries

Additional Services

On its Web page, getAbstract provides full access to all abstracts, which are categorized in so-called knowledge channels (or focus areas), such as leadership, self-improvement, strategy, or technology. One can also search the database of book summaries through a keyword search or browse a list of top downloads or new abstracts. The Web site also contains a customization application through which the customer can enter or modify his or her interest profile. In total, the Web server offers a repository of about 1,200 abstracts. BERGEN indicates that this number increases by 500 new abstracts every year.

The Rating Criteria

While getAbstract refers to itself as a knowledge compression and *rating* company, the rating is – as of now – not a very visible part of its services. As mentioned above, the editors of getAbstract rate each book according to four crite-

ria. These four criteria are described as follows on the homepage of getAbstract:

1. Overall Rating /Must Read: How critical is this book to you? Is the information in the book so important that you can't afford to miss it? Have the concepts in this book become so widely accepted that you need to be familiar with them?
2. Innovation: Are the ideas presented in this book new, or are they just the same old recycled clichés?
3. Applicability: How important is the subject matter to your business and personal success? Can you put these ideas to work?
4. Style: How energetic and clear is the writing style? Hey, not everybody writes like Tom Peters!

Impact on Information Quality Criteria

Having briefly outlined the core product and additional services of the company, we can now look at all the services from an information quality perspective. Table three lists the main functionalities of the getAbstract service and shows which information quality criteria are affected by them.

Information Quality Levels	Information Quality Criteria	Functions of GetAbstract.com
Community Level (Relevance)	Comprehensiveness	At the book level: the most important elements of the book are represented in the abstract. At the portal level: most general management books are summarized (more than 8,000 are screened).
	Accuracy	The accuracy of the provided information is determined by the editorial guidelines that are provided to the writers and by the quality of the writers, who are mostly professional journalists.
	Clarity	Only professional writers are hired to write abstracts. Professional editors review the abstracts for clarity and style.
	Applicability	Regular feedback from abstract users is acknowledged and incorporated. The abstracts focus on take-aways and main new terms.
Product Level (Soundness)	Conciseness	Every book abstract is limited to five pages. Reviews are limited to one paragraph per book.
	Consistency	Every book abstract has the same structure: take-away, rating, author, buzz-words. Authentic quotes from the book are included on the side.
	Correctness	Not explicitly addressed.
	Currency	New book summaries are added every week, about five hundred new books are summarized every year.
Process Level (Optimization)	Convenience	The book abstract can be simply clicked on and is directly mailed to the inbox of the client where it can be read as a PDF-file or on the palm pilot.
	Timeliness	New abstracts that fit the profile of a client are automatically sent out by e-mail.
	Traceability	Author and publisher information is always given. However, the reviewer's name is not disclosed.
	Interactivity	The getAbstract customer can interactively edit his account and his interest profile. He can browse various book categories or do a key word search.
Infrastructure Level (Reliability)	Accessibility	All abstracts are accessible all of the time from any computer with Internet access and an e-mail account.
	Security	The getAbstract site is protected by a firewall. The client account is protected through a password.
	Maintainability	The site is continually updated and improved by a team

Table 25: getAbstract features and their impact on information quality criteria

From these information quality attributes, the ones that are affected most by the services of getAbstract are the following five:

Most Affected Information Quality Criteria

1. Conciseness: Every book is summarized in five pages. This increases the conciseness of a book by an average (purely quantitative) factor of about forty.
2. Comprehensiveness: The main elements of the book are discussed. Most qualified and successful business books are abstracted and available on the Web site. The executive can get an overview on a pre-filtered selection of books from a total of about 8,000 business books.126
3. Convenience: The abstract is delivered as a PDF file or for the palm pilot via e-mail. In this way it can be read at one's own convenience either electronically (in mobile situations on the palm pilot) or as a printed page.
4. Accessibility: All of the abstracts are accessible all of the time. The already downloaded abstracts are listed in a profile section and can also be accessed anytime from anywhere. They cannot, however, be directly viewed on-line, but only through an e-mail account.
5. Consistency: All abstracts follow the same structure. Thus, new abstracts can be easily scanned or read in overview and eventually stored in a personal archive.

Added Value

In these five areas, getAbstract clearly provides an added value for its clientele. According to BERGEN, this key value proposition for his clients can be described as follows: getAbstract is a time-saving device and an access point to an up-to-date, electronic library of relevant management know-how. It enables a manager or business student to "get into a new topic quickly." Customer questionnaires issued by getAbstract have actually revealed that a lot of clients subscribe to getAbstract in order to browse new topics or gain an understanding of new trends quickly. Many of them also want to be informed about the bestsellers that are available on the book market. One client, for example, has subscribed to getAbstract, to prime his technical staff on marketing vocabulary and concepts.

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126 Nevertheless Bergen acknowledges that this is a weak spot of any abstract service, namely that it can never achieve full comprehensiveness in terms of the summarized books. Because of this, getAbstract will loose or fail to attract customers that look for very specific types of books that focus on a particular industry or a specialized management function.

The next paragraph describes how this added value is turned into a tangible business model.

The Business Model and Pricing Scheme

The revenues of the company are generated through annual subscriptions of 299 US$ per client (this fee provides access to all available abstracts and to one new abstract every week that is automatically sent to the subscriber by e-mail) or through its corporate clients that integrate the service into their intranets. Alternatively, individual book abstracts can be bought at a price of US$9.80 each. Students are also a targeted customer group of getAbstract. They can access the service for US$60 per year. In addition, getAbstract receives a seven percent commission on all books that are ordered through its Web site. With this business model, the sales were in the order of approximately 1 million Swiss Franks for the year 2000 (start of sales was May 2000).

This revenue side of the abstract business has to be related to the costs that are involved in producing an abstract. The following paragraphs show what it takes in terms of staff resources to produce an abstract. Since getAbstract does not disclose its salaries, one can only estimate the margins of this business model.

The Production Process

In order to produce an abstract, a process which takes up to two months per summarized book, the following twelve steps have to be completed. They are briefly described below.

1. The first step consists of the book (market) *screening* and the book pre-selection. This step should answer the following question: Which books are relevant to our clients and worth summarizing? The answer to this question is given by a team of three editors in the US and Europe. They screen about 8,000 books per year for potential relevance to their clients. Occasionally, large corporate clients may propose books to be abstracted. An important indicator for a book's relevance or impact is the press echo that it has received or the discussions about it on Internet newsgroups (which are followed by the editors).
2. The second step in the production process consists of clearing the possible legal barriers. The key question in this step is: Can we get the rights for the book in every language? This is very often the case since getAbstract has contracts with over 120 publishing companies.
3. If there are no legal barriers, getAbstract receives a copy of the book directly from the publishing house (mostly for free).
4. The (two) editors in Lucerne (for German books) and the one in Fort Lauderdale (for English books) browse

through the received book and evaluate it for approximately half an hour. If they still think the book is relevant and fairly well written, they decide to abstract it and move to step five.

5. In step five, the editors determine which writer has the free capacity to do an abstract. Every writer writes an average of four book abstracts per year, but this varies greatly from writer to writer, as there are some who may do more if they decide to make their living abstracting books. In order to complete this step, the editors have a comprehensive database of all the books that are summarized, their legal status, and who is summarizing them.
6. If a free writer is identified who may be able to evaluate and summarize the book, it is sent to him or her by the editors.
7. This is the main step in the abstract production process. It consists of the writer reading and summarizing the book. According to BERGEN this is a "black box" process in the sense that getAbstract does not know how or when a writer produces an abstract. There are hardly any guidelines or rules for the actual summarizing of a book. The writer is paid a fixed amount per abstract, regardless of the book's level of difficulty or scope in terms of pages. In the initial two to three months that a new writer works for getAbstract, the abstracts are usually not what they should be in terms of quality, according to BERGEN. They need to be edited heavily by the editors and the writers receive a great amount of feedback from them. The writers do not receive any specific training material, just examples of some very good abstracts. In general, the writers are encouraged to write more than the required five pages, this way the editors can still edit the abstract for its final version. In terms of tools, the writers are provided with a word template. The reproduced original quotes from the book are selected by the abstract writer. He or she also compiles and forwards the list of buzz-words that are added at the end of the abstract. In the future, the writers may even work with a template with XML-tags so that the later retrieval can be enhanced and the abstracts can be more easily integrated into a corporate intranet or document repository.
8. In the next process step, the editors go over the received abstract and decide where changes or cuts are needed. The end rating of the book is also done by the editors in Lucerne or Fort Lauderdale at this point.

9. When the abstract is complete, the legal department once again checks the rights on the book and whether the abstract is in accordance with those rights.
10. The abstract document is then tagged (through XML-technology) with keywords that indicate its subject, date, author, etc. This will enhance the future use of the abstract as an element of a document repository or in the conversion to other formats, such as Adobe PDF files or Palm Pilot files.
11. and 12. The final two steps in the production process of an abstract consist of making a layout for the summary document (either in-house or externally) and putting it online or sending it to clients via e-mail.

In the future, getAbstract plans to add yet another step to this process, namely that there will be feedback mechanism so that readers can indicate what they liked or disliked about an individual abstract.

Problems in the Production Process

As can be expected, some of the biggest problems in this process reside in steps two, five, and seven.

The problem inherent in step two is basically a coordination and time problem. It consists of overcoming the entry barrier of lacking contracts with publishers. This involves a great amount of negotiation and relationship management. Once established, however, these legal agreements between getAbstract and the publishing companies can prove to be a distinctive competitive advantage that is difficult and time-consuming to replicate. For the CEO of getAbstract, this also represents one of the biggest barriers of entry into the book abstract market. He cites examples of companies that have entered the abstract business without proper legal contracts and have since been sued by publishing companies.

The problem inherent in step five is finding enough high-caliber writers who can continually and consistently provide well-written abstracts that reflect the relevant content of a business book. getAbstract's approach to this problem has mostly been by word-of-mouth, networking, Internet monitoring, and by asking for recommendations. In this way, new writers were identified and won through up-front payments. BERGEN points out this crucial challenge in the following quote:

> It was a very difficult task to find these business journalists; they are all professional writers. They were found via networking over the Web, then talking to opinion-leaders and working with them, and

then through word of mouth. Our staff is a Web community. It is very important to treat them fairly because of this virtual relationship.

Because the relationship to the abstract writers is at the same time crucial for the success of getAbstract and purely virtual, the management gives special attention to their remuneration and to their own working styles. The abstract writers receive a generous flat fee for every produced abstract. In addition, getAbstract is very flexible it its coordination with the writers. One writer, for example, does not deliver her abstracts electronically but by fax, which getAbstract accepts due to the high quality of her summaries. The company is also very flexible in regard to how many abstracts a writer would like to produce in a given time span.

For the abstract writing itself (step seven), the main problem was and still is to achieve and sustain a unique and consistent writing *style* (that BERGEN describes as spicy and entertaining, yet to the point). The solution to this problem relies on the in-house editorial team that uses an internal style guide to make the abstracts more alike (in the sense of a typical getAbstract style). A second solution element in regard to style is the fact that only professional writers are hired as abstract producers and that they are explicitly asked to write in a light and entertaining manner. A third possible improvement in regard to a consistent style comes from customer feedback. According to BERGEN, a number of clients (and sometimes even book authors or publishers) do send feedback on specific abstracts and thus help the company to improve its style and services.

Customer Opinions

In telephone interviews with six getAbstract clients[127] from three different companies, additional information was gathered that reflects the current strengths and weaknesses of the book abstract idea and its implementation at getAbstract.All of the six questioned customers indicated that the abstracts were mostly of good quality and helped them to decide whether a book merits further attention or not. The six customers all said that they were surprised by the consistent high quality of the abstracts and that they greatly appreciated the systematic and fixed structure of the book summaries. However, all of the interviewed customers also said that they

[127] One of the interviewed customers was at the same time a client of a getAbstract competitor, namely Soundview's summary.com. He did not, however, stress major differences between the two services (except for the fact that getAbstract also summarizes books in German).

frequently read abstracts that did not meet their expectations (because of style or content). All of them indicated, that they would like to have a bigger choice of book topics (and not just general management books), as well as more or better value-added services, such as a true full-text search, a more sophisticated user profile, links between related book abstracts, a more informative rating system, more topic-categories or sub-categories, or summaries or streams of related books.

Some complaints were voiced regarding the comprehensiveness of the abstracts and their clarity or applicability. Two out of the six customers indicated that when they read an abstract of a book that they knew, they did not always agree with the abstract writer on what were the most important points. One customer said that the quality of translations was at times insufficient in book abstracts that were translated from English to German. This customer also felt that some writers were not knowledgeable enough in the topics they covered and did not always seem to understand the terms that they were using. Another customer, however, thought that the writers did an excellent job at picking the right quotes and knowing where to paraphrase the book text.

As far as the content of the book abstracts was concerned, two customers indicated that they would like to see one or two key charts from every book included in the abstract in order to facilitate the reading and make it more memorable. This issue has in fact already been discovered by getAbstract (also through customer feedback). In the future, getAbstract may include figures and illustrations in its abstracts, if it can process them efficiently and no legal problems in reproducing book charts arise. When asked why getAbstract has so far not compressed knowledge visually or through diagrams, BERGEN gives the following answer:

> Until now there have been no abstracts with graphic information because the production process is much more efficient with pure text. You need a graphic specialist if you want to include charts, because the look and feel of the abstract has to be consistent. You cannot just do a scan. We would have to redraw the graphic in our style. We would have to reduce the complexity of the graphic illustration to live up to our promise. We will now test it with a book abstract. Nevertheless, I am sceptical about including charts because our vision is complexity reduction and we would have to do the same with the charts, which will complicate the production process.

Another point that BERGEN acknowledges as an improvement area (as indicated by the clients) is the profiling of customer needs. Here, Bergen states that “We have to get better at

evaluating the requirements of our reader. Right now we only provide categories and a profile. In the future, we will learn more about our customers and their needs and let them benefit from this knowledge."

Conclusion from the Customer Opinions

Clearly, a set of only six customers is not representative. Nevertheless, these comments can be seen as valid suggestions for future improvements and getAbstract's reaction to customer feedback shows that it is willing to continually optimize its information processes and infrastructures.

In order to complete the view on getAbstract, the last segment of this case study will portray competitors of the company and outline possible future developments for getAbstract and for the abstraction or summary business in general.

Competitors of GetAbstract: Meansbusiness.com

Major competitors of getAbstract are meansbusiness.com, SOUNDVIEW (www.summary.com), and manageris (www.manageris.com) although the last one mainly focuses on the French market and only produces two book abstracts per month (it is thus not further discussed below). MEANSBUSINESS has a significantly lower number of book abstracts in total, but also provides concise summaries of content *across* various books in its so-called concept suites. A concept suite is a summary of book chapters from various books that deal with the same topic (such as information overload, knowledge management, or managing the workplace). Hence, Meansbusiness.com also integrates business books on a macro-level, by summarizing important aspects or concepts across various books (usually four to six books per topic). MEANSBUSINESS only offers abstracts in English.

Soundview's summary.com

SOUNDVIEW, a US-based company based in Pennsylvania owned by Clement Communications, offers an "executive book summary" service at its Web site www.summary.com. Each book abstract requires about 20 minutes of reading, according to the company. Summaries are also made available as audio CDs or audio tape cassettes. The text-based summaries of SOUNDVIEW have a scope of eight pages and differ in terms of their structure and style from the abstracts produced by getAbstract.

A SOUNDVIEW executive books summary begins with a thumbnail reproduction of the book and its full title. It contains a one-page *brief summary*, and a seven page *complete summary*. On the front page of a book summary there is a table of contents of the summary. On the second page, information on the book's author(s) is provided. Whereas getAb-

stract uses a very sober page layout (with only one font, one column, and highlighted sentences that are underlined), SOUNDVIEW uses various sizes of fonts, and bold sentences for crucial phrases or terms. It divides every summary into various topic-oriented chapters. The complete summary is often interrupted with shaded areas that contain short case studies, checklists, examples, or questions. Summary.com offers thirty book summaries each year for a price of US$159 (179 dollars for the audio version). It has agreements with over 30 book publishers (mainly from the United States).[128]

New Competitors: Summaries.com

At the moment, new competitors are entering this dynamic industry. Other contenders include summaries.com which offers its business book summaries at only 1.92 dollars a piece. It follows a similar model as getAbstract by sending out one new abstract every week and by offering various subscription models. Unlike the other three players, summaries.com also includes diagrams in its book abstracts.

Future Developments

As far as the potential of the book summary business model is concerned, various new directions can be imagined. BERGEN sees four areas in which growth is possible and likely for his company. They represent getAbstract's growth axes and are briefly outlined below:

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[128] Besides these commercial competitors, getAbstract faces a number of competitors who also summarize business books or business magazines, but provide these summaries free of charge (as traffic generators or as customer service). Examples of such competitors are www.mwonline.de (a German site that provides summaries of business magazine articles), www.strategy-business.com/books, a site provided by Booz, Allen & Hamilton, or ww.brint.com (which provides book summaries and book discussions through its community members, a model that a number of sites have chosen, which does not guarantee high-quality summaries, however). Another category of competitors are book abstract producers who do so illegally (without the consent of the publishers). Finally, there are specialized abstract services such as MCB University Press that produces abstracts of personnel and training articles with its Anbar Abstracting Journals. MCB publishes abstracts of up to 120 articles twelve times a year.

[129] Another domain, where knowledge compression or book abstracts are already a major business is in the academic sector. Two of the more famous companies in this sector are Cliffs Notes and Random House. The first company produces so-called Cliffs Notes (named after the founder of the company Cliff Hillegass) which are essentially summaries of classic works of lit-

1. The first growth axis is *technology* or the media in which abstracts are provided. getAbstract is already experimenting (as summary.com) with audio abstracts, in which a book summary is read aloud to the executive on a business-class flight or in a car. Future applications may include video summaries that are enhanced by charts, animations, and film clips. A possible trend for the future may be multimedia abstracts that are more interactive and put a greater emphasis on learning and knowledge transfer than current abstracts. As far as technology is concerned, BERGEN also intends to extend the on-line services that are available on the getAbstract Web site. A new service that will be added soon can refer customers to other book summaries that might interest them (e.g., "people who have downloaded this abstract, have also downloaded these abstracts").
2. The second growth area is an expansion of the *languages* in which the abstracts are offered. One logical next choice, besides the existing English, German, Spanish, and Chinese (the latter two are only translated, not originally written) is Japanese. Offering abstracts in a new language can mean access to an entirely new market, either directly by producing abstracts in the foreign language or by licensing the getAbstract brand and the necessary infrastructure to local providers.
3. The third growth axis consists of offering entirely *new products* or services. This means applying the abstraction principle to different types of content, such as speeches or presentations. getAbstract refers to this service as speech abstraction. It has already offered speech abstracts at the

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erature for college students. The summaries include background information on the text and the author, a two page synopsis, a list of the characters, and a longer summary by chapter, as well as explanatory comments. A book such as Milton's Paradise Lost is usually discussed and summarized on sixty to eighty pages (on the inside cover of every book summary, Hillegass writes that the notes should not be a substitute for the reading of the original). Whereas Cliffs Notes rely purely on text to summarize a book, Random House uses 'plot diagrams' (a variation of Novak's concept maps) to depict the story of the book and its central characters. A Random House "Keynote" summarizes a classic book on only six pages (which makes you wonder what kind of warning could justify this kind of literary text compression). Like meansbusiness.com Cliffs Notes does not only integrate individual books, but also series of books that relate to the same topic, such as books on mythology, or Roman and Greek classics.

ST. GALLEN MANAGEMENT CONFERENCE ISC, and at the SWISS ECONOMIC FORUM. Other similar new services are feasible, such as offering on-demand abstracts for client-requested books, reports, studies, etc., or training executive assistants on how to write high-quality abstracts.

4. A fourth area for growth that BERGEN foresees for the very near future, is in new geographic markets that can be addressed with the existing content, such as Scandinavia, England or India.
5. A fifth and final growth area may lie in addressing entirely new content domains beyond the traditional business books. For this option, getAbstract has already acquired the rights to summarize books such as Harry Potter and the Tiananmen Papers. Other feasible areas may be in the domain of science books, market studies, legal norms and codes, or company profiles.[129] Recently, getAbstract has already begun to offer select summaries of classic literature, ranging from the Bible to Alice in Wonderland.

This list of growth opportunities shows that the book abstract business has many promising perspectives. However, these new applications also confront the suppliers of abstracts with considerable information quality problems (in terms of convenience, consistency, currency, timeliness, security, and many other criteria). Thus, it seems important to install a functioning information quality system right from the start, in order to learn about quality assurance for intellectual information products and leverage the gathered insights in other domains. This is, in my view, an untapped potential of current book abstract services. They can no longer afford to treat the summarization process as a black box that is entirely left to the writers themselves. Rather, they need to install guidelines and tools that "force" the writers to contribute abstracts that meet certain minimal standards in terms of content depiction, style, and structure.

Case Summary

In conclusion, one can say that the biggest entry barriers for this type of information quality service are the legal obstacles (getting publishers to agree to the book abstraction) and finding enough qualified writers who can provide consistently instructive abstracts over a long period of time. The biggest improvement area lies in the consistent writing style that captures the essence of a business book, as well as in making the information process more convenient and the offering more comprehensive. Possible measures that can be implemented to improve the quality of the provided information are writer guidelines and more elaborate templates that

provide hints and examples for the writers to follow. The greatest untapped potential can be seen in relating book abstracts to one another and thus integrating them on a macro-level, as well as providing a more useful and informative rating schema.

We can summarize getAbstract's major benefits or innovations with the four information quality principles:

- Integration: getAbstract integrates on two levels: every book is reduced to five pages, and a great number of books is integrated and made accessible in one Web site.
- Validation: getAbstract pre-selects and filters new business books and rates them according to a defined set of explicit criteria.
- Contextualization: getAbstract provides information on the author and his or her background, it states possible target groups of a book, and it will add references to similar books or to books others have found to be useful.
- Activation: getAbstract stresses the key take-aways of every book and provides them through a push-mechanism to the reader (based on a user-defined profile).

The principle that is most visibly exploited by getAbstract is the first one: Books are integrated or compressed by professional writers in a pre-given format.

Conclusion

The getAbstract case study has shown that high-quality information (in this case especially in the area of conciseness, comprehensiveness, and convenience) may be considered as a growing industry in its own right. The case study has also shown that a framework like the one presented in this study can indicate possible future market niches, such as the one discovered by getAbstract to increase the conciseness of business knowledge in the form of books.

4.4 Putting IT into Context: Gartner Advice and the Difficult Scaling of Knowledge

The main problem in transferring our knowledge to the client is what I call 'the last mile': How to get our information into the heads of a client's project team that needs it.

PETER MÜLLER
Country Manager, Gartner Inc., Switzerland

Case Study Sources

This case study is based on four sources. The most important one is a 90 minute interview with the country manager of Gartner Switzerland, PETER MÜLLER, as well as several follow-up e-mail 'conversations' with him. Second, the case study is based on the experience of being a Gartner client and using its research reports on a regular basis. Third, it is based on interviews with five Gartner clients from three companies. Finally, the case study is based on an extensive website and document analysis of Gartner Inc. and some of its main competitors.

Company Overview

Gartner (formerly known as the Gartner Group) is the largest IT market analysis company in the world. It was founded by the former Wall Street analyst GIDEON GARTNER. Currently, Gartner employees over 1,400 analysts and consultants (about half of this number are analysts). According to Gartner Inc., its analysts advise over 1'000 executives a day across 75 countries. In total, Gartner advices over 10'000 clients. The average amount spent by each client is around 81'000 US dollars. The revenues of Gartner for the year 2000 were 858 million US dollars (509.8 million from the research business alone). The net income was 25.5 million dollars. In terms of national scale, Gartner Switzerland employs a staff of fifteen people: three consultants, three administrative assistants, and nine sales representatives. Since Gartner emphasizes its 'one opinion' on crucial information technology topics, it does not deploy analysts to every country, but rather pools them in a few central locations in the Unites States, England, France, and Germany. Gartner has been in Switzerland for nine years and has a market share of seventy percent among Switzerland's biggest 100 companies.

PETER MÜLLER, the country manager responsible for Gartner's operations in Switzerland, describes the core competence of Gartner as follows:

We understand the IT-sector better than any other company because of our high number of vendor and client interactions. The customer benefit is the advice we can give our clients based on these frequent and informative interactions.

The Core Products: Research

Advice is in fact Gartner's main business. Gartner's services and products can be categorized into four types of activities that all leverage the central competence of information technology advice. The first product group comprises the various *research products* (such as strategic analysis reports, research notes or newsletters), as well as the inquiry services, where customers can ask IT-related questions by e-mail, fax, or phone and receive a tailored answer by one of the Gartner analysts. A part of this product group is also made up of quantitative vendor or market data, provided by Gartner's own DATAQUEST group. Dataquest focuses on sales statistics and related information. A new research product that has just been launched by Gartner is 'G2.' G2 bundles Gartner intelligence relevant for top-management and focuses on advice for CEOs on growth strategies through information technology. While Gartner's research products typically target CIOs (chief information officers) and IT-product or project managers, this new product is aimed at general top managers and their strategic information needs.

Events

Events are a second large domain of Gartner's offerings. Gartner organizes regular conferences where it presents its research findings and brings together various members of the IT-community for discussions and debates. Today, Gartner is the largest IT-conference organizer in the world.

Consulting

A third type of activity that Gartner pursues with great success (in terms of growth) is *consulting*. Gartner consultants advice their clients on issues ranging from total cost of ownership of an IT-system to the strategic IT-implications of a corporate merger.

Measurement

The fourth and last product group focuses on *benchmarking and measurement*, particularly in the domain of cost efficiency. Here, Gartner assembles crucial indicators, compares them across industries or companies and finally advises the clients how to increase the effectiveness and efficiency of their IT department.

Case Study Focus: Research Products

In the present case study, we will focus on the first type of Gartner products, namely research reports and inquiry services. In this field, Gartner delivers 'pre-canned research information' as PDF-files or entire Lotus Notes data-bases that can be easily accessed, searched, or browsed. Gartner

acts as an 'outsourced research department' and provides a company with advice on all aspects of its information technology strategy and infrastructure.

The main categories of research products are *research notes* that can be up to five pages long, *executive briefings* (also about five pages), a monthly research *review* with current news and an overview on new research studies, and *strategic analysis reports* on companies, products, technologies, general trends, or markets, which are usually more comprehensive and up to eighty pages long. All of these reports are sent directly to subscribers via e-mail (based on their interest profiles) or they can be accessed through Gartner's information portal at Gartner.com. Although these research reports are the most visible part of Gartner's research activities, they are not necessarily the most important one. According to Müller, most Gartner clients rely much more on direct advice from Gartner analysts through the so-called *inquiry services* than on the research reports themselves. According to Gartner's customer surveys, this form of direct questioning and answering is seen as more efficient by many executives than the reading of research reports.[130] Müller states this fact in the quote below:

> If I am a CIO and I invest a million dollars in Gartner, I want to use it 20 percent of the time on research reports, 70 percent on direct inquiries on vital IT-issues, and ten percent on events such as Gartner conferences or symposiums.

Inquiry Services

Through Gartner's inquiry services a customer can ask specific questions to a central phone number or e-mail address and receive direct feedback from one of the analysts from Gartner's pool of researchers worldwide. The identification of the relevant expert and the forwarding of the question is handled centrally by Gartner. Usually, a response may include a reply with advice tailored to the specific situation of the client, relevant reports, and suggestions for action, as well as links to other information sources. The response time for such inquiries ranges from a few hours to a few days. This service is also provided by most of Gartner's competitors in a similar format.

[130] This may not always be the case. The interviews with customers and the Giga case study will show that there is also the typical customer need to keep abreast of new developments or trends and get a general overview on the industry. This need is better fulfilled through the reports and newsletters than through direct inquiries.

Research Documents

Although the direct inquiries may often dominate a customer's use of Gartner, one cannot neglect the crucial role of the research reports. They are a key resource for clients (and for Gartner analysts themselves) and they play a substantial part in building the company's credibility and reputation. The reports are also examples of high value content products that are based on considerable expertise and on a well-designed production process that focuses on adding value to information. Below, we look at the various types of research reports, their structure and main benefits, as well as their production process and its problems.

As mentioned above, Gartner offers various formats of research information, the most important ones being research notes and strategic analysis reports.

Research Notes

Research notes are concise summaries of an analyst's opinion regarding a current business issue, a technology, a company, or an entire market or industry. They are typically divided into four sections: the core topic that is discussed, the key issues or questions that are addressed, the main text (incl. various sub-notes or key facts), and the bottom line (or consequence) of the note. There are several types of research notes (that are clearly labeled) such as decision frameworks that help to make sense of a complicated domain, tutorials that explain a new concept, technology notes that examine new technological tools or platforms, or guidelines that suggest an effective course of action.

Strategic Analysis Reports

Strategic analysis reports, the second major type of Gartner research reports, can range from twenty to a hundred pages. They are more complex in terms of structure than the relatively 'flat' research notes. Every SAR (strategic analysis report) begins with a management summary that consists of key issues and key findings in a bullet-point format. The key findings consist mostly of suggestions what may happen in the future and how to best react to those developments. Every chapter in a SAR begins with two bold lines of key issues (in the form of a question) which are discussed in the chapter.

Whereas research notes contain few diagrams, SARs make great use of conceptual charts. These abstract graphics depict networks of companies or market constellations, timelines, product portfolios, or hierarchies of concepts. A particular and unique type of diagram that is used in these reports is what Gartner calls a 'magic quadrant'. A magic quadrant is a central device to aggregate a great amount of market information (and analysis) in one single chart.

Magic Quadrants as Information Integrators

A magic quadrant is a matrix that divides a market into four segments and positions competitors in those segments according to their strategic vision regarding the domain and their implementation or execution ability. Gartner defines a magic quadrant as follows (Bradley & Braude, 1995, p.1):

> Gartner Group's "Magic Quadrants" are graphical Strategic Planning Assumptions that position vendors in a market sector going forward.

The figure below shows a typical example of such a quadrant for the computer aided software engineering (CASE) market (Bradley & Braude, 1995, p. 1). It positions the major vendors in this market according to their strategic plan and its alignment with major industry trends (completeness of vision) and according to a vendor's ability to implement this strategic plan (ability to execute). The ability to execute is rated based on a company's management, its financial strength, the existing sales channels, the research and development capacity, its network of alliances, and a number of other factors determining operational excellence.

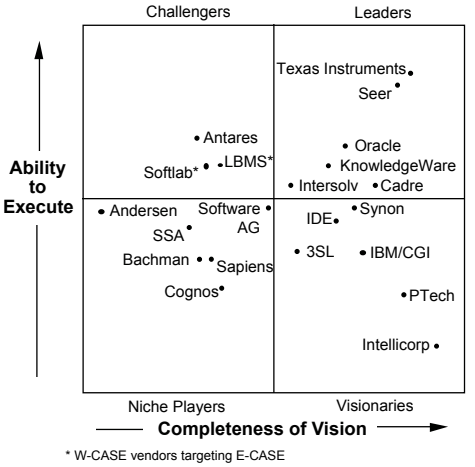

Figure 30: An example of a Magic Quadrant for the CASE market (Source: Gartner)

Strategic Planning Assumptions

As stated in the definition above, a magic quadrant can be seen as a visual strategic planning assumption. Strategic planning assumption are a central information block type in most Gartner's reports. They designate qualified predictions about an industry's future development. A strategic planning assumption may be that by the year 2003, eighty percent of all large multinational organizations will have implemented

Probabilities as Validity Indicators

an intranet portal with personalized content (0.8 probability). The bracketed probability number at the end of the statement is an integral part of every strategic planning assumption. Since they are assumptions, every such statement is qualified with a probability indicator that designates the level of certainty that is associated with the prediction. In order to make various levels of confidence explicit, Gartner has devised a rating scale for these assumptions. The scale ranges from 0.1 to 0.9. Since the scale is a validation mechanism (it allows readers to evaluate the information more carefully) it is outlined in detail in the next paragraph.

The Rating Scale for Gartner Predictions

Below, Gartner's own description of the rating scale is reproduced (Allen, 1994, pp. 1-2). Gartner has made this description available to customers because it believes that it is crucial that its clients understand the various validity levels of predictions and can interpret and evaluate the information accordingly.

0.9: This will definitely happen, barring an act of a god or war. We would be shocked otherwise. Moreover, we are almost certain of timing.

0.8: This will happen barring exceptional circumstances. We would be *quite* surprised if it did not happen, but a degree of uncertainty exists. Clients should plan on something close to it. In addition, we have a good idea of the timing. We use a 0.8 probability when the largest issue is timing.

0.7: There is good reason to believe this will be true, but there is a decent chance it will not be true. We would be surprised, but not shocked, if it did not happen. The details may change. Moreover, the timing is soft, and it may vary from our estimates. Clients should include this in their strategic plans.

0.6: This is a general direction – better than a rumor or a guess, but not necessarily by a lot. If a client needs to make a decision and asks for our advice, this is what we recommend the client use. This probability is particularly well-suited for time frames greater than two years. Most likely, we do not have a firm idea of the timing.

0.5: A tossup. It would not surprise us if this happened, or if it did not. Clients should include neither this nor its complement in their strategic plans.

0.4: This will probably not happen, but we would be neither surprised nor shocked if it did. We would argue, but not fiercely, with a client who is planning on this event.

0.3: There is good reason to believe this will not happen, but there is some chance it will. We would be surprised, but not shocked, if it occurred. In either case, we would not be sure of the

timing. We would argue hard with clients who include this in their strategic planning.

0.2: This will not happen, barring exceptional circumstances. We would be *most* surprised were it to happen, but it is not totally implausible. We would argue fiercely with clients who include this in their strategic planning.

0.1: This will definitely not happen, barring acts of a god or war. We would be shocked if it did happen, and we would make every possible effort to identify the error. We would be disappointed if a client's strategic plans assumed that it is going to happen.

Gartner's Probability = Likelihood and Time Scale

The list above shows that Gartner's main criteria for the distinction between various levels of probability are the *likelihood* of something to happen, and the *time scale* of an event (i.e., how soon something will happen). Gartner suggests that clients use these probabilities in a comparative manner in their IT-strategy development and planning activities (Allen, 1994, p. 2):

We recommend that clients not only use the Strategic Planning Assumption with the highest probability, but that they create a scenario that responds to the lesser Strategic Planning Assumption(s). This is particularly true for Strategic Planning Assumptions with probabilities between 0.3 and 0.7. This ensures that the user will not be caught off-guard should a less-likely event happen, and that the user has a backup plan if and when that less-likely event occurs.

Sideline: Information Quality as a Legal Issue

These indications provide help in interpreting (and weighing) the researched information provided by Gartner. While the legal disclaimer at the end of every report is not intended for that purpose, it can also be used to evaluate the quality of the content. Inherent in the disclaimer (which is similar to the one used by other research companies) are central information quality criteria that we have encountered in chapter three:

Information Quality Disclaimer

The information contained herein has been obtained from sources believed to be *reliable*. Gartner Inc. disclaims all warranties as to the *accuracy*, *completeness* or *adequacy* of such information. Garter Group (sic!) shall have no liability for errors, omissions or inadequacies in the information contained herein or for interpretations thereof. The reader assumes sole responsibility for the selection of these materials to achieve its intended results. The opinions expressed herein are subject to change without notice.

Action Items as Activators

Besides integrating information in magic quadrants (or other conceptual diagrams such as pyramids, coordinate systems, or cycles) and indicating its validity through probability ratings, Gartner also aims at activating information for the read-

ers through the highlighting of *action items*. Action items describe what companies ought to do in light of the evidence gathered by Gartner. They are – like strategic planning assumptions – especially marked with italic typeface. Often, however, these action items are quite general and need to be broken down into more specific actions by the reader him- or herself. Below are three examples of such items taken out of a Gartner strategic analysis report:

- Action Item: Enterprises should plan on TCP/IP being the digital glue binding together disparate networks.
- Action Item: Enterprises should:
  - Expect to make significant investments in digital asset management tools
  - Expect false starts in designing intuitive dynamic, interactive environments
  - Seize opportunities to become part of the content aggregate
  - Use interactivity to develop a dialogueue with end users.
- Action Item: Enterprises should seize the opportunity to become part of the content aggregation of portal sites and develop actionable content applications that instill confidence within decision-focused interactions.

'Bottom line' as Activator

Another way of activating content (anchoring it in the reader's mind) is through 'the bottom line.' Every Gartner research note ends with a concise paragraph of two to eight lines that summarizes the main insight of the note and its application. Below is an example of such a bottom line taken from a research note on business intelligence and knowledge management:

> Bottom Line: Decision-making and knowledge sharing can be optimized when BI and KM are practiced in concert. Enterprises should review existing BI and KM strategies, evaluate the intersection of these processes, and adapt their approaches to enable KM with BI and BI with KM.

Consistent Use of Text Elements

While *magic quadrants*, *strategic planning assumptions*, *probabilities*, *action items*, and *bottom lines* are not major analytic inventions or breakthrough formats, they do help the reader to locate and interpret relevant information quickly. From a management perspective, Gartner exploits this potential through rigorous guidelines that regulate the use of these 'text tools.' This consistent use of certain text elements, enables Gartner to 'condition' or train its readers to its own style and format and consequently to make the reading process for them more efficient. All of the five interviewed Gart-

ner customers acknowledged that this improved the quality of the provided information. One manager of a Gartner competitor, however, pointed out that tools like magic quadrants also have a 'dark side'. Often the methodology behind such an aggregation device is unclear and the individual positions of companies that are placed in such a matrix are highly debatable. Nevertheless these devices have stood the test of time and make Gartner reports clearly recognizable as such.

Additional Services

In addition to the core products described above, Gartner offers various additional information tools, such as document templates, forms or analytical tools (e.g., Excel models or rating tools) that IT-managers can use in their daily work. A possible template may be a generic service level agreement contract. An example for an analytical tool is a Microsoft Excel-based rating spreadsheet for the comprehensive evaluation of a website.

Impact on Information Quality

Having described the various information products of Gartner and their features, we can now summarize the activities that Gartner pursues to increase the quality of those products. They are listed below next to the quality criterion that they affect most.

Information Quality Levels	**Information Quality Criteria**	**Activities to improve the IQ-criteria**
Community Level (Relevance)	Comprehensiveness	Gartner employees more than 700 analysts to provide comprehensive and in-depth coverage on most IT-related issues.
	Accuracy	Vendor data is usually compared and cross-checked through other sources, such as vendor suppliers (e.g., chip producers). Reports are checked internally by peers.
	Clarity	Editorial guidelines on language use and peer reviewing stress clarity of language and vocabulary. Glossaries, abbreviation directories, and side-notes and definitions provide additional means of clarification.
	Applicability	Every Gartner document contains strategic planning assumptions that are especially marked (in italic) and can have direct influence on a manager's decision or options. Action items are also highlighted and state ways of implementing the findings. Every research note ends with a bottom line that contains the main suggestions.

Information Quality Levels	Information Quality Criteria	Activities to improve the IQ-criteria
Product Level	Conciseness	All research notes are limited to a maximum of five pages. All strategic analysis reports are limited to a maximum of hundred pages. Long reports include executive summaries. Magic quadrants and conceptual diagrams are used to synthesize content.
(Soundness)	Consistency	All documents of one type (research notes or strategic analysis reports) have the same overall structure. In addition, the same visualization schemes are often used, such as the magic quadrants matrix or process charts.
	Correctness	All documents are peer-reviewed before publication and checked by a topic-'champion'.
	Currency	Most topics are updated on a monthly basis through research notes by the topic owner or his team.
Process Level	Convenience	The documents can be easily downloaded from the Internet or they are sent automatically to a user by e-mail (based on his interest-profile). Inquiries can be addressed to one central phone number or e-mail address where they are forwarded to the relevant experts. The experts will contact the client in the medium that is most convenient to him or her.
(Optimization)	Timeliness	Answers to questions in the inquiry service are given within a couple of days. New information is automatically sent to subscribers with a matching profile.
	Traceability	Prior reports are usually referenced and hypertext-linked. Author information is limited to the name and a list of prior reports.
	Interactivity	Subscribers can customize their Gartner portal and personalize the content selection. Gartner events and consultants provide the opportunity for physical interaction.
Infrastructure Level	Accessibility	The Gartner reports are accessible anytime from any Internet terminal. Inquiries can be placed by phone, fax, or e-mail.
(Reliability)	Security	The Gartner site is protected by a fire-wall and every account is password protected.
	Maintainability	The content updating is delegated to topic owners. The infrastructure is maintained by dedicated web masters.
	Speed	The Gartner infrastructure is highly developed with high performance in terms of access and retrieval speed. The search engine delivers instant results.

Table 26: Gartner service features and their impact on information quality criteria

Most Affected Information Quality Criteria

From the list in the above table, the criteria that seem to be affected most by Gartner's approach are the following four:

1. Comprehensiveness: the large pool of analysts guarantees advice on all IT-relevant issues. As Müller states "our analysts are more specialized than at most other IT-research firms, simply because we have more of them than any other company." The business model of Gartner has changed recently in that respect. Now, all of the research services or topics can be accessed by all subscribers (a model that was introduced by Giga, a Gartner competitor).
2. Consistency: Gartner research notes and reports follow the same format all over the world. In addition the same visualization schemas are often used. Gartner also claims to provide one consistent opinion on most IT-related issues.
3. Clarity: the analyst boot camp (the base training for Gartner authors), the analyst guidelines, and the frequent client interaction and feedback help to assure that an analyst writes in a clear and comprehensible language. Since many Gartner clients are not English native speakers, simple and clear English is of high importance to the management.
4. Conciseness: the research notes and the research newsletters compress crucial findings and the analyst's experience and interpretation to a few pages. The feedback from analysts to client questions is usually very concise (1-3 pages) and tailored to the context of the client.

Added Value: Objectivity, Believability and Reputation

The added value that these characteristics provide can be described as fast, authoritative and tailored advice on all IT-related strategic issues. Due to this, Gartner has become a reliable and reputed source for IT-professionals. Four out of the five customers whom I have interviewed have indicated that they use Gartner information to not only prepare their decisions but also to defend them in their teams. In this way, Gartner becomes a proxy for objective, reliable information. The added value lies not only in the information itself, but also in the fact that it can bring endless discussions among IT-professionals in a project team to an end through a reliable outside opinion. In next sections, we look at the price tag for that outside opinion and how it is actually generated.

The Business Model and Pricing Scheme

Subscribing to Gartner is not a low-cost investment. While Müller acknowledges to be more expensive than competitors such as Giga Information Group, he argues that the hefty price tag on Gartner is backed by unparalleled research re-

sources. The subscription rates vary greatly according to the number of licenses that are bought by a company. One can say that every employee that uses the Gartner services will cost a company a couple of thousand dollars per year. This fee includes an unlimited access to all reports and as many inquiries as requested by the client (within reasonable limits). However, events such as conferences or seminars are not included in this price.

The Production Process

The Gartner research process follows the same, iterative 'answer first' logic as the research process of most business consulting companies (see Minto 1995): The analysts start with a scenario and a hypothesis of where a market may be going. Then, they collect evidence and opinions to prove or modify their initial hypothesis. In this way, they continually revise their hypothesis and add evidence to validate their strategic planning assumptions. The following six steps are Gartner's official description of how a strategic planning assumption is researched and written (Allen, 1994).

1) **Scenarios:** Develop scenarios (five-year forecasts for market dynamics, winners and challengers and technology breakthroughs) and Strategic Planning Assumptions. Key Issues are developed as part of the scenarios; they are questions that have no definitive answers, on which user and vendor strategies are determined for the five-year planning period. Strategic Planning Assumptions, the guidelines or best working answers that can be applied to the Key Issues, are given probabilities ranging from 0.1 to 0.9.

2) **Search:** Search for written material (e.g., vendor announcements and financial analysis) that is relevant to the Strategic Planning Assumptions.

3) **Data Collection:** Survey vendors, users and other contacts in the industry to refine the Strategic Planning Assumptions.

4) **Pattern Recognition:** An ongoing and integral part of the research process on which Key Issues and Strategic Planning Assumptions are developed or modified. This requires constantly surveying and checking the validity and relevance of Strategic Planning Assumptions.

5) **Stalking Horses:** Create a "stalking horse" Strategic Planning Assumption – a tentative Strategic Planning Assumption – when more data is needed. This "stalking horse" elicits comments and stimulates the research network.

6) **Document:** Publish the scenario, as well as *Strategic Analysis Reports* and *Research Notes*. This documentation is a vehicle to further "survey" the user and vendor network.

Quality Control through Peers

Before a research report is actually published in step six, it must undergo a brief evaluation by a group of analyst peers knowledgeable in the topic of the report. After the reviews of the peer community have been incorporated into the text, the final draft is cleared for publication by the 'topic champion'. The topic champion is an analyst who is responsible for a domain of related IT-topics (such as knowledge management, data warehouses, networks, etc.).

Guidelines and Training

Besides peer reviewing, Gartner relies on two other means of fostering quality in the produced reports, namely guidelines and training. The authoring guidelines, however, are not very extensive. They focus on the *size* (e.g., maximum number of pages for a given report type), *style* (e.g., the choice of words), and *structure* (e.g., report templates) of Gartner reports. There are no editorial guidelines about the content of the reports because the management does not want to interfere with the analyst's opinions in regard to vendors or products. Here, the neutrality and objectivity of the analysts is the main concern. In terms of training, the analysts go through a basic 'analyst boot camp' at the beginning of their career. The courses at this camp focus on essential writing skills and on the typical Gartner information elements discussed above (e.g., how to use magic quadrants and probabilities). Later training events focus on knowledge sharing between analysts.

Problems in the Production Process

Since the series of steps described above is in effect a knowledge-intensive process, the problems that occur in producing a report are mostly related to the identification, interpretation, and communication of complex information. When asked about the problems in the research process, Müller indicates six areas of potential concern. First, there is the danger of not covering the right 'hot topics' soon enough. Gartner tries to sense such topics through close contacts with its clients, vendors, and with other research institutions. A second problem that all IT-research companies are facing is that of assuring accuracy and reliability of the provided data. Gartner tries to overcome this problem by gathering evidence from a variety of sources including vendors, consumers, suppliers, and government agencies. A further problem in the report production process is reviewing. As of now, this process is not highly standardized. Earlier in this case study, it was indicated that the reviewing is mostly done informally by sharing a report with colleagues before its publication and waiting for feedback or suggestions.

The next problem is, in Müller's view, the most important one at the moment. The crucial question behind this problem is how to assure a timely and competent response to all in-

quiries that Gartner receives every day. This is both a logistics and a knowledge management challenge that involves the following issues: How can the right (i.e., competent and available) analysts be allocated to the right kind of questions and how can they re-use already given answers if similar questions are addressed to them? How can they manage their time effectively so that urgent questions can be answered quickly, yet more profound research is not neglected? How many questions should one analyst answer in a given day? Until now, these questions have not been fully resolved. It is mostly up to the analyst how he or she handles the heavy work load. The customer interviews I have conducted indicate that longer response times and less specific answers are indeed symptoms of this problem. According to Peter Müller, Gartner is acutely aware of this 'scope' problem: "We invest heavily in organizational structures for simpler, more direct and more speedy replies from the analyst to the client."

The last two problems refer both to what GIDEON GARTNER has labeled 'collaborative research'. They are a direct result of Gartner's size and research scope which at times makes it difficult for analysts to brief or inform one another about their work. The resulting problems consist of adequately cross-referencing and linking related or prior research reports and assuring that Gartner has one consistent opinion on most IT-related issues. The solution to these problems lies in the powerful information platform that Gartner uses and continually improves. Through the classification and indexing of the reports, new documents can easily be identified, retrieved, and linked. This classification, however, requires a lot of discipline on behalf of the analysts in classifying their work on a daily basis and adding relevant meta-information to their reports. While linking reports to related material improves the traceability and coverage of a topic, it can also be the source of frustration. Too much cross-linking between reports can distract the reader from the flow of the argumentation and make it more difficult for him to concentrate on the core topic. This is one of the findings from the customer interviews that are summarized in the next section.

Customer Opinions

On the basis of five customer interviews some of the problems described above can be better understood and evaluated. All of the interviewed customers were quite content with the information provided by Gartner. All of them indicated that they appreciate the clear and consistent structure of the reports and the way that they summarize crucial developments and trends (as in the magic quadrants that provide overviews on vendors and their strengths or weaknesses). The respon-

siveness problem was confirmed by two of the customers who indicated that they sometimes had to wait several days for a response. One customer indicated that the answers tended to be rather US-centered and that information on European companies was more difficult to get.

As far as the Gartner on-line infrastructure is concerned, all five clients said that they appreciated the ease-of-use, the good search engine, and the mostly adequate alert service that automatically informed them about new relevant information by e-mail. Two customers also commented that the life events were worthwhile, but costly. The high costs of the service were generally mentioned by all customers.

A long-term client indicated that the positions taken by Gartner were less courageous or visionary than they used to be. He found that the Gartner analysts were more provocative in the past and that nowadays, they were much more diplomatic. This concern resonates with Müller who also aims for crisper and more provocative research reports:

> Our information is not crisp enough yet, it has to be more to the point to highlight our position. We are also less courageous than we used to be in our positions. We don't cause as many wow-effects anymore as we used to and we definitely need to become more provocative.

The main concern of this client was a different one, however. He found that the size of Gartner – which is usually a competitive advantage – also has its negative sides. This relates closely to the second challenge described in the problem section above, namely managing the increasing size and scope of Gartner (in terms of logistics and knowledge management). The scaling of Gartner's knowledge is a crucial challenge that is not easy to manage. One client who used Gartner for more than seven year had the following to say about this issue:

> It used to be that there was small number of analysts who you would know personally and it used to be we had more contact with these analysts. Now, there are so many more analysts, there is less continuity in terms of staff and topics. There are also too many reports on every topic. Less would be more in this case. The same holds true for the events. The symposiums used to be better, they are just too big now. They didn't present too many new facets and they had less product presentations. We don't need an IT-expo at Gartner. They should focus on a few core issues at every conference.

This 'scaling problem' seems to cause other issues, for example in regard to the website, where a growing number of reports has to be made accessible. One customer indicated

that he was confronted with too many reports and that he was no longer able to get a quick overview of all the *new* reports. He also mentioned that the frequent links among reports didn't help him, but rather distracted him and lead to a hunt for information in various reports. In conclusion, he found that there were too many redundancies in the reports.

While Gartner competitors also use linking and cross-referencing to inform customers of related research material, Gartner uses hypertext links not only at the end of every report, but also in the text itself. In next section, we will find out who these competitors are and whether they pose a threat to Gartner or not.

Competitors

Being the number one research company in the IT-sector, Gartner faces a number of aggressive competitors. Nevertheless, the competitive threat to Gartner seems not very significant, since Gartner has a "quasi-monopoly" on the market and many companies cannot afford to loose its information or opinion. In addition, many companies need to subscribe to at least two analysts to get a balanced set of expert opinions, and Gartner is usually one of the two.

Gartner faces distinct competitors for its various activities. As far as research is concerned its main competitors are Giga Information Group (described in the next case study), Forrester and Meta Group. For the quantitative market research performed by Dataquest major competitors are the International Data Corporation (IDC) and the Yankee Group. For the consulting domain the competitors are obviously Accenture, Ernst & Young, Boston Consulting Group, McKinsey & Company and other similar companies. The measurement branch of Gartner does not have major competitors, according to Müller. He mentions Compass as one company who is also active in the benchmarking and measurement sector. Next to these major players, there is also a large number of smaller IT-research companies that cannot gain a large part of the IT-research market due to their limited resources. Examples of such smaller companies are the Delphi Group, Ovum, Burton, Butler, Computerwire, Tower Group, Aberdeen, Seybold, Hurwitz, Zona, or Durlacher. These smaller competitors do not face the same scaling problem as Gartner, but due to their limited resources, they often have to focus on market niches, such as IT-outsourcing or IT in the financial sector. As in other sectors, market niches can be an attractive future industry sector. The last section of this chapter addresses other future developments in this context.

Future Developments

When asked about the biggest development imperatives in the IT-research domain in general, and in regard to content quality and value in particular, Müller refers to the 'last mile problem' in analogy to the telecommunications industry where the last mile to the consumer is still a crucial problem.

> The big problem we have is what I call 'the last mile': How can we get the knowledge we have actually into the projects of the client who is under a lot of time pressure, but who would actually need our advice for his tasks. In the future, we will hence work more personally with the client in physical interactions. For example: we deploy a Gartner consultant at the client's site who works in the project team with the client over a longer period of time. We have had a pilot like this. The Gartner consultant can bring our input directly into the project team. To summarize: in IT-research, it is more important what you get across, than what you have in store.

As the next case study will show, getting the attention of the customer is a crucial challenge for external knowledge sources such as Gartner. This is especially true as more and more content sources compete for the attention of a CIO or manager (such as e-mails, Intranet publications, trade journals, consultants, universities, internet portals, etc.).

The limited processing capacity or attention of managers and executives can also be an impediment for future growth. As we have seen with the scaling problem, more reports may not necessarily mean more business. Thus, Gartner's growth strategy is only moderately based on additional revenues in the research domain. Mostly, Gartner strives for new business in the areas of benchmarking and measurement, where the annual growth rate is currently at 25 to 30 percent. This seems reasonable, given the fact that numbers are both more concise and easier to compare than qualitative opinions. Besides benchmarking, Gartner has invested heavily in its consulting branch. This three-year investment has resulted in a growth rate in this area of above fifty percent per year. Another important element in Gartner's growth strategy consists of tailoring its research knowledge for other target groups, specifically general managers and CEOs who are interested in using IT for the growth of their company. As mentioned earlier, Gartner has launched this service under the G2 brand.

Summarizing these activities, one can say that a sustainable growth strategy in this sector needs to focus not only on quantitative, but also on qualitative growth. It has to focus on improving the interaction with the client and at the same time expand its client base. That this can lead to management challenges has been demonstrated with the issues surrounding the scaling problem (e.g., assuring that more information

does not result in less actionable advice; this point will also be discussed in the next case study).

Case Summary

Gartner is one of the oldest, largest and most respected business research institutions in the world and co-ordinates over 700 information technology specialists and their documentation. In order to do so, Gartner has recognized the crucial importance of what it calls 'knowledge content quality' (see Harris and Flemming, 1998). It manages its own content quality by enforcing strict format standards, by fostering collaboration among its analysts, and by continually optimizing the internal and external information management process and its infrastructure.

We can summarize Gartner major benefits or innovations with the four information quality principles:

- Integration: Gartner makes information more concise and accessible by using a consistent format and re-occurring text elements that stress the key messages of a report. These elements are executive summaries, bottom lines, action items, magic quadrants, and strategic planning assumptions. In addition, Gartner provides a comprehensive overview on its in-formation through a state-of-the-art Internet portal.
- Validation: Probabilities indicate the level of certainty and the time scale that is associated with every strategic planning assumption. To validate vendor data, Gartner uses multiple sources (such as suppliers or census data). Client feedback is also used a validation indicator.
- Contextualization: The Gartner analysts contextualize information by commenting on vendor's data based on their background and based on other (insider) sources. Thus, they are able to see behind the data and look for intentions and relate them to one another. In terms of retrievability, the analysts add vital meta-information to their reports to make cross-comparisons easier and quicker. The purest form of re-contextualization occurs in the inquiry services, where the analyst has to apply his expertise to the specific situation of a client.
- Activation: Through direct interaction between analysts and customers at telephone conferences, meetings, or conferences, Gartner brings its expertise and advice to live and thus increases its impact. The reports contain various action-oriented text blocks such as action items, bottom-lines or planning assumptions.

The principle that is most visibly exploited by Gartner is the third one: Data and information is put into perspective

through the careful analysis and comparison of sources and developments. It is tailored to the context of a client and his or her questions and problems.

Conclusion

The market leader in IT-research has established a high-standard in a classical knowledge-intensive process, namely market analysis and advisory. In doing so, it has created high-quality information formats such as the magic quadrants, or strategic planning assumptions. The scaling of this process, however, remains a crucial challenge for a company as dependent on direct client interaction as Gartner.

4.5 Making Research Relevant: GiGA Information Group's IdeaBytes

Our biggest competition isn't another company, it's low usage: How can we get people to actually use the knowledge they have at their fingertips?

MARTIN ABEL,
Giga Country Manager, Switzerland

Case Study Sources

The following description of Giga's information products and services is based on a two hour interview with the country manager for Switzerland, MARTIN ABEL, and with the Senior Account Manager for that region, ADRIAN SCHÖN. As far as the quality assurance of the research process is concerned, the case is based on a thirty minute telephone interview with PAUL DE LIGNY BOUDREAU who is the chief research officer of Giga Group. Additional sources were five telephone interviews with customers of those services. Finally, the case study is based on the experience of being a test-user of Giga's products and on the analysis of its website and company and product documentation.

Company Overview

The Giga Information Group is a relatively young research company that was founded in 1995 by GIDEON GARTNER who left the first company he founded (Gartner Inc.) to start a new IT-research approach that was based on what he called 'collaborative research' (stressing the cooperation of analysts from various domains). Gideon Gartner was at the time discontent with Gartner's business model of compartmentalized research products that were offered individually to clients. In founding the Giga Information Group, he stressed the unlimited access of clients to all of its research products. In addi-

tion, he conceived the company's research products as Internet-based services that were highly inter-connected and interactive.

The Giga Information Group has since grown rapidly and has now annual revenues of almost seventy million US dollars (it is now part of Forrester Research). It has nine offices in the USA, and 18 in Europe. It has over 1,200 clients worldwide and 350 of Europe's biggest companies are Giga customers. Total subscriptions amounted to 68,7 million US dollars in 1999. Giga employs over a hundred researchers in various locations. In addition, Giga manages an expert net of over 1,200 independent subject matter experts that collaborate with Giga on an ad-hoc basis. Recently, Giga has been acquired by Forrester, another major IT analyst company.

As of September 2000, GIGA GROUP is a European spin-off of the Giga Information. It employs 45 people and focuses on the distribution of Giga products in Europe (with the exception of Germany, Austria, Scandinavia, and England). Besides the international analyst pool, Giga Group has its own staff of European analysts. Currently, there are twelve such analysts who are mainly based in Paris. The company's following mission statements outline its vision of the IT research business:

> GigaGroup provides customers with objective advice about harnessing Information Technology (IT). In particular, GigaGroup helps clients make strategic and tactical decisions about the IT technologies, people and processes needed to excel in business.
>
> Giga's mission is to enable you to investigate, make, and verify strategic and tactical IT investments by providing: results ready IT intelligence and advice.
>
> Giga helps organizations manage the developments as well as reduce the risk associated with investing in and deploying new technologies (source: Giga company presentation).

These statements clearly indicate that Giga focuses on research regarding information technology markets and products. When asked about Giga's core competence MARTIN ABEL (who has been with Giga for several years) refers to Giga's ability to give unbiased advice on information technology in a comprehensive, responsive, and hands-on manner. As we will see later on in the case study, responsiveness is indeed one of Giga's distinctive features (as perceived by customers), hence timeliness of the delivered information is one of the key quality attributes highlighted in this case.

The Core Products

Giga's main activities can be divided into three major areas, of which the first one clearly dominates. They are advisory services (mainly ad-hoc research), consulting, and events (conferences and round tables). This case study will focus on the first area and how Giga improves the quality and impact of these research reports. In terms of content, the reports focus on six IT-related domains, namely information management, application development, IT management, computer platforms, communications and networking, and software applications and solutions. The two major types of research products that Giga offers to its clients besides the inquiry services (i.e., asking direct questions to analysts by e-mail or phone), are *IdeaBytes* (reports that are up to two pages long and answer a specific question) and *Planning Assumptions* (which are up to ten pages long and argue a position or opinion about future developments). Besides these two formats Giga also offers *Research Digests* which summarize a large number of research reports in newsletter-type format of roughly one hundred pages, and so-called *Salons*, which are essentially web-areas dedicated to a particular topic or issue such as supply chain planning or data warehouses. Another Giga product are *Flashes* which provide abstracts of new research reports via e-mail. Although Giga's research activities are categorized into a number of research domains, the access to these areas is not restricted. This is due to the belief that IT-problems do not neatly fit into predefined categories, but rather cross disciplinary boundaries. Abel describes this view in the following quote:

> The times when information was segregated are over. Today information is much more connected. It does no longer make sense to offer just a few of the research services. Thus, Giga provides its client with access to *all* research areas. Analysts may also collaborate intensively to resolve a certain question. We refer to this approach as 'collaborative research'.

In spite of this collaborative approach, pre-defined research areas still exist. They are called Orbits and represent a group of roughly fifteen analysts that work on similar topics. Every one of the thirteen orbits is managed by an orbit leader who is also the final reviewer of every paper published on a particular issue within the orbit's topic domain.

Document Structures

The main research products of Giga, the IdeaBytes and the Planning Assumptions, both follow a consistent structure. For the Planning Assumptions, that argue a specific Giga position in a four to ten page document, this structure consists of the position statement, proofs to back the position, an alternative

view that outlines another possible position, and findings and recommendations for actions based on the taken position. Every planning assumption ends with references and links to related research reports.

The shorter IdeaBytes center around a specific question that was raised by a client, or triggered by an industry event. Every IdeaByte begins with the 'catalyst', i.e., how the question that will be addressed in a document originated: whether from a client inquiry or through analyst collaboration or a specific event. After the catalyst the actual question is stated and the answer to it is described. Again the document ends with references with related material.

Additional Services

Besides the two main types of research documents, Giga offers two software applications which can be used to run evaluations or analyses. These applications enable Giga customer's to better analyze their own situation in comparison to a general industry standard. As we will see in the 'future developments' section of this case study, software applications are a lucrative way of scaling a knowledge-based business such as IT-advisory services. The applications increase the *interactivity* and *applicability* of the offered information and they allow calculations or ratings based on the customer's specific context (the thus provide means of contextualization).

The two software applications that Giga offers are the Web Site ScoreCard that can be used to analyze website effectiveness and Total Economic Impact which helps clients to assess and measure the value of their IT programs.

Impact on Information Quality

How Giga's various infrastructure and process features increase the quality of its information product is summarized in the table below.

Information Quality Levels	Information Quality Criteria	Activities to improve the IQ-criteria
Community Level (Relevance)	Comprehensiveness	All Giga reports can be accessed by all clients all of the time. The Giga Knowledge Center provides assistance in locating the relevant expertise.
	Accuracy	Information is cross-checked by peers and by the topic owner. Giga analysts are usually experienced specialists in their domain.
	Clarity	Every IdeaByte has a clearly formulated client question or an event as a starting point. The document structure is simple and logical. Longer documents distinguish between Giga's position, the proofs, and alternative opinions.
	Applicability	All research notes are either based on a client question or an important event in the IT-industry. The analysts are constantly asked to align their research with the short-term needs of their clients. Every research report is evaluated in regard to its propositions, metrics, and answers. Software modules are provided.
Product Level (Soundness)	Conciseness	Research notes are limited to 1-2 pages. Planning assumptions are less than ten pages. Quarterly research digests provide overviews on new research documents.
	Consistency	All research notes or reports have the same exact structure.
	Correctness	Analysts are independent from sales and must sign a declaration of neutrality. There is a four-level quality assurance process.
	Currency	Salon owners update their topic area on a regular basis and purge outdated material.
Process Level (Optimization)	Convenience	The Knowledge Center automatically directs inquiries to the relevant and available experts and ensures that the contact is established.
	Timeliness	Answers to inquiries are given within several hours. Relevant information is forwarded automatically to subscribers based on their profiles.
	Traceability	The research digest provides background information on senior analysts (research focus, prior position, etc.). Prior reports or other sources are usually referenced at the end of a document.
	Interactivity	Various on- and off-line life events are organized periodically, from telephone conferences to an annual client symposium.

Information Quality Levels	Information Quality Criteria	Activities to improve the IQ-criteria
Infrastructure Level	Accessibility	Knowledge salons group document around topics, knowledge tree serve as a taxonomy to make the files more accessible. Full access is provided to all clients.
(Reliability)	Security	The gigaweb.com site is fire-wall protected. The account is protected by a password.
	Maintainability	The topic owners are responsible for the updating of their research 'salon' and there is an overall web master who maintains the Gigaweb.
	Speed	The search engine delivers instant feedback on the made queries. Access to the website is immediate. Linked documents are retrieved instantly.

Table 27: Giga's service features and their impact on information quality criteria

Most Affected Information Quality Criteria

From this list of attributes, four clearly stand out. In talking to customers, Giga managers and researchers, it became clear that great attention was given to the applicability, conciseness, timeliness, and consistency of the provided information. Here again, Giga's way of managing these attributes:

1. Applicability: Because most research notes are triggered directly by client questions, the applicability or relevance of the research is assured, also by the fact that every document ends with specific recommendations for actions. The internal review process also stresses applicability: Staff evaluations by Giga managers focus primarily on the applicability of the produced research reports and how well client questions have been answered. In addition, software applications can be used which can be applied to the IT-program or Website of the customer. Finally, Giga also monitors the actual usage of its services and may ask clients who do not use Giga frequently why they have not done so.
2. Conciseness: Giga stresses compressed information in all its facets. Research notes (clearly branded as IdeaBytes) are usually only one page long and planning assumptions rarely exceed five pages. In addition, services such as the research digest or the salons provide summaries on all research products. Giga tries to reduce information overload for its clients by only offering two formats of reports and by limiting the number of reports per topic.

3. Timeliness: As confirmed by the customer interviews below, one of Giga's most distinctive features in comparison to its competitors is its responsiveness. Most customer inquiries are answered within hours and most customers indicate that inquiries are usually handled in a very timely and personal manner.
4. Consistency: As stated earlier, there are only two structures for Giga reports, the IdeaBytes and the Planning Assumptions. Both do not vary in terms of maximum size or structure and hence assure a consistency in terms of format. Consistency in terms of content is assured through the weekly telephone conference that all analysts attend and where Giga positions are discussed.

Added Value

The added value that is generated through these attributes is fast, reliable, actionable and easy-to-use advice that is tailored to the problems of the Giga customers and organized for action. According to Giga, this advice focuses primarily on tactical issues and middle management strategic decisions (unlike FORRESTER that also emphasizes advice on high level strategic issues). In order to track the value that Giga generates for its clients, user statistics are closely monitored. If usage of a customer is consistently low, Giga may call up the client and ask for possible reasons. It may even suggest to reallocate the services to another person where they can provide more value. According to one Giga customer, this value often resides in the alternative (and neutral) views and options that are offered or the hidden risks that are made visible by Giga analysts.

The Business Model and Pricing Scheme

In line with its 'collaborative research' philosophy, Giga's business model does not limit the access to a restricted number of research domains, but offers access to all material to all clients. It does distinguish, however, between premium members who have access to additional services, and pure on-line users who can only read the stored reports. The 'members' pay a license of 14,000 US dollars each which gives them the right to attend all Giga events and ask as many inquiries as they want. These members use Giga frequently and profit from its roundtable discussions, analyst sessions, and the yearly GigaWorld conference. Typical members are chief technology officers or corporate IT-architects. Users, the second subscription model, only pay 1,400 US dollars for a one year subscription to Giga's on-line content, support through Giga's KnowledgeCenter, and access to local events. All other services that users may want to use cost extra (such as the inquiry services or the conferences). Nevertheless, a

minimum total subscription amount of 42,000 US dollars is usually a prerequisite for such licenses.

The Production Process

Throughout this case study, the 'collaborative' nature of Giga research was stressed. Now, we will examine in how far this collaboration is visible in the research process itself.

The production process of Giga research documents is often triggered by an external event or a client inquiry. More seldom, an analyst collaboration or Giga's own research agenda (called thematic planning assumptions) may trigger a research report. The following four steps describe the series of activities that lead to a research publication in the Gigaweb site.

1. If a customer inquiry has been answered in a way that the analyst judges it to be relevant to a large number of Giga clients, the analyst rewrites his or her answer to the original question for a more general appeal. In doing so, he collaborates with his peers within the same orbit (i.e., practice group), asking for comments or feedback on his or her answer.
2. The analyst then produces an abstract of the IdeaByte or Planning Assumption (if several IdeaBytes have been combined in a larger piece) and submits this summary (e.g., two to four bullet points and two to three sentences) to the central, worldwide research coordinator. The coordinator will screen the abstracts on a regular basis. Abstracts that are relevant to many analysts will then be discussed in the weekly global telephone conference with almost all hundred analysts. In this way, the analysts receive feedback on their ideas and knowledge is shared in a global 'conversation'.
3. If the report has the format of a longer piece, a planning assumption, the orbit leader will review the document with the author and release it for publication. The research leader may also contact other research leaders or analysts in case that additional clarifications are needed. The orbit leader is the thought leader of the analyst within a give topic, and not the direct superior.
4. After the report has been published, user statistics measure how many times a piece has been downloaded. The orbit leader then grades every report on a scale of one to ten with a 'quality scoring' (see below). The top thirty percent of all reports are rated again centrally by the head of research.

The four steps show that the production process of Giga reports is neither complicated nor highly standardized. It is

however, complemented by a research guide that comprises the rules of authoring. These rules are clear and simple, but strict in terms of document length and structure. The same applies to the quality management that was mentioned in steps three and four. Below the four levels of this quality assurance process are described in more detail.

Four Levels of Quality Assurance

At present, there are four levels of quality assurance at Giga. The first one is an informal one that is triggered by the analyst. It consists of an informal collaboration with peer analysts, e.g., sending a draft to various other analysts who may be interested in a particular topic. The second level of quality assurance also occurs prior to publication. Before a document is published on the Gigaweb, it has to be reviewed by the relevant orbit leader. Once the document is published, the orbit leader will again review it. This (monthly) review will then become a part of the analyst's yearly evaluation. For this third quality 'scoring' Giga has devised a common set of rating criteria. They consist of the following five questions: Is the (client) question answered? Are there metrics or guidelines for measurement? Are quantifications provided or suggested that help the customer judge a situation or a development internally or externally? Are there conclusions and (actionable) practical recommendations at the end of the text? Is there a specific Giga position that is articulated in the text?

There is also a fourth, global quality scoring system that highlights the top contributions of Giga analysts in a given period. It is done centrally by Merv Adrian, Giga's senior vice president for research. Based on the highest evaluation scores, the top thirty contributions are clearly labeled as such and marked in the Gigaweb to signal their outstanding quality to the clients.

Besides these four quality mechanisms, there is an additional one for new analysts. New analysts are continuously monitored by their orbit leader and everything that a new analysts publishes will be reviewed by a superior.

Problems in the Production Process

Although the quality management for Giga reports is systematic and elaborate, it cannot solve all the possible problems that arise in the production of research reports. When asked about the main issues that the management faces in the production process, ABEL and SCHÖN mention two major challenges.

First of all, the issue of how to manage the heavy *work load* and time pressure for their analysts. Since freedom and time to reflect are essential to the analyst's work, a heavy load of client inquiries can actually interfere with the analyst's productivity. According to Abel, analysts tend to be

overloaded with client inquiries and often work over twelve hours a day. This may of course lead to a danger of burn-out. Especially the 'star analysts' are overbooked. Finding the right balance between reading, reflecting, and writing is thus one of the biggest challenges for analysts working at Giga. PAUL DE LIGNY BOUDREAU, Giga Group's Chief Research Officer, refers to this challenge as the switch between the absorption mode and the production mode which is not always an easy transition for many analysts, as he points out below:

> An analyst needs to pump out findings fast and frequently. In any case enough to get feedback. I call this the 'constructive loop': as he writes more, he becomes well known, and hence receives more inquiries.

DE LIGNY BOUDREAU acknowledges that this virtuous cycle can also turn into a vicious one, as more and more inquiries need to be answered quickly and thoroughly. Re-using already written answers thus becomes an important issue for which tagging, categorizing, and indexing are crucial prerequisites. At Giga, it is still an unresolved question who should do this tagging or indexing. The analysts would be more competent in classifying their work, the editors or the technical staff would be more inclined to do so. However, additional administrative tasks such as indexing or classifying use up more of an analyst's already scarce time. Interestingly enough, Giga's present knowledge management system (based on the Vignette Storyserver application) is almost identical for analysts and clients.

A second problem inherent in the production process of research as Giga pursues it, lies in its focus on short-term issues. Since most research reports are answers to client questions, the research agenda focuses on present or short-term issues. Consequently, Abel sees a danger in overlooking important (long-term, e.g., more than two to four years ahead) trends because of this close client contact and the focus on operational and planning issues. In order to avoid this danger, Giga also pursues research that is not directly triggered by client questions, but these independent research activities amount to a small percentage of the total research underway at Giga. This is due to Giga's core commitment to actionable and timely research that focuses on the current questions of its clients. This illustrates the tradeoff between timeliness and comprehensiveness that was discussed in chapter three.

Customer Opinions

In spite of the problems discussed in the previous section, Giga customer satisfaction is at a high level (this can be illustrated by the fact that Giga has a yearly re-subscription rate of over eighty percent). The responsiveness and competence of the Giga analysts was confirmed by the sample of five customer interviews. One client said that of all twelve IT-research companies that they had subscribed to, Giga had the quickest and most reliable response time. He indicated that Giga analysts usually answered inquiries in a matter of hours rather than days. This client also referred to the limits of an analyst's impact and pointed at one major problem of knowledge-based services, that of context:

> Knowledge transfer cannot be ordered. The complexity and decision scope has increased exponentially. *It becomes ever more difficult for an analyst to understand the specific context of a client*. Often, I would have to brief the analyst for three weeks about what we do, before we can use his advice. So, for a win-win situation, you have to update an analyst for quite a long time. Linking him into the context of the company is difficult.

This crucial issue can only be resolved partially through the inquiry service, where a client states his context and asks for advice tailored to a specific situation. It is a disadvantage of the analyst model versus the consultant's way of working where a steady relationship ensures that the consultant understands more and more of his or her client's context. Giga nevertheless believes that no analyst should spend more than thirty percent on consulting engagements in order to remain open for client questions from a variety of contexts.

When asked for the reasons why he used Giga, one customer indicated that the full access to all topics over the Internet was one reason, combined with the fact that 'you actually find what you are looking for'. The typical questions that this client was able to answer with the help of Giga are related to products and companies, e.g., what products are in this market, who are the major players? For these types of questions Giga usually provided high-quality information. For more complicated questions, e.g. how is this technology going to evolve and how will it affect us, direct inquiries are necessary. This is especially true in regard to the concise IdeaBytes. One customer indicated that "we don't like IdeaBytes because they are superficial", pointing at the limits of this approach to conciseness. The same customer indicated that he preferred the longer planning assumptions, since they were more profound and well written. He also indicated that Giga didn't offer planning assumptions on all relevant IT-

issues. He felt that Gartner and Meta (two main competitors) had more documents on the same topic than Giga. This, however, was not necessarily seen as a disadvantage, but rather as a way of limiting information overload, as he states below:

> We told them [Giga] not to produce more documents per year. Otherwise we drown in them. This is the paradox: If they produce more, the people will read less.

One other client indicated (as the only negative point) that he was sometimes overwhelmed by the amount of information available on Giga's homepage and that it became difficult for him to prioritize the reports. Another important issue regarding not only this overload problem, but also the applicability of the research information was raised by three interviewed Giga customers. One indicated that he especially appreciated the conceptual summary *diagrams* that were sometimes provided. They enabled him to use the Giga expertise in presentations and meetings as simple slides that summarized a whole topic. He felt that "diagrams can be more easily used internally and adapted for presentations and briefings." A second interviewed customer independently indicated a similar preference for diagrams. He found that "the graphics are simple; we can use them with non-technical people and we incorporate them into our presentations." A third customer also indicated that "we use 'cut and paste' to assemble interesting charts from the reports for our own documents." These diagrams are ways of activating the information contained in the reports. Another way to bring the information to life is of course through events. The interviewed customers indicated that they appreciated the opportunity to meet the analysts in person and talk face-to-face to them about their problems or questions. Many customers stressed the 'real dialogueue' that takes place between Giga and its clients. One client indicated that this dialogueue went as far as being called up every month by Giga's staff. In these phone calls, Giga's managers would ask about the satisfaction with the service and about the issues that were on the manager's mind. This type of real dialogueue was seen as a unique form of activating not only the information, but also the company's relationships with its clients.

Overall the five questioned customers stressed the conciseness of Giga's research reports and the above average customer service. They indicated that they liked the frankness of Giga's reports while still presenting alternative views. The only negative views were on the company's overly strong focus on e-business and its at times inadequate search func-

tion on the website. Both issues were only raised by one customer.

Competitors

Although the IT-market research arena is quite competitive and many companies produce IT-research information, the biggest competitive threat that Giga faces does not primarily reside in other companies, but – according to Abel – in the limited attention of managers. "We loose clients because of low usage, not because of competitors, that's why we monitor usage to closely and follow-up on low-usage costumers." Another reason why Giga may loose clients are mergers and acquisitions. There is only one client where there used to be two.

In terms of specific competitors, Gartner, as a market leader, clearly stands out. While it is true that Gartner Inc. is one of the biggest competitors of Giga, many of the larger companies that subscribe to IT-research companies cannot afford to rely on just one opinion. In consequence, they subscribe to two or three IT-research services and chances are high that Gartner and Giga are among the two (with Forrester or Meta Group being the third one). To win Gartner clients, the Giga sales force stresses the lower price, the comprehensive access model, and the high responsiveness of its analysts.

As a major trend regarding competition ABEL and SCHÖN see the rise of 'research boutiques', that is to say specialized market research companies that focus on a specific niche, such as IT-outsourcing or IT in the financial services industry. Giga will keep its focus on e-business as one factor that distinguishes it from competitors.

Future Developments

Besides the trend of 'nichification' of market research, ABEL and SCHÖN see a number of other developments in their sector. Below, we look at some of these trends in more detail.

One mega-trend of market research is to make IT advice more actionable by packaging it as consulting. This offers not only higher margins, but also more intimate customer contact. SCHÖN and ABEL are nevertheless skeptical about the promises of consulting for their activities. While they acknowledge the growth potential of IT-consulting, they see a number of risks associated with this domain. One asset that may be at stake if Giga emphasizes its consulting activities is credibility. As analysts, Giga experts are considered neutral and independent. This may change if they are more and more involved in client projects. Another asset that may be at risk if the consulting activities are further developed is depth. According to ABEL analysts need to keep abreast of many

developments and market trends. This would become increasingly difficult if they are involved in operational projects on a day to day basis. Consequently, Giga does not stress consulting as much as other companies in the domain of information technology research. Instead, it focuses on standardized solutions out of its research competence that are highly scalable, e.g., software-based methods which can be used in various contexts to solve customer problems. These software tools are mostly diagnostics instruments, such as questionnaires, simulations, or calculation sheets. They help an IT-manager answer questions such as 'where are we strong and where are we week and what can we improve to increase our performance?' The main advantages of these tools are that they can be used independently of the analyst's availability and that they can be customized to the client's situation. Many other trends that influence this type of business are also triggered by technological innovations. ABEL mentions the Gigabots which are profile-based agents that notify customers about new research that fits their interest profile. Also, new interaction forms between analysts and customers can be envisioned, such as desktop conferences or on-line chats (which are already in use at Giga). A final industry trend that can be envisioned at this point is the closer *integration* of Giga and its customers in terms of a common infrastructure: Giga's knowledge base can now become an integral part of a company's intranet, so that an IT-manager can research the Giga reports in his or her familiar environment. This service is called IntraGiga.

Case Summary

Looking back at Giga's products and services through the lens of the four information quality principles, *integration* and *activation* clearly stand out. Giga has made considerable efforts to ensure that its advice is concise and actionable. How the four principles can be applied to this case is outlined in the four paragraphs below. They summarize the main findings of this case.

- Integration: Giga provides various means of compressing information. First, through the IdeaBytes that are limited to two pages. Second through the limitation of Planning assumptions to a maximum of ten pages. Third, through

[131] An interesting new business field of Giga Information Group is website certification. With this service, Giga validates whether a corporate Internet homepage meets its core criteria in terms of contact and company information, clarity, tools (such as a site map), page design and navigation, and privacy policies.

the Research Digest that provide a summary of all published research. Fourth, through the Giga Flashes that provide abstracts on new research reports. A final means of integration is provided through the research salons, which bundle documents, experts, and events that relate to one IT-topic.

- Validation[131]: The most prominent validation mechanism at Giga consists of four levels of quality control and reviewing. In addition, there are ethical guidelines for the analysts that should assure their objectivity and neutrality.
- Contextualization: The background of a research report is often explicitly stated in the 'catalyst' section that describes how or why a certain report was written. At the end of every report, related reports or references are added that provide an additional context for the presented information.
- Activation: Giga emphasizes the activation of its information for clients in various forms, the most evident ones are the recommendations at the end of every report and the fact that every IdeaByte answers a specific customer question. In addition, answers to client questions are usually given within hours and can be used immediately. The currency of the information is also assured by the Gigabots that automatically forward new relevant research to the customer via e-mail. The software applications also make the stored information more interactive and applicable to the context of the client. As a last way of activating the information, Giga provides various events, such as conferences, telephone conferences, or live chats.

Conclusion

This case study has stressed the fact that information must be organized for action in order to be useful for managers and specialists. Organizing for action means answering specific questions, offering metrics, or stating the organizational implications of a trend in a timely, clear and concise manner. It also means using the same consistent structure in every communication. The case study has also highlighted various tradeoffs, e.g. between timeliness and comprehensiveness, between conciseness and applicability, or between applicability and objectivity (as illustrated by the analyst versus consultant discussion).

4.6 Communicating Quality: Guidelines and Quality Criteria at UBS Financial Services Group

It's not enough to provide our employees with new communication tools. We must also equip them with the necessary skills and methods to use them effectively.

MARKUS SCHÄRLI
Head of Employee Communications,
UBS Financial Services Group

Case Study Sources

This case study is based on an action research project of the author with UBS' corporate center and its employee communications staff. The described work on guidelines was part of a larger project. The guidelines work started in 1999 and ended in 2000. The main workshops, where the discussed guidelines were developed took place on May 16th of 2000. Over 25 people participated.

Company Overview

UBS is the largest Swiss bank, a result of the merger of Swiss Bank Corporation and the Union Bank of Switzerland in 1998. It is headquartered in Zurich and Basle and has almost 71'000 employees. UBS is a universal bank in the sense that it provides a wide range of financial services, from investment banking, retail banking and asset management, to private banking. Operating income for the year 2000 was in the order of 36 billion Swiss Francs, resulting in net profits of over 8 billion Swiss Francs.

The corporate center, which provides the context for this case, has a staff of over one thousand employees. The center is home to the group's central services, such as the legal department, the communications and marketing departments, the finance and risk office, and human resources-related staff. The corporate center acts as the central entity of the bank, which coordinates group-wide activities and strives to identify possible synergies among the various business units.

Guidelines as Way to Foster Information Quality

As a global bank, UBS realizes that new media have become an important communication channel for its staff, for top-down and client communication, as well as for bottom-up and lateral information flows. There are many guidelines that have been elaborated to help employees use these new communication channels effectively. There is, however, a plethora of such guidelines on the corporate intranet (and in printed training documents) ranging from e-mail standards to on-line chatting etiquette. These guidelines are often very

long, they have *different structures* and different styles, as well as *different key messages*. Employees often ignore these guidelines or they are confused which of the many guidelines they should follow. The head of employee communications at UBS is aware of this problem and determined to do something about it. He is pondering the following questions:

What makes a good e-mail, chat session, memo, website, or management briefing? Are there common criteria on which we can all agree that improve communication in these settings? Are the guidelines easily applicable by our staff in their current format? Can we come up with one consistent structure for all guidelines so that we can communicate them more effectively?

In light of these questions, the head of employee communications, DR. MARKUS SCHÄRLI has decided to unify the various communication guidelines and calls together all employee communication officers worldwide. In a full-day workshop with communication staff from all geographic regions, a set of quality criteria is developed and applied to the various communication means, such as e-mail, chat, meetings, intranet publications etc. In this way a consistent and concise set of guidelines is developed.

The Purpose of the Guidelines

The main purpose of these guidelines is to provide staff and management with one set of instructive suggestions on how to use a specific communication tool most effectively and create high-quality information. In the present form, however, the various guidelines do not always meet this goal. Below, we describe how a new set of guidelines solves this problem

The Process: How the Guidelines Were Established

The set of consistent guidelines was developed in a one day workshop which involved a number of communication professionals from various sectors of the bank. Prior to this workshop, communications managers were asked to screen and review existing communication guidelines. In addition, all participants were provided with a package consisting of relevant literature and examples.

On the actual workshop day the following steps were completed. In a first step, I presented the importance and consequences of effective communication guidelines for high-quality information. Then, the workshop participants agreed (through a moderated, pinboard-based discussion) on the UBS core values as they are stated in official UBS documents. This step included agreeing on the most essential values and having a common understanding of their interpretation. In this way, the participants agreed on a total of seven

core UBS values, namely professionalism, client focus, security, innovation, integrity, community and cost effectiveness. The next step consisted of applying these values to the communication behavior of UBS staff and the various communication channels. Again, I presented examples of such communication principles and rules on how they should be devised, before we addressed every single UBS value and derived communication principles from it. The rules for the design of the principles that all team members had to adhere to were the following: First, there should not be more than six or seven communication principles in total (so that they can be memorable). Second, every principle has to be relatively self-explanatory and easily applicable. Third, the principles need to be, as far as possible, mutually exclusive (i.e., non-overlapping) and collectively exhaustive (i.e., cover the main aspects). [132] Fourth, the communication principles should focus on content (e.g., topics), format (e.g. style and length), and context (e.g., time, security) of communication in a specific medium.

This rule-based procedure led to five communication principles that were only reworded slightly in the follow-up to the workshop. The resulting principles are described in the next paragraph. One sub-team was given the task of briefly describing every one of them so that the other sub-teams could use them in their writing process. In this way, the working groups had some sort of meta-guidelines to use in their medium-specific guidelines.

The Quality Principles

The agreed-upon communication principles are based on the core values of the bank, namely: professionalism, client focus, security, innovation, integrity, community and cost effectiveness. They set universal standards for each type and channel of communication within the bank and are applicable throughout the hierarchy. Their main goal is to enable the creation of high-quality information in business-related communication. The wording of these definitions is identical to the released 'meta-guidelines' which briefly describe every single principle that is applied in all communication guidelines. As you can see below, the title of every principle is at the same time an information quality criterion.

Principle 1: Targeted
Communication must address the right audience (i.e. for whom the information is relevant). In addressing the audience the most appropriate communication channel should be

[132] See Minto (1995) for further explanations of these criteria.

used, taking into consideration cost efficiency, credibility, risk/confidentiality and the characteristics of the content. Content, format, style, language and terminology should be mapped to the needs, context, existing knowledge and the expectations of the audience.

Principle 2: Concise and Clear
Clear, concise communication is cost efficient, demonstrates respect for the time of the audience and helps to reduce information overload and avoid misunderstandings. Clarity can be achieved by taking into account the existing knowledge and information needs of the audience, by focusing on the relevant topics and on key messages, by using a systematic and logical structure (e.g. Who? What? When? Where? Why? How?), by keeping the language simple, avoiding technical terms and abbreviations if possible, and by giving figures if meaningful and available. Conciseness means keeping communication as short as possible to avoid superfluous information and as long as necessary to be clear.

Principle 3: Accountable
Each individual at UBS is personally responsible for his or her communication with others and must be aware of the risks and consequences that this entails. In particular, the owner/author of information is responsible for its authenticity, correctness and compliance with all directives and guidelines including the choice of the right/secure media by which it is communicated. Content, format and style must be in line with our values and principles and must not jeopardize the image or business of UBS.

Principle 4: Respectful
This principle addresses the ethical dimension of communication within UBS, specifically our core values of community and integrity. It means that our communication is as open as possible within the obvious limits set by our business, our strategic goals and the personal integrity of employees, clients and other third parties. Further, this means that our communication is honest (no lies). We are proactive communicators because we respect the professionalism and the needs of our audience. As a general rule we aim to communicate internally prior to externally or at least at the same time. In communicating bad news, we inform those directly concerned first. Finally, the tone and style of our communication is encouraging, motivating and promoting, but we do not

oversell or gloss things over. In language and style the emotions and values of the audience should be taken into consideration.

Principle 5: Timely
We work in a constantly fast-moving business environment where timeliness and speed are of outmost importance. As professionals we cope with this challenge by communicating up-to-date information and by communicating promptly when the information is available and required. If appropriate, we communicate in stages if the whole of the information is not available. In choosing the communication media we ensure speediest delivery if necessary and appropriate.

Document Structure of the Guidelines

After the core principles were defined, the team had to agree on a common structure or layout for the guidelines in order to assure one consistent look and feel. This was done in a plenary session based on a generic document structure that I provided. It was decided that every communication guideline should follow the same structure and logic: The first item of information after the title of the guidelines is the *target group*, that is to say for whom the guidelines are relevant. Team briefing guidelines, for example, are only relevant to team leaders, whereas e-mail guidelines are relevant to everybody that sends e-mails on a regular basis. After the target group, a short *summary* outlines the purpose and content of the document. Then the *principles* and their application for the specific medium are discussed, followed by background information, such as *references* to related material. Every set of guidelines ends with contact information for *feedback* or questions. This identical structure assures that the guidelines themselves are consistent.

Examples

Below, we provide two examples of the developed communication guidelines. The first set of guidelines relates to team briefings. Team briefings are important communication means since they are used at UBS to communicate strategic top-down information to employees through their team leaders. These guidelines are hence addressed to team leaders and managers who use them to structure the information meetings with their teams. The second example describes guidelines for e-mail use. Since e-mail proliferation or e-mail overload is a problem that many employees struggle with, the guidelines should assure that e-mails are of high-quality and can be read efficiently.

Communication Guidelines: Team Briefing

All Managers (Team leaders) *Target Group*

Summary

The team briefing guidelines help all managers to effectively prepare and give team briefings. Team briefings are a leadership tool to inform the members of a team **regularly** on central developments (progress, policy, people, products and points of action) affecting the team. They are a **central** medium to cascade information top-down and receive feedback. The guidelines below are based on the UBS communication principles *targeted communication*, *clarity* and *conciseness*, *personal responsibility*, *fairness/respect* and *timeliness.*

Principles	***Guidelines***
1. Targeted	1.1 In a team briefing the manager has to select the key issues affecting the team and its context and communicate those in a manner that is easily understood by the team members and can be related to their own work. 1.2 A team briefing consists of company-wide as well as local information and relates the two for the team that is being briefed.
2. Concise / Clear	2.1 Every team briefing begins with the overall purpose or agenda of the briefing and the key information (e.g., who, what, when, why, where). 2.2. The team briefing should consist of the five P's, that's to say news on: progress, policy, people, products, and points for action. 2.3 Every team briefing ends with a summary of the main facts and, if necessary, resulting actions and responsibilities. 2.4 Team briefings ought to be limited to one hour. 2.5 The team briefing minutes should be limited to two pages.
3. Accountable	3.1. Team briefings should always be given by the line-manager who in turn has been briefed by his or her own manager. 3.2 The manager has to communicate the level of required confidentiality (and accuracy) of the information that is being presented at the team briefing.
4. Respectful	4.1 Every team briefing is minuted and the minutes are made available to all team members. 4.2. Every team briefing should allocate at least five minutes for feedback, comments, and questions of the team members.
5. Timely	5.1. Team briefings are held on a regular basis (at least monthly) and following a major event or a rumor in order to clarify the facts.
Reference	For further communication guidelines (e.g. on chat, e-mail or publishing) see: http://bw.ubs.com/guidelines.
Feedback	For questions or comments on these guidelines please contact or give feedback to group-employee-communications@ ubs.com.

Communication Guidelines: E-mail

Target Group	**All employees**
Summary	The aim of these guidelines is to help UBS employees optimize secure and efficient use of e-mail. It highlights how e-mail can help to save time and how an overflow can be avoided while attracting more attention to each message. *'Less is more… is the motto'.*
Principles	***Guidelines***
1. Targeted	1.1. An e-mail is addressed to a limited number of persons who are directly concerned by a specific issue. For information addressed to a large number of people, please contact your communications department for advice on other message media (e.g. intranet/desk drop).
2. Concise / Clear	2.1 The subject field should contain a clear title or key words summarizing the content of the e-mail. 2.2 The message should be friendly, clearly structured, brief and succinct. Instructions / actions to be taken must be clear and explicit. 2.3 Abbreviations should be at least explained once. 2.4 Attachments should be as small as possible (compressed files). E-mail attachments sent outside the bank should be in pdf format only, and carry the relevant disclaimer if the information is of a "market sensitive" nature. Bear in mind that pdf attachments can only be read if the recipient has the corresponding software.
3. Accountable	3.1 Content: One should always be aware of the consequences that the content of an e-mail may have. In sensitive cases the sender may require authorization and sources should always be checked. 3.2 Security: Auto-forwarding of e-mail to less-secure networks (whether internal or external) is not permitted. Incoming external e-mails need to be checked carefully with regards to viruses. No communication with external e-mail addresses may be sent without the written agreement of the client. E-mail, like any form of written communication, is considered under the law to be a legal document and, as such, is discoverable in a legal action. 3.3 Costs: To avoid storage costs, clogging the network, and slowing down the system only selected e-mails should be saved in a personal folder or printed.
4. Respectful	4.1 In an e-mail, one should treat others as one would like to be treated. If there is potential for disagreement, a telephone call can avoid misunderstandings (this includes avoiding blind copies sent to third parties).
5. Timely	5.1 An e-mail should be answered within two days. 5.2 If an action is needed, an e-mail should be sent well in advance and a clear deadline given. 5.3 In case of a prolonged absence, the auto reply function should be used.
References	For a detailed version of this document, we refer to the group e-mail guidelines http://bw.ubs.com/ceo/gec/mailguide_e. htm. Guidebooks for the use of e-mails: **Outlook 98 on XYZ**: http://bw.itux.it.ubs.ch/upload/ge/229/Guidebook_d.doc (German only, other languages to see) F
Feedback	For questions or comments on these guidelines please contact or give feedback to group-employee-communications@ubs. com

Impact on Information Quality

How UBS' communication guidelines – themselves information products – meet the criteria that define information quality is summarized in the table below. The table emphasizes the fact that communication guidelines should not only be of high-quality to improve their acceptance and application, but should also to set an example and thus increase their legitimacy and credibility.

Information Quality Levels	Information Quality Criteria	Activities to improve the IQ-criteria
Community Level (Relevance)	Comprehensiveness	All most widely used communication channels are discussed in the guidelines (meetings, team briefings, intranet, e-mail, and chat). In addition to the short version, there is a detailed version of the guidelines available upon request.
	Accuracy	The accuracy of the guidelines was cross-checked between division representatives and with existing (internal and external) communication policies.
	Clarity	The guidelines were checked by regular employees for clarity and comprehensibility, in addition to a review by several communication officers.
	Applicability	The guidelines focus on how to actually use communication channels effectively. Many provide a step-by-step procedure. The relevant target group of the guidelines is stated at the beginning.
Product Level (Soundness)	Conciseness	Every guideline is produced in a short and a long version. The short version is limited to one to two pages.
	Consistency	All guidelines have exactly the same structure and rely on identical principles.
	Correctness	The guidelines are based on existing policies and they were validated with other communication professionals.
	Currency	The guidelines were formulated after all media were already in use for quite some time. They were thus based on current insights into how they were being used. A regular update (e.g., once a year) is envisioned.
Process Level (Optimization)	Convenience	The guidelines can be accessed over the intranet (as HTML files or word files) and printed out.
	Timeliness	Answers to inquiries regarding the guidelines are usually given within one day.
	Traceability	The document owners are indicated at the end of the guideline with an e-mail address.
	Interactivity	The employee communications department can be contacted for comments or feedback.

Information Quality Levels	Information Quality Criteria	Activities to improve the IQ-criteria
Infrastructure Level (Reliability)	Accessibility	All guidelines are accessible over the intranet by all employees of the bank.
	Security	The intranet is fire-wall protected although security is not of a great concern for simple guidelines. The guidelines stress security aspects, e.g., in e-mails.
	Maintainability	There are only six guidelines and since all have the same structure, maintenance is relatively easy.
	Speed	The guidelines can be accessed immediately through the intranet search engine. They are converted to HTML to improve the speedy access to them.

Table 28: Features of the guidelines and their impact on high-quality communication

Most Affected Information Quality Criteria

In terms of the guideline's own quality, the following criteria were particularly stressed in the formulation of the documents:

1. Consistency: The structure of all six guidelines is the same and they all use the same five communication principles.
2. Conciseness: All guidelines are limited to a maximum of two pages. Most guidelines consist of only one page. The total number of communication principles is only five.
3. Applicability: The guidelines provide clear instructions on how to proceed and what to avoid.
4. Interactivity: The document owners of the guidelines are indicated and can be directly contacted for feedback and comments or questions.

Remaining Problems

Although the redesign of the communication guidelines has resolved many of the issues that were identified (e.g., inconsistency, length, redundancy, etc.) various problems still remain. The remaining problems relate to the *adherence* to the guidelines and to *medium-specific standards* that are insufficiently discussed in the guidelines.

The former problem mainly consists of actually getting employees to use the guidelines in their daily work. Here, training events or applications need to familiarize employees with the characteristics of each communication medium. Ideally, the guidelines would pop-up every time an employee uses a communication medium inadequately. Still, the impact of written guidelines on communication behavior can only be limited. They have to be complemented by other means (such as training, frequent feedback, or on-line assistants).

The latter problem consists of extending the guidelines to other areas, such as technical standards. As of now, the guidelines focus only on the main issues that arise when a new communication channel is used. This assures that they remain concise and to the point. Complex communication channels, however, such as the intranet, require additional rules (e.g., design conventions, process elements, and specific roles). These complex regulations cannot be included in a one page document. They may require extensive style guides and manuals which run the risk of overloading the readers. A feasible solution for this problem may be found in electronic publication templates and automated workflows that incorporate the guidelines intelligently and seamlessly.

Future Developments

In terms of future developments, two issues seem particularly critical. The first relates to new communication media, the second to the just-in-time delivery of the guidelines.

As other communication media become readily available to UBS employees, such as WebTV, instant messengers, or virtual reality environments, new guidelines will need to be devised that help employees use them to their full advantage. As already mentioned by many communication professionals, it is a greater challenge to implement the guidelines (that is to says to get the employees to actually use them) than to devise them. This will become an even more significant problem as more media are available for communication. Which brings us to the second issue of just-in-time delivery. Ideally, communication guidelines should be 'pushed' to the employee whenever he or she makes a mistake in the handling of a communication channel. New monitoring systems could provide such automated, context-sensitive help functionalities.

Case Summary

This case study has focused on one particular information product that is vital in many large organizations: the guideline. The examples that have been included are management tools that can be used to foster high-quality information since they provide hints on how communication media can be better used. The guidelines have been designed using a specific methodology that stresses a consistent and concise structure and guidelines that are easy to use. Specifically, the following four principles have been applied:

- Integration: all communication guidelines can be found at one single location in the company's intranet. They are all limited to a maximum of two pages. Every guideline document contains a brief summary.
- Validation: The guidelines have been developed in consultation with almost all relevant communication staff from all geographic and divisional areas. They are based on a set of agreed-upon principles and these in turn have been derived from the company's core values. The specific guidelines were then developed in working groups and presented to the plenary session and revised. Prior to the work of the team, external benchmarks were provided to validate the new guidelines.
- Contextualization: The purpose and background of the guidelines are stated in the purpose, references, and feedback sections. The references also provide the possibility to access further details and background on the information by linking to extended versions of the guidelines.
- Activation: The guidelines focus on how and when a particular communication channel should be used and what steps should be taken. Because the principles are limited to less than seven, they should be easy to recall in every day work.

Conclusion

This case study has introduced both a tool for information quality management and an example of a high-quality information product: communication guidelines. It has highlighted the fact that guidelines need to be made consistent (both in terms of structure or layout and in terms of content, e.g., principles), concise, and applicable in order to be useful information. In this way, the guidelines can in return foster a culture of high-quality communication.

4.7 The Multiple Views on Country Risk Intelligence –Communicating Analyst Knowledge at the Economist Intelligence Unit

With all the available information on the Internet and with the overload of information we are facing, customers turn to us to have an opinion, an informed opinion on a specific country.

ANDRÉ ASTROW
EIU Deputy Editorial Director

Case Study Sources

The following case study[133] is based on interviews with André Astrow, EIU Deputy Editorial Director and Catherine Sealey, EIU Regional Sales Manager for Central and Eastern Europe, as well as on a number of interviews with EIU customers and frequent users. Further interviews included competitors of the EIU. Additional information was acquired through use of the EIU website and through the product documentation provided by the company. The four products described in the case study were all tested on a two week trial.

Company Overview

The Economist Intelligence Unit, part of the Economist Group, is a company active in the field of country intelligence. Over the last fifty years (the company was founded in 1946) the business intelligence division of the Economist Group has established a network of country analysts and country experts, presently 650, most of them based in the countries that they cover. The company can presently rely on a team of 80 economists, based in London, producing in-house risk and forecasting models. Besides the London office, which is the head office, the Economist Intelligence Unit has two major regional offices in New York and Hong Kong and 32 editorial and sales offices around the world. The EIU has currently over 500,000 clients: among them companies of every industry; financial institutions such as investment banking and insurance companies, investors, governments and business schools. The mission of the company is that of providing trustworthy intelligence on the worldwide business context, as outlined on the EIU website:

"Our mission is to help executives make better business decisions by providing up-to-date, reliable and impartial analysis on world-

[133] This case study contains material gathered by L. Musacchio.

wide market trends and business strategies. We continuously assess and forecast political, economic and business conditions in almost 200 countries, and provide insight into how companies are responding".

The Core Products

The EIU provides *country intelligence* in different forms that range from raw statistical data, forecasts, indicators, ratios, tables and charts to qualitative reports and risk ratings. The focus is on both the context of the worldwide marketplace and on the associated opportunities and risks for investors. Event-driven briefings are available through the Viewswire or Business Newsletters and provide the latest worldwide developments in business and politics. Economic and geopolitical analysis is also provided regularly in two products called Country Reports and Country Profiles. The three products Country Risk Service, Riskwire and Risk Model provide risk assessments, early warning indicators, ratings and assessments, while data and forecasts are provided trough Country Data, Market Indicators and Forecasts and trough Woldwide Cost of Living.

Operating Conditions and Regulations

In addition to these products, the EIU offers a series of international business guides on business regulations and on changing financial operating conditions, tax laws, and investment opportunities.

Management Strategies and Executive Development

Another group of products focuses on management strategies and executive developments. *Executive Briefing* and *Which MBA?* are the two main products in this group. So-called 'strategic intelligence' is provided trough regular manager surveys, best-practice insights and benchmarking, overviews and case studies.

Industry Trends and Developments

A fourth type of intelligence provided by EIU regards industries. Eight major industries are assessed: automotive, consumer goods and retailing, energy and electricity, financial services, food, beverages and tobacco, health and pharmaceuticals, telecoms and technology, travel and tourism.

Case Study Focus: Country Intelligence

This case study will focus on the first group of products, namely products focusing on the context of the worldwide marketplace and on the opportunities and risks involved. The EIU provides this kind of intelligence at different levels and through different forms. Four main information services will be discussed: *Viewswire, Country Reports, Country Data and Country Risk Service*.

Event Driven-Briefings

Viewswire is an Internet portal where the users can find useful information about the political, economic, commercial, financial and operational worldwide daily events and on their impact on business. The portal is updated every day with a large number of events that the EIU staff judges to be the

most important ones. The users can either choose to obtain updates on a single country (from a choice of about 200 countries) or list the worldwide major events of the day.

Five main channels are offered to the users and include: Politics, Economy, Business, Finance and Regulations. Through this portal, the user can have access to information and insights at several levels through background information, updates and standardized reports.

Economic and Geopolitical Analysis

The *Country Intelligence* database consists of three main publications: the country reports, the country profiles and the country forecasts. *Country reports* are provided for 181 countries every three months (full report) and updated every month (update report). The product has the form of a structured report and contains political, economic and financial developments and analyses. The reports contain both information on the political and economic structure of the country and an outlook for the next two years containing expectations on the political, economic policy, economic and financial environment. The focus is on political, economic policy, domestic economy, foreign and trade payments events and on their overall impact on the country risk.

Risk Assessment and Early Warning

Country Risk Service provides an assessment and an early warning system on the political, economic policy, economic structure and liquidity risks for 100 emerging markets and six main geopolitical areas (Africa, Americas, Asia and Australasia, Eastern Europe, Middle East and North Africa, Southern Europe). Risk assessment is provided also for specific investment risks, namely currency risk, sovereign debt risk and banking sector risk. Risk is evaluated on a time horizon of two years and its assessment is updated monthly via the Internet subscription and quarterly in print. An overall rating is provided together with a brief review of the major short term risk events as well as a political, economic and financial outlook. Separate sections are devoted to a more detailed assessment of these three (political, economic and financial) axes of analysis. These sections are: political outlook, domestic finance and economic outlook, external finance and credit risk (containing specific investment risk ratings, namely currency risk, sovereign risk and banking sector risks). A final risk rating summary explains the overall assessment. Statistical appendices present the economic variables used in the country risk assessments on a seven year basis with three years of actual figures, one year estimates and two year forecasts.

Risk Model

The risk ratings provided by the *Country Risk Service* come out of a risk model developed by the EIU. The Risk

Model is accessible over the Internet (eiuresources.com/ras) and provides risk ratings for 100 emerging markets and six major geopolitical aggregates. Broad risk is divided into Political Risk, Economic Policy Risk, Economic Structure Risk and Liquidity Risk. The broad risk is based on 77 indicators ranging across 13 different risk categories. For each of the 77 indicators it is possible to show the question that lies behind the specific assessment and the relations between the score and the assessment (see the figure below). Lower scores are associated with lower risks.

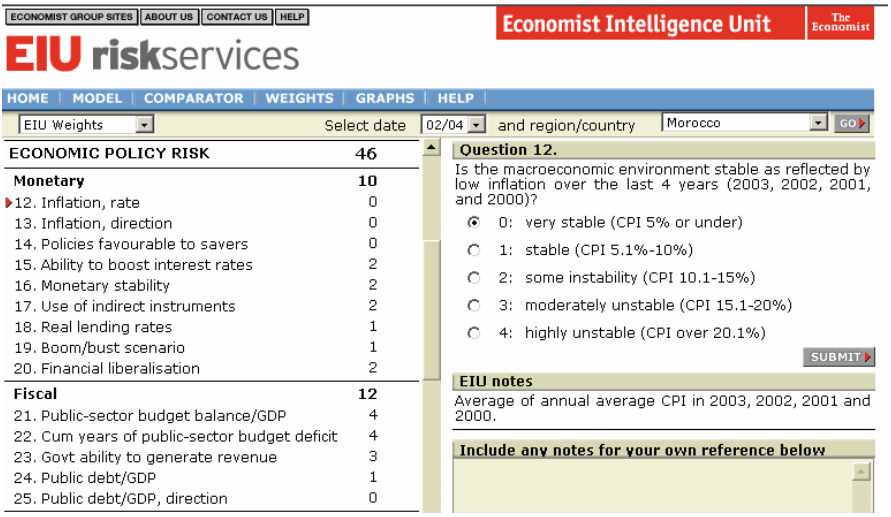

Figure 31: EIU risk model – inflation indicator

Once all the points for each indicator are added up, it is possible to associate each score with a rating. In the EIU rating model the label A is associated with the lowest risk and with a score ranging from 0 to 20, B is associated with a low risk and with a score ranging from 21 to 40, C is associated with moderate risk and with a score range from 41 to 60, D is associated with high risk and a score ranging from 61 to 80 and finally a high risk E rating is associated with scores that range from 81 to 100. This rating is provided for the overall country risk but also for each of the risk categories: political risk, economic policy risk, economic structure risk, and liquidity risk. The scoring of these four categories is provided also for the specific investment risks namely currency risk, sovereign debt risk and banking sector risk (see next figure).

Compare risk summaries for one country over multiple dates GRAPH EXCEL

Morocco	08/03	10/03	12/03	02/04
Broad risk				
Political risk	64 D	66 D	70 D	68 D
Economic policy risk	45 C	46 C	42 C	46 C
Economic structure risk	38 B	34 B	32 B	30 B
Liquidity risk	20 A	20 A	20 A	18 A
Specific risk				
Currency risk	40 B	39 B	36 B	39 B
Sovereign risk	40 B	39 B	38 B	36 B
Banking sector risk	42 C	43 C	41 C	41 C
Summary				
Overall risk	41 C	41 C	41 C	40 B
Moody's scale	Ba1	Ba1	Ba1	Baa3
Fitch/S & P's scale	BB+	BB+	BB+	BBB-

Figure 32:EIU risk model – country risk break-down for Morocco

Data and Forecasts

Country Data consists of a huge database provided online trough the website of Bureau van Dijk (http://countrydata.bvdep.com/) and enables the users to access and manipulate the data with a great flexibility. The users can choose the country/countries they want to focus on from a database that covers 117 countries from the Americas, Asia and Australasia, Eastern Europe, Middle East and North Africa, Sub-Saharan Africa, Western Europe and 40 regional aggregates that can be used as a benchmark to evaluate the performance of one country against the group. For all the 280 series, annual data are available and for some of them quarterly and monthly data are compiled. The reference years go from 1980 to 2008 with a distinction between actual figures, estimates and forecasts (different colours). Forecasts for the 117 countries are updated monthly. Through the three main axes of analysis (country, series and year) the user can aggregate and compare data in a number of ways through graphing functions, screening functions and segmenting functions. There is also a possibility of downloading data into Excel spreadsheets.

Additional Services

Tailored intelligence and research is also provided by EIU in the form of executive surveys and sponsored white papers. Conferences and seminars are also organized for both current and potential new customers.

Added Value Usable, Up-to-date and Reliable Intelligence

The added value that EIU generates is that of providing usable, up-to-date, and reliable country intelligence. These aspects are crucial to decision making. Visualization and aggregation capabilities of *Country Data* allow the user to combine and compare information in a number of ways and thus help in setting up preferences for alternatives while representing information in a new and flexible way. One way of getting to reliable decisions is that of understanding the implicit relationships between the different forces and systems operating in the environment. In country intelligence, this is a particularly difficult task as the analysts have to cope with very unsteady and complex environments and have to account for the different logics and implications involved. They have to detect both the continuities and the breaks of the systems. They have to focus on the hidden relationships within the system in order to obtain the necessary insights to formulate their view. In this sense, *Country Report and the Country Risk Services* help in matching information with the user objectives and the strategic decision to be made. This can be illustrated with the risk modeler of the EIU. The *Risk Model* is an interactive model whose main characteristic is adaptability. The score given by the analysts can be changed by the user. He or she can assign new weights to the various indicators. (see Figure 33)

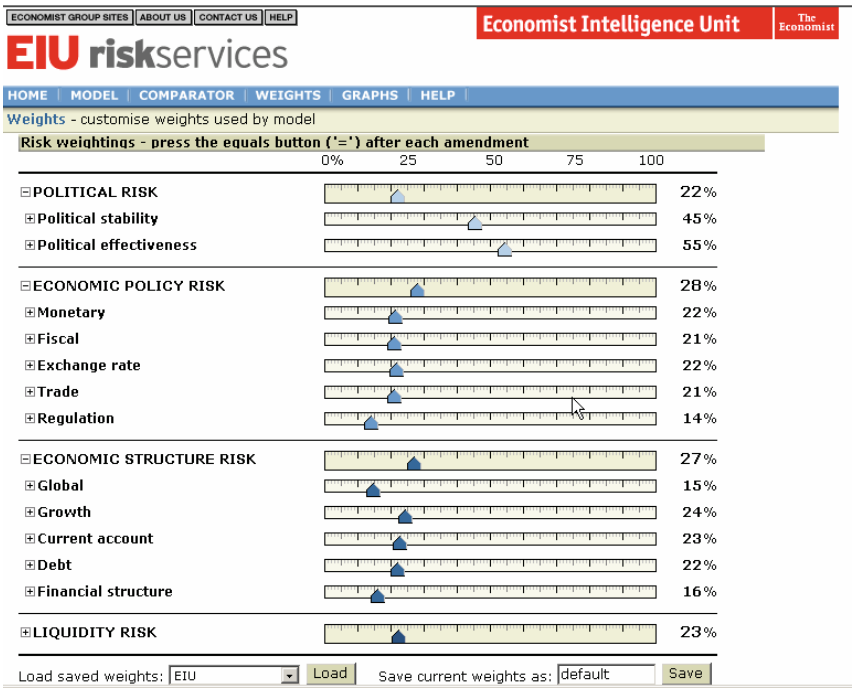

Figure 33: EIU risk model – risk weightings

The user is able to understand how the score is computed by looking at the question that lies behind every score. With these two interaction features, the user can adjust the weightings and the scores of any of the 77 risk indicators. The score is then calculated based on the needs of the users as they choose weights and scores that better suit the prospected task. By changing the assumptions and providing the possibility to see the consequences of such changes, the user is able to reconstruct knowledge, to give meaning to the knowledge provided by the service, thus adapting it to the decision situation. Beside this powerful functionality, the model allows for comparisons of the indicator scores over time, across countries, or across time for a single country. These functionalities enhance comprehension by generating new visualizations and combinations and allowing the user to compare data. What is also interesting about this product from a knowledge perspective is the rating tool: the exposure to risk can be quantified with a skilful mix of qualitative and qualitative questions. Another, related feature in this product group is *Viewswire*. Timeliness is the major feature of this product. Trough the

Viewswire portal the user can have access to information and insights at several levels. Background information, recent updates, and standardized reports are combined in this product and allow the user to combine the currency of the information with the background sections and the reports. Inthis way the user can shift from background and consolidated knowledge to new ideas and news alerts. Here we can observe how different levels of information are provided simultaneously: raw data, structured reports, outlook and ratings can be viewed at the same time by the user. Having described the various information products of the EIU and their features, we can now summarize the activities that the EIU pursues to increase the quality of those products. They are listed below next to the quality criterion that they affect most.

Information Quality Levels	**Information Quality Criteria**	**Activities to improve the IQ-criteria**
Community Level (Relevance)	Comprehensiveness	EIU relies on a network of experts in the field based in each country and thus provides information on countries where information is very scarce.
	Accuracy	Information sources are selected and examined carefully by the analysts; forecasts are produced by experienced analysts and are based only on in-house analysis. Reports are checked both internally and externally.
	Clarity	Editorial guidelines on language use and reviewing stress clarity of language and vocabulary.
	Applicability	Products are relevant for the decision tasks to be performed; the country intelligence provided is applicable to business investment decisions in foreign countries. Special attention is paid to emerging and exotic markets where information is difficult to find for executives.
Product Level (Soundness)	Conciseness	Reports such as those of the Country Risk Service provide a great number of information in not more than 15 pages.
	Consistency	Every series of reports follows a standardized structure. The reader is able to find the same structure for all of the country reports provided.
	Correctness	Reports follow a five step review process before being published. The EIU is a completely independent company. No other company has stakes in the EIU nor are they tied to any government or corporation. The EIU does not participate in the financial markets and thus holds no financial interests.

Information Quality Levels	Information Quality Criteria	Activities to improve the IQ-criteria
	Currency	The analysts constantly monitor political and economic development in almost 200 countries and constantly update their intelligence. Information provided is updated with the latest events. All the information is updated daily for the wire services, daily briefing and alerting services or monthly for the full text reports. This updating includes the whole report and not just parts of it.
Process Level (Optimization)	Convenience	Reports can be easily downloaded from the Internet. Data can be easily downloaded as in excels spreadsheets. Inquiries can be addressed to one central phone number or e-mail address where they are forwarded to the relevant experts.
	Timeliness	Each month, the country view is revised as well as the model that is used to generate a new economic forecast in order to catch the deteriorating or improving trends and set up effective early warning systems.
	Traceability	No author names are given, but the main sources of all data are revealed. Revisions are indicated.
	Interactivity	All customers can speak directly to editors to resolve any queries. There is a number on the report that customer can ring up to get extra information, or ask any question. Events are organized in the form of seminars and presentations for existing and new clients. Many of the EIU products have customization capabilities like country risk services and country data. This means that they are adaptable to different circumstances and different contexts. The risk model can be used in a very flexible way. Customers can change both scores and weights.
Infrastructure Level (Reliability)	Accessibility	EIU clients are offered different electronic delivery methods to access the products. Customers can opt for a print or electronic channel that includes CD-ROM, Lotus Notes, online database…The access is either via IP, password or via intranet and extranet.
	Security	Every account is password protected.
	Maintainability	The portal is updated daily and there is a great effort in its development.
	Speed	The EIU websites and applications react almost instantly to queries or changes in entries. The download time of reports is adequate.

Table 29: EIU products and services features and their impact on information quality criteria

Most Affected Information Quality Criteria

From the list in the above table, the criteria that seem to be affected most by EIU's approach are the following three:

- Comprehensiveness: The EIU provides country intelligence on nearly 200 countries trough a large network of experts (about 650) who contribute information on recent economic and political events, comment on the business environment and legislative changes, and give their views on political, economic and social trends. A global reach is provided as information is also available on countries where it is difficult to access statistical information (i.e., emerging markets).
- Interactivity: Interactivity is provided at different levels. As Catherine Sealey, Regional Sales Manager Central and Eastern Europe at the EIU, states: "*All our clients can ring up our analysts in London anytime*". In this way they can ask questions to resolve unclear issues. Interactivity is also provided through customization capabilities of the online products. In *Country Data,* for example the user can visualize and aggregate information in different ways trough graphing, screening and segmenting functions. In the *Risk Model* interactivity means that the user can change the score given by the EIU analyst for each of the 77 indicators and customize weights according to his needs.
- Timeliness: As written in the EIU Publications and Services Catalogue "*Our clients need timely forecasts and analysis, so our process is designed for speed*". The global environment is monitored daily by the network of country analysts and experts who cover the latest events and trends.
- Accuracy: At the EIU, the sources of information are attentively scrutinized by the analysts. The five step production process and the quality checks show a major commitment to accuracy and reliability of information. Forecasts are based on in-house analysis and the forecast models are continuously revised by a team of economists.

Added Value Usable, Up-to-date and Reliable intelligence

The added value that the EIU generates is that of providing usable, up-to-date, and reliable country intelligence. These aspects are crucial to investment decision making. Visualization and aggregation capabilities of *Country Data* for instance allow the user to combine and compare information in a number of ways and thus help in setting up preferences for alternatives while representing information in a flexible way. One way of getting to reliable decisions is that of understanding the implicit relationships between the different forces and systems operating in the environment. In country intelli-

gence, this is a particularly difficult task, as the analysts have to cope with unsteady and complex environments and have to account for the different logics and implications involved.

The Pricing Scheme

Subscribing to the EIU is not a low-cost investment. Prices vary depending on how much the customers buy, as the more they buy, the higher the discount., The price depends on the type of institution (non profit and academic institutions, corporates or banks), the number of users, and the number of countries subscribed. For a typical customer, the price for the full set of 146 countries is around 35.000 dollars for five passwords to the Country Reports.

The Production Process for Reports

The intelligence provided by the EIU results from the collection, processing, aggregation, assessment and interpretation of information concerning countries or areas. Analysts involved in this process produce country intelligence out of raw data and qualitative information. EIU intelligence is based on regular contributions from a global network of more than 650 specialists. Experienced in-house analysts assess how political and economic developments and produce detailed two-year forecasts. This intelligence is then edited into a common format and offered through print or electronic channels. The company relies on a hundred country analysts who are permanent staff members, most of them based in London, although some analysts are in the two main regional offices in Hong Kong and New York. The production of country reports follows a five steps process:

1) **Writing:** Country Reports are written largely by experts in the field and sent to London.

2) **Editing:** Country experts in London integrate the manuscript with their own inputs on what is likely to happen in the country. They check it by running all the forecasting numbers to make sure that they are consistent with the company's global view and regional view. Their final task is that of putting everything together and structures it in a consistent and standardized way.

3) **Second check:** Once the manuscript has been edited and finalized by the primary editor, it is passed on to a more senior person to look trough it. During the review, the senior editor reads the manuscript to makes sure that the forecasts make sense and that the whole report is sound. His task is that of catching any error or inconsistency that there may be in the manuscript within the analysis or between the analysis and the tables and numbers. Once that is done, the second checker will get together with the editor and go trough any problem, asking a number of questions to improve the report. Once everything has been changed, the manuscript goes to a subeditor or a copy editor.

4) **Sub-editing:** Subeditors or copy editors are very rigorous. It's not just a matter of making sure that the manuscript is in good English, but also to ensure consistency and accuracy. Subeditors do a lot of fact checking and ask questions about any kind of inconsistency that may still be in the manuscript. Once everything has been proofread and checked by the subeditor, then the manuscript is ready to go to production.

5) **Production:** The production team will take a final look at the manuscript to make sure (from a production point of view) that everything is correct and properly coded and styled properly. Then, the manuscript is sent on to New York for electronic distribution and to the EIU printers in the UK.

Problems in the Production Process

Since the series of steps described above is in effect a knowledge-intensive process, the problems that occur in producing a report are mostly related to the collection, processing, aggregation, assessment, interpretation and codification of available information concerning foreign countries or areas. The main factors that can affect this type of process are: quality of the sources, consistency of the analytical frameworks used and the available expertise.

The importance of the quality of information is stressed in the EIU guidelines: *"No matter how good the model or how deep the analyst's expertise, building an accurate forecast is impossible when the underlying data are wrong. So we spare no effort to procure the best and latest data available for the 195 countries we cover"*. In countries (like OECD economies) where electronic databases providing national statistics are available, the EIU subscribes to them. In a country where this supply is not complete, the EIU holds direct subscription arrangements with statistical offices and central banks. For the less developed countries (where it is particularly difficult to get information) the EIU relies on a large network of people who contribute information and data released by the statistical offices and central banks. Additional sources are the World Bank, the International Monetary Fund, the United Nations, the OECD, and the EU. Data are selected and scrutinised by the analysts following quality criteria such as timeliness, accuracy and consistency. National statistics are the preferred sources, but when quality criteria are not met, the analyst may choose a better alternative, such as the aforementioned sources or come up with their own estimates.

Data are processed trough a series of proprietary forecasting *models*. These models ensure consistency by applying the same methodology and assumptions. For the Risk Model, this consists of a particularly skilful mesh of qualitative and quantitative assessments. Numerical scores must be assigned to

factors that are difficult to compare, and this in a structured way that allows for comparison across countries and time. But as written in the aforementioned EIU publication:

> "We never lose sight of the fact that even the best models are an approximation of the real world making our analysts' judgement a crucial factor."

In providing country intelligence, *expertise* is in fact the crucial aspect: forecasts and analyses depend largely on the ability of the analysts to understand the environment of the countries, the different forces that can affect the business, and how to relate them to the decision tasks to be performed. Country experts are people who have had at least 5-7 years experience, who have worked and lived (for a number of years) in the country or region that they cover and can speak local languages. All of them have a university degree and most of them have advanced degrees such as an MBA, Masters or PhD. Their background and experience is mostly in economics, but it also ranges from political science to international relations. The most frequent previous experience is in the banking sector, in research institutes and in multinationals insitutions. Each of the analysts is in charge of very few countries (two, maximum three countries) and visits them regularly, ensuring up-to-date and focused expertise. In addition to local country expertise and experts in the main offices, the company can rely on a team of 80 experienced economists who are in charge of building and testing risk and forecasting models.

Customer Opinions

We had five interviews with EIU users in two major Swiss banks. Their analyst reported that they use EIU experience in gathering and assessing data at different levels: as an input to in-house risk assessment processes, as a second opinion compared to credit agencies such as Moody's or Standard and Poor's, or simply as a source of information. EIU products allow them to save time in reading newspapers, magazines and doing detailed research. All the interviewees agreed that what they mainly look for are the qualitative aspects, like for instance political stability or fiscal policy; qualitative aspects that need to be quantified in order to be included in a decision model. They all reported that this is a crucial aspect that involves comparisons with other indicators or information, the weighting of different factors, the choice of the indicators that best suit the prospected decision. This ultimately leads to the customisation and personalisation of the provided information. As an analyst from a bank's Collateral Rating Office indicated:

"EIU products help us getting a homogenous vision for a decision. They provide data and information, but it is our duty to interpret them and interpretation always holds a high level of subjectivity."

Asking the customers what they particularly like about this product, we gathered a number of positive feedbacks. Consistency seems to be one of the most appreciated features.

"When you go from one report to another you always find the same sections and the same methodology behind each one of them, and this make it very user friendly. Once you are accustomed to use one of them, you can very easily jump from one country to another and this is very useful for me because I am not an expert in many of the countries that I work with, and so at least I can acquire a certain level of knowledge in very short time"

reported an economist at a large Swiss bank. Decisiveness is also valued as he said

"You always find an opinion stated. It is never neutral in a sense; this is what I like about it".

Focus and conciseness are also rated highly. As the responsible for the Risk Analysis and Rating for Africa and Near & Middle East at a large Swiss bank stated

"if you already have a quite sophisticated knowledge about the country, then you are happy to have a report which is very focused on the really important things and it is not talking at length... reports from other providers are well done, but they are long and they are not focused and sometimes they are hesitant about a political judgment and so for me they are not that helpful".

Finally interaction is recognized as plus of the products:

"The good thing is that you can also talk to the analysts in London. When I am going to London I am usually going to see the analysts who are responsible for my region and then you get a better idea of how they are getting their information and how this information is processed and why they are coming to certain conclusions".

Despite this positive view, the interviewees reported that one of the problems of the product is accessibility

"What I don't like so much is the accessibility. Sometimes you have to shift through a lot of papers until you find the latest thing that has happened. If I am interested only on the fiscal development in the country it takes me quite a lot…it is not very user-friendly, so I would like to have a search function with a database of all these reports that would be very helpful for example"

said an economist. Accessibility problems comprise difficulties in downloading the data, as some of the users reported

that it could take very long to download a wide series of data. Completeness is also a major concern.

"You don't have the same data for all countries, which is sometimes confusing. In some countries I have seen GDP forecasts until 2005 while for another country you can't find it"

said the responsible for the Data and Management Support at a large bank. Also the quality may differ from one product to another as

"The quality differs, you have different analysts and of course you have different levels of quality"

said the Responsible for the Risk Analysis and Rating for Africa and Near & Middle East at a multinational bank.

When asked about the competitors Oxford Analytica was mentioned for country intelligence services, Standard and Poor's, Moody's, Fitch for ratings, the Institute of International Finance for its country reports on emerging markets, and Bloomberg for daily data.

Competitors

Country Intelligence is a very broad market as a number of companies provide different intelligence products and services. We can distinguish between full competitors of the EIU and competitors only on certain services. The two major competitors of EIU are Global Insight and Business Monitor International. Global Insight (www.globalinsight.com) is a worldwide operation with offices in 12 countries. It employs over 450 persons between analysts, researcher and economists and offers country intelligence products and services that support corporates, banks and governments in developing strategies, monitoring risks and making successful decisions. The broad range of products offered comprises country analyses, forecasts, economic data, risk services and consulting expertise. Over 200 countries are covered by the services as well as a number of industries. It is a true competitor of the EIU as it can be compared to it in terms of its size, the broadness of coverage and the type of products provided. Business Monitor International (www.businessmonitor.com) is also a major player in the country intelligence market. It offers specialist business information on global markets to financial institutions, multinationals, government and academic institutions. Print and online services comprise country analyses, forecasts, risk ratings and repositories of foreign companies and industry sector data. A smaller company that can nevertheless be compared to the aforementioned two is Oxford Analytica (www.oxan.com). It provides analyses on worldwide political, economic and social developments to both

governments and international institutions and manufacturing and financial firms. It relies on a worldwide network of over 1000 experts. Daily briefing services are provided covering both world and regional economic and political developments of major significance. Consultancy and customised research are also offered like country risk and sectoral analyses or monitoring services.

Beside these three major competitors there are other institutes that provide different kind of data, information and risk ratings.

The Institute of International Finance (www.iif.com) is a global association of financial institutions. One of the goals of this institute is to provide members with data, analysis and prospects on economic and financial developments in emerging market economies. Services include Economic Reports, Monthly Economic Reviews, Short Briefing Notes and Key Indicators for selected emerging economies. The Political Risk Services (www.prsgroup.com) provides both country reports, country data and has developed the International Country Risk Guide a political, economic and financial country risk model based on the assessment of 13 political indicators, 6 economic indicators and 5 financial indicators. Political risk letters and country forecasts are also available. Other providers of worldwide information and risk assessments are Euromoney (www.euromoney.com), Business Environment Risk Inteliigence (www.beri.com) and Credit Risk International (www.crimag.com). Regarding the rating the three major rating agencies are Moody's Investors Service, Standard and Poors and Fitch. They are recognized statistical rating organizations. They provide an informed opinion on the creditworthiness of an entity and the financial obligations (such as, bonds, preferred stock, and commercial paper) issued by an entity by assigning a credit rating. Credit ratings used by these agencies are worldwide recognised and follow a scale (specific for each agency) that distinguishes between investment grade and non-investment grade.

Bloomberg is a major information provider of real-time and historical financial data. Through the Bloomberg Professional Service central banks, investment institutions, commercial banks, government offices and agencies, corporations and news organizations can access more than 3.6 million financial instruments and interact with a worldwide financial information network. In this sense Bloomberg is a competitor of EIU only regarding data and not the qualitative intelligence. Another competitor in this sense is Reuters.

Besides these international competitors, the EIU also faces

competition on a more regional level. The German FAZ Institut (www.faz-institut.de), for example, has a Country and Industry Service that provides country reports and investments guides for about 40 countries that are relevant for German investors. It is a small company with 11 employees and a number of free-lancers which targets medium size enterprises. Its added value results from its focus on the impact of country risks on commerce with Germany.

Future Developments

The Economist Intelligence Unit is now a major player in the country intelligence providers market. During the last years it has undergone a process of transformation to an electronic business (see Figure 4) that allowed for cost reduction and market growth. Growth opportunities are envisioned also in terms of services provided and in terms of scope. The EIU wants to keep up with the growing demand for customized research (such as tailor made research for banks and corporates) and increase the industry and country coverage. There is a strategic focus on growth, both through an extended sales network and through a growing product range.

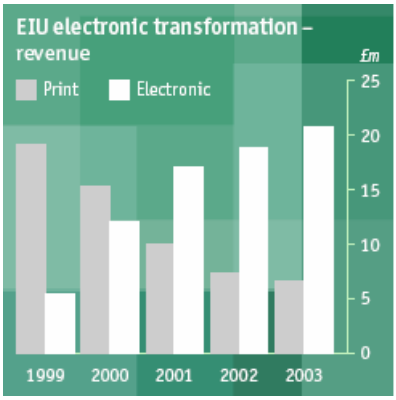

Figure 34: Electronic transformation revenue (source: EIU annual report)

Case Summary

EIU is one of the major and most respected country intelligence providers in the world and co-ordinates over 650 country intelligence experts worldwide. The EIU organization is particularly interesting from an information quality point of view as it is characterized by both knowledge intensive production processes and knowledge intensive communication processes. The first refer to content (what type of knowledge is conveyed) while the latter refers to interaction (how the knowledge is conveyed). Information quality principles influence both processes. We can summarize EIU major bene-

fits or innovations with the four information quality principles:

- Integration: EIU codifies and standardizes information by applying a strong analytical framework and a consistent format to carefully selected information. Formats may vary from one product to another: and includes raw data, indicators and forecasts figures as well as qualitative reports, structured reports and ratings.
- Validation: Validation is achieved trough the strong commitment on information source quality, trough continuously revised models and trough the number of checks and the expertise of the reviewers.
- Contextualization: Customers can interact with the knowledge provided by changing underlying assumptions within the models or trough the interactive views provided by the products. In this way they can adapt and personalize information.
- Activation: The provided intelligence is made actionable through various means, one of which is that customers can speak directly to analysts and participate in conferences and events organized by EIU. The applicability of the provided information is facilitated as customers can download data into excel spreadsheets and work with them in their own models or applications.

The principle that is most visibly exploited by EIU is the first one: data and information is aggregated and compressed in a skilful way that leads to clear and determined views and analysis on complex and unsteady environments.

Conclusion

The Economist Intelligence Unit has established a high standard in a knowledge intensive process, namely country risk intelligence. This has been achieved trough a skilful mesh of aggregation and compression abilities to codify knowledge and through rigorous validation and a commitment to currency and timeliness.

4.8 Conclusion: Cross-case Insights

Goal: General Characteristics and Propositions

In this section, we compare the problems, solutions, and contextual factors that were discovered in the six case studies. This will enable us to make inferences about information quality characteristics and their systematic management. It will also generate new propositions that can be tested in further investigations. First, the recurring information quality problems will be discussed. Then the practical meaning of the criteria will be briefly reviewed, followed by applications of the four IQ-principles and contextual factors that tend to foster high information quality.

Resurfacing Information Quality Problems

The case study material has shown that the dominant problems relate to the information production and delivery process (e.g., keeping it timely and interactive), the characteristics of the final information product (e.g., assuring its consistency and relevance), and managing the often high volumes of information and maintaining them on an adequate infrastructure. We have seen that meeting customer expectations consists of two dimensions: first, in regard to the delivered content, and second in terms of the medium through which this content is delivered.

Different Responsibilities for Different Problem Types

From the case study descriptions and their problem sections, we can see that the four levels of the information quality framework can help to make sense of these problems and that they can be used to devise counter-measures: Whenever information is seen as incomplete, inaccurate, unclear or difficult to use, it is not targeted at the user group. The kind of information that is provided must be altered. This requires *line managers* to take action. Namely, they have to inform the authors and IT-managers about the true needs of the target communities. Whenever information is not concise, consistent, correct, or current, the *authors* themselves need to take action to improve the information they provide. They either need to seek assistance, receive training or use guidelines and templates to produce information that is to the point, contains no errors, and is based on the latest available data. The *IT-process managers*, usually the staff that is responsible for the deployment and management of software, need to take action if the way that information is produced or delivered is seen as inconvenient, not timely, untraceable, or not interactive enough by information produces or consumers. They need to optimise the authoring, query, and navigation process to meet these criteria. Finally, whenever information seems generally difficult to access or unsafe to store,

hard to maintain or slow in its response, the *IT-infrastructure managers*, responsible for hardware and network software, need to take action. They need to improve the available infrastructure to meet the increasing demands of information consumers and producers.

The Practical Meaning of the Information Quality Criteria

Besides the insight on problem types and possible solutions, the case studies also provided an opportunity to look at information quality criteria and what they actually mean in real-life settings. In the six case studies, the following eight criteria were especially prominent.

Conciseness of information seemed to be an important characteristic of information in all five contexts, due to the heavy information load of most managers. Conciseness was the raison d'être for getAbstract and it was the distinguishing factor of Giga who produced no report of more than ten pages. It was also one of the most innovative aspects of UBS' communication guidelines since they were limited to one page only. The EIU, finally, paid particular attention to providing synthetic tabular information in all its reports.

Almost contrary to conciseness is *comprehensiveness*. This criterion was also discussed at various points in the case studies. Gartner was proud of its comprehensive coverage of IT topics (as was the EIU of its scope of covered countries), due to its large pool of analysts. GetAbstract claimed to cover most important business books with its abstracts. However, full comprehensiveness was seen as an illusion by most interviewed managers. In fact, some customers of getAbstract, Giga, and Gartner claimed to suffer from too much coverage ("if they produce more, we read less").

A third "magic c" was *convenience*. All companies in the case studies understand that it is not enough to just deliver information. It has to be communicated in an easy-to-use manner and format that reduces transaction costs. This could mean helping the recipient store and organize the information for later use (as IHA·GfK and getAbstract do for their clients through customer portals). Or it could mean providing information in a number of formats, depending on the customer's situation. GetAbstract delivers its abstracts as PDF-files, palm-files, mp3 sound files and soon also as PowerPoint slides. IHA·GfK not only delivers printed marketing reports, but also provides a CD-ROM with the database, an online platform to run additional analyses, or interactive workshops to interpret the information with the help of experts. The EIU offers its models as Excel files that can be modified by each customer. Other forms of 'information convenience' were discussed in the cases: Gartner and Giga will identify rele-

vant experts and call back managers who have posted questions on their websites. GetAbstract automatically sends out new abstracts to managers, based on their job profile and preferences.

Another one of the "c"-criteria that came up frequently in the interviews was *consistency*. At the Swiss bank UBS, consistency meant that all communication guidelines were based on the same principles and that all of the documented guidelines followed the exact same format and layout. This was also true for getAbstract, Gartner, and Giga, where consistency was seen as imperative as far as the document structure is concerned. All book summaries at getAbstract contain the same elements (from the rating to the buzzwords), as do the reports at Gartner, Giga, and at the EIU.

At Gartner, consistency also relates to the used text items, such as probabilities or magic quadrants that are always used in the same way (and ensured through guidelines, trainings, and reviews).

In all interviews with managers and customers that were conducted for the case studies, there was one credo that - almost like a mantra - was cited over and over again. Namely, that information does not have a lot of value unless it is applied. So it came as no surprise that *applicability* was often given special attention. At UBS, the guidelines only focused on what one actually needed to do to improve communication. Giga even evaluated the performance of its analyst according to how well clients were able to use their answers. IHA·GfK changed part of its business model to increase the applicability of its data. It launched IHA Consulting to assure that the market findings were put into actions.

It also became clear that *accessibility* has become one of the essential prerequisites of information services today. Customers simply expect that information is accessible all of the time, from anywhere, at anytime. They expect an infrastructure that is easily accessible yet highly secure. IHA·GfK, getAbstract, Giga, Gartner and EIU provide this infrastructure through simple web-based logins to most of their services.

The somewhat vague term of *interactivity* has also become more tangible through the case studies. Providing information in an interactive way does not only mean providing a starting page on the web that can be adapted to one's personal preferences. It means being able to explore information interactively and run simulations with it; it means asking what-if questions that were perhaps not anticipated by the information provider themselves. Interactivity also implies a re-

packaging of knowledge and experiences into software applications. Giga has used its know-how to provide clients with the Website Scorecard, an interactive questionnaire for real-time website evaluations. The EIU has introduced a graphic slider interface through which criteria weightings as basic assumptions in each model can be modified. IHA·GfK has discovered that one of the most interactive formats is not necessarily the Internet, but on-site workshops with clients. Similarly, Giga and Gartner have started to deploy their analysts on-site so that customers can interact with them on a personal basis.

Finally, it seems that in these hurried times, answers are needed faster than ever. *Timeliness* has become a crucial information quality criterion. Giga has realized this and strives to answer any inquiry within hours rather than days. GetAbstract has started to summarize books which are not even published yet, assuring a timely delivery of the abstracts once the book is on the market. IHA·GfK has streamlined its research process and moved online to accelerate the data gathering, analysis and delivery process.

Nevertheless, timeliness can also have adverse effects on information quality. It can negatively influence other criteria such as accuracy, correctness or comprehensiveness. This danger was also seen by several of the interviewed managers and clients.

IQ-Principles in Action

The criteria discussed in the previous paragraphs already highlight some 'good practices' with regard to information quality. When we review the tools and techniques we have encountered in the six case studies, we can detect general, insightful ways of improving information quality. Specifically, we can summarize a number of ways in which information can be compressed, validated, contextualized, and activated.

As far as the *integration* of information and sources is concerned we have encountered one key technology, namely portals, such as the client and knowledge portals installed by IHA·GfK. A portal bundles various information sources and applications in one browser-based interface. The compilation of sources and applications in a portal is ideally personalized, i.e., based on the specific needs and preferences of the user. Other forms of compressing information that were frequently encountered were conceptual diagrams, such as Gartner's Magic Quadrant matrix. Another effective way to compress (prescriptive) information is principles. In the case of UBS, principles were used to represent a number of guidelines and norms.

To *validate* information, to judge its soundness and consistency, various mechanisms were discussed. One very elaborate arrangement is used at Giga, where information is evaluated at four different levels (through peers, superiors, clients, and one global research head). Many companies analyzed in the case studies rely on different sources for the same information as a way of assuring its validity (the EIU for example relies on statistical data provided by national banks in emerging markets, but also gather its own primary data). Other mechanisms for information validation included benchmarking (as in the UBS case), feedback loops (IHA·GfK), and an explicit rating of content, as in the case of getAbstract (the book rating schema) or Gartner where probabilities are used to indicate the level of certainty associated with a prognostic statement.

That information *contextualization* is a vital component of increasing information quality was highlighted by various case studies. Giga's catalyst section in every document is a direct result of the importance of context. A catalyst clarifies the background of a specific question. It tells the reader why a certain question is important and for whom. This 'catalyst' function was also encountered in getAbstract's book summaries. Providing background information was generally seen as an effective way of contextualizing information. In the case of getAbstract's book summaries this background consisted of a book author's credentials. In the UBS case the background consisted of a link to a more elaborate version of the guidelines. In the market research area of IHA·GfK, contextualization means adding general market data to specific findings, in order to relate them to one another and facilitate interpretation. Other effective ways of providing context are topic trees that locate a document in relation to the key terms in a thesaurus, listing the buzzwords contained in a book, or providing links to prior or related reports.

We have also come across various ways to make information actionable. One type of a*ctivation* mechanism consisted of specific text block types that stress the implementation of insights and findings. These text blocks had labels such as Bottom Line, Action Item, Strategic Planning Assumption, Recommendation, or Key Take-Away. They were consistently and repeatedly used to highlight the consequences of information for action. Other key mechanisms of activating information were personal dialogues (e.g., between an analyst and a client), events such as conferences or expert chats, direct question and answer sessions (as in the Giga and Gartner cases), or through workshops, simulations and close col-

laboration over time (as in the IHA·GfK case).

In the final section of this cross-case study analysis, we focus on the contextual factors that contribute to information quality. The term 'contextual factor' refers to general organizational parameters that influence the quality of information indirectly.

Contextual Factors that Contribute to Information Quality

The first such contextual factor is direct, immediate, and frequent *feedback* from information users to information producers and administrators. In this way, they can quickly adjust their information products to changing needs or detect errors in their analyses. All of the five companies portrayed in the case studies provide feedback mechanisms, either through an electronic channel, e.g., via e-mail or user statistics, or via direct face-to-face feedback from colleagues, superiors, or clients. Sometimes the feedback is informal and spontaneous (such as the feedback that getAbstract sometimes receives from book authors or readers), at other times it is based on a defined set of criteria and given on a periodic basis (as in the Giga quality reviews or in the EIU customer surveys).

Other contextual factors relate to the knowledge workers themselves. In the case of getAbstract and Giga, the writers do not have heavy *administrative overhead* and can focus on their field of expertise. Also, in the case of Giga and Gartner, there is a great degree of (formal and informal) *exchange* between them, through telephone conferences, meetings and conferences or simple e-mail lists. A factor that (among other things) facilitates the exchange among information producers and increases the quality of information is a minimal set of common standards and methods. By creating a common set of (taught and enforced) methods, *standards*, or guidelines to which all information producers must adhere, a company can create a common language that fosters comprehension both internally and externally.[134] These standards were evident in all cases except that of getAbstract, where the management team has acknowledged that it will have to implement such guidelines in the future.

The last crucial contextual factor is *recognition*: for quality to count in a company, high-quality contributions need to be recognized. The quality of information has to be made

[134] McDermott describes this factor as follows: "When knowledge workers have common key focus areas and standard methods, enough convergence in thinking between individuals is created that valuable, detailed discussions can take place." (McDermott, 1995, p. 77).

visible to all information producers and outstanding contributions have to be recognized. In this way, there is an additional incentive to provide high-quality information besides satisfying customer expectations, namely to win the respect of peers and superiors.

Propositions: Key Success Factors for Information Quality

These contextual factors have not been empirically tested in terms of correlation to information quality. They have only been illustrated through five exploratory case studies. Further research would have to analyze these factors in more rigid ways, e.g., operationalize them and divide them into measurable constructs.

Proposition 1: If an information provider has institutionalized feedback mechanisms that are in place between information producers and consumers, then it will tend to have higher levels of customer satisfaction than providers that do not have such simple feedback channels.

Proposition 2: The less administrative overhead for information producers in a company, the greater the satisfaction of the information consumers with the information products of that company.

Proposition 3: The greater the institutionalized exchange between information producers, the higher the satisfaction of the information consumers with the information products.

Proposition 4: Information producers that have a minimal set of guidelines and standards create higher customer satisfaction than those who do not have (and use) any such standards.

Proposition 5: Information providers that officially recognize and acknowledge high-quality contributions of their authors, will have higher customer satisfaction in regard to their information products than those who do not.

Measuring the Impact of Context

All of these propositions have to be viewed under the condition of ceteris paribus (i.e., all other things being left unchanged). They are, as of now, highly speculative and only based on a sample of five companies. Whether they are in fact correct or not, can be tested through a survey among a larger number of similar information providers, such as IT-analyst companies.[135] The contextual factors described above

[135] There are numerous companies which could be potential candidates for such a survey. They all focus on IT analysis and advisory services and they all produce market reports on information technology. They are: Forrester Research, Emplifi, Telcordia, Metamor, TSC, CGI, CMG, Keane, Ciber, RSM, Sapient, Computer Science, Logica, Answer Think, Kennedy Information Group, Tower Group, Radicati Group, Meta Group, Ovum, Ber-

should be measured for each one of these analyst companies and then be correlated to the values of the customer satisfaction surveys.

Conclusion

The case studies have shown that the four information quality principles can be used as an analytic lens to examine the information value adding activities of companies engaged in knowledge-intensive processes. They have highlighted methods of dealing with crucial information quality problems, such as eliminating obsolete or outdated information, avoiding information overload, or keeping a consistent information format. They have also shown effective ways of fostering information quality, such as highlighting outstanding contributions or bringing information producers and consumers together. The case studies have shown what information quality criteria, such as accuracy or convenience, mean in specific contexts.

4.9 Beyond Corporate Case Studies: Information Quality in e-Government

In the previous sections, we have focused on the description and on insights on managing information quality in the profit sector. In this new section, we would like to focus on an emergent information quality practice: that within and among government agencies and their effort to supply citizens and other agencies with high quality information.

4.9.1 The Relevance of Information Quality for e-Government

e-Government ≠ IT

The provision of relevant, timely, consistent and reliable information to citizens is at the core of many e-government initiatives. In fact, the improvement of the quality and quantity of information provided to citizens is frequently cited as one of the main motives for e-government efforts (Grant and Chau 2005, 4-6). The basic belief behind such initiatives is often that information technology by itself can increase the quality of information provided to citizens (ibid, 7). While interactive online government services, such as e-government portals, public service search engines, online forms, or notifi-

lecon, Butler, Burton, Delphi Group, Hurwitz, Tech Republic, Sema Group, Aberdeen, Durlacher, IT Lab, and Computerwire.

cation services, can indeed increase the accessibility, convenience and timeliness of governmental information, they cannot ensure that the retrieved information is accurate, informative, current, or comprehensive. This may lead to frustrations and unfulfilled expectations on behalf of citizens wanting to complete a certain task or researching relevant public information. As the channels of e-government become more and more of a commodity that citizens take for granted, there is a need for a shift from a management focus on the delivery mode (electronic government) to the essence of the provided service, which is content. This new focus on information requires more than just deploying state-of-the-art information technology. It calls for clear information-related *roles* and responsibilities, for reliable review *processes* and for an information- and citizen-centric service *culture*. In this chapter we outline some of the reasons why the mere reliance on information technology is not enough to warrant high quality information in e-government. We do so with a clear focus on government-to-citizen relationships, although many of the discussed insights can be equally applied to government-to-government or government-to-business relations.

Following this rationale, it is surprising that e-government is an area to which the information quality perspective has not been applied yet, although it offers many fruitful approaches to improve e-government services.

The main premise of this chapter is that only an explicit and systematic effort of managing the quality of government provided information can lead to successful and sustainable e-government services. This systematic effort involves various professional groups (Eppler 2003) within government agencies that need to agree on common quality standards regarding information content, format, delivery process, and infrastructure. If these groups – ranging from managers, content experts, administrators to IT staff – do not cooperate and do not agree on an explicit and common standard for information quality, problems like the ones listed in the following table ensue.[136] The problems in the table below are typical effects of low information quality in e-government websites. They can be detected by employing online satisfaction surveys or conducting online focus groups with citizens from different age groups and with differing professional backgrounds. Although these problems may seem unrelated at first sight, they can all be traced back to a missing informa-

Problems of low IQ in e-Government

[136] For similar, authentic citizens' complaints regarding e-government sites, see for example Barnes and Vidgen 2003.

tion quality policy that assures that the right information is made available at the right time, in the right format, through the right communication channels, to the right people, at the right costs.

- Citizens discontinue to inform themselves via online government platforms in order to participate in democratic processes because the public information online is *irrelevant*, *outdated*, of *unstated origin* or *inconsistent*.
- Citizens cannot find relevant information because the interaction process with a government website is *complicated* and *unintuitive*.
- Citizens cannot comprehend how to proceed to complete a certain administrative task because of *unclear* information. They need to phone in and ask for additional instructions – this in return leads to additional costs in terms of agency staff time.
- Citizens loose valuable time in gathering necessary government-provided information because it is *dispersed, incomplete*, or not well *organized* (i.e., based on a citizen's life situation).
- Citizens do not entrust their personal information to virtual government applications because of unresolved *security* issues (information is not properly protected.)
- Citizens loose interest in public issues because of *lengthy* information that is not concise and does not provide an overview.
- Citizens or their representatives seek legal action against a public institution because influential, but *inaccurate* information that concerns them has been made accessible online *too early* and resulted in negative publicity or reputation impact.
- Citizens cannot participate actively in political processes, because the necessary information is not online on time, due to an *inefficient* publication process and too many bureaucratic barriers.
- The budgets of public ministries can no longer keep up with their growing websites, because *maintainability* issues have not been addressed early and the allocated funding is not sustainable to maintain the online information base.

Figure 35: Problems resulting from low quality information in government-to-citizen e-government

To address and prevent such problems[137], we propose first steps towards an information quality management framework for e-government applications. This chapter is organized as follows: First, we define information quality in the context of e-government. Then, we outline specific ways to manage and assure high-quality information in e-government websites. In the last section, we describe some of the constraints that make information quality improvements difficult to achieve in many e-government settings. We argue that it's useful to view information quality management (IQM) as an innovation for the public sector, as it requires significant changes in the habits and routines of public servants. As an innovation, IQM is subject the typical innovation diffusion barriers, elicited elegantly by communication-based approaches of studying innovation. These barriers, and possible ways of overcoming them, are discussed in the final part of this chapter.

4.9.2 Defining Information Quality for Government to Citizens Relations

In a recent study on government-to citizen e-government initiatives, West states that "there is no agreement on appropriate benchmarks or what constitutes an effective government Web site" (West 2004, 18). In order to develop such benchmarks, we can employ the rich definitions and metrics that exist on the notion of information quality. These definitions can be applied to the e-government context.

As discussed in previous chapters, information quality designates the characteristic of an information product (Wang et al. 1998, Eppler et al. 2005) or service, e.g., a set of information bundled for a specific purpose, to meet or exceed the

[137] Accenture's 2004 global e-government survey finds that there are now new efforts to integrate e-government sites vertically across national, state/regional, and local government levels. In this integration process, reliance on the quality of information between the various levels becomes crucial for the effectiveness of the overall system. Thus, large scale e-government integration may be another driver that raises the importance of the information quality issue in government-to-government contexts. In the current paper, as mentioned, we focus primarily on government-to-citizen applications, but it seems obvious that high quality information among government agencies is also one pre-requisite for information quality provided to citizens.

[138] See Barned and Ugen 2003 for this use of information quality in e-government.

requirements of its stakeholders. The stakeholders of an information product or service are its consumers, creators, custodians (or administrators), direct or indirect content providers, intermediaries, and regulators. High quality information is information that is *fit for use* and of *high value* to its consumers, as it is *free of errors* or other deficiencies. The notion of value in this context is a multi-dimensional one. Besides stressing different quality dimensions (such as content or format) or *attributes* (such as accuracy or timeliness), IQ definitions also highlight different information *stakeholders* (including their value expectations or specifications) and their different *uses* of information. An information quality definition for the e-government sector can combine these elements and specify them for the public service context. The result of this amalgamation is the following definition of information quality for e-government:

> Information provided by public agencies to citizens can be considered to be of high quality if the information and its medium meet or exceed citizens' expectations and regulators' specifications and if the information is of high value to citizens because it is fit for their various uses. Information quality can be further defined with attributes that relate to the time, format, content, and media dimension of information (such as timeliness, relevance, conciseness, or convenience).

From Definition to Management

In spite of the merit of such definitions (for example to facilitate the development of metrics for e-government effectiveness and benchmarking[138] or to articulate a quality mission statement), it is obvious that it is much easier to define information quality than to actually assure and manage it. Nonetheless, an explicit systematic definition of what a public institution considers to be high quality information can be a first important step towards more valuable online information. For that purpose, however, the typical IQ definitions are still too general. As we have seen earlier, information quality can be described more specifically with the help of information attributes or structured criteria lists that categorize information characteristics into several meaningful and manageable dimensions. Among the numerous existing information quality frameworks (see chapter 2.3) very few use categories that can be used directly for management purposes, i.e., for assigning responsibilities to specific professional groups. Our framework (presented in chapter 3) offers such attribute categories. They can directly be used to assign specific areas of responsibility for information quality factors in a government agency.

The IQ-framework Revisited

On the highest level of abstraction, the framework distinguishes between content and media quality, i.e., the message and its channel, or information government (defined by content) versus e-government (defined by the channel). The main logic behind this framework is a pragmatic one: the categories help to assign responsibilities for different prerequisites of information quality within a public agency or institution. This is illustrated by the following figure that shows the four levels, labeling them according to the professional group that is responsible for each set of criteria. The main responsibility for providing the right (relevant) information is with the line managers or department heads. The responsibility to see that this content is right (sound) lies with an agency's content providers themselves, usually subject matter experts. The responsibility for a convenient interaction process lies with the information technology managers (who should not interfere with the content-related matters) and the usability engineers (Nielsen 1993, 2000). The responsibility for a reliable and speedy infrastructure, finally, lies with the IT hard- and software specialists (either inside a public administration or with an outside partner). The main plan how each set of criteria is consistently met is referred to as a policy. Each policy is briefly described below.

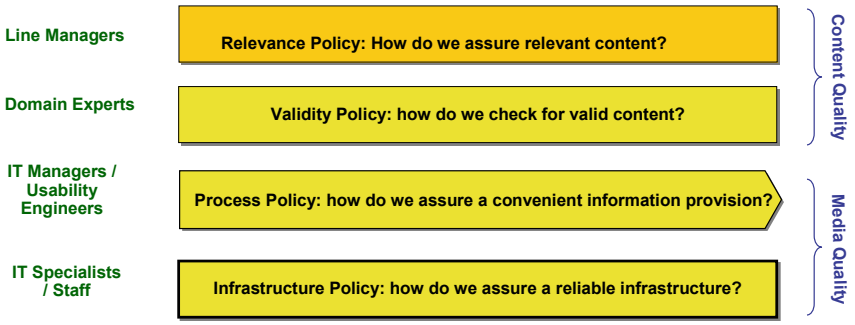

Figure 36: Roles and policies derived from the IQ framework

In order to implement an information quality function in a e-government context based on the above framework, a public agency needs to institute four kinds of IQM policies:

A **relevance policy** based on a profound understanding of the real information needs of citizens. The goal of this policy is to assure that the information that is provided is relevant and comprehensive enough, accurate enough, clear enough, and generally applicable for the targeted citizens.

A **validity policy** that outlines how information is reviewed internally in order to avoid information deficiencies, such as documents that are too long, internally inconsistent, incorrect, or outdated.

A **process policy** that describes how the interaction process remains usable for various types of citizens. Usable in this context means convenient to use, with timely information delivery that can be adapted to one's needs and where the sources of information are visible.

An **infrastructure policy** that describes the necessary preventive measures to assure that the information hard- and software remain reliable. Reliability in this context refers to the requirements of the citizens (they expect an easily accessible infrastructure that is safe and fast), but also to the constraints of the public agency (which must assure that its level of spending for the infrastructure is maintainable in order to offer the services in a sustainable manner).

Table 30 provides a sample checklist with some of the key questions that should be answered by each of the four policy documents in a public agency.

1. Relevance Policy[139]

- What are the main expectations of our citizens with regard to content?
- Which are (derived from the expectations) our main content areas?
- How do we monitor changes in the relevance system of the citizens?

2. Validity Policy[140]

- How and by whom is influential information double-checked before publication?
- Is there an appeal process that citizens can employ to rectify wrong information?
- Does published information have a perish date or what other mechanisms are there to insure regular updates of information?

[139] Two current studies that illustrate the urgent need for such a policy are Dawes et al. 2003. These authors illustrate that governments are often not sensitive to the information needs and relevancy systems of their citizens.

[140] These suggestions are based on the guidelines issued by the US office of Management and Budget with regard to the implementation of the federal data quality act which requires each federal agency to install an information quality process for its influential publicly released information. See for example: http://www.whitehouse.gov/omb/fedreg/final_information_quality _guidelines.html (last accessed July 5th 2005).

3. Process Policy
• Have the navigation trails to find information been tested with user groups and with different user scenarios?
• Is the navigation behavior of the users of the e-government analyzed? Are log-off points registered and navigation trails improved accordingly?
• How can citizens suggest improvements to the interaction process?
4. Infrastructure Policy
• Is there a backup system for the infrastructure?
• Is there a strategy on how to scale the system's capacity in case the information demand by citizens increases?
• Is there a rights management and a security software installed?

Table 30: Key questions addressed by the four information quality policies

How these policies and responsibilities are implemented is the object of the next section.

4.9.3 Managing Information Quality in e-Government through Roles, Processes, Tools, and Training

The four levels that were previously introduced can now serve not only to distinguish among different *roles* for information quality, but also to distinguish key *processes*, *tools* and *training* areas that are needed to make high-quality information a reality in e-government websites.

In terms of *roles*, we have already distinguished among staff that is responsible for content selection (content directors), for content validity our soundness (reviewers or content managers), for the interaction processes (usability engineers, webmasters, etc.) and for reliable base infrastructures (IT specialists, platform managers).

With regard to key quality *processes*, we can – again using the four categories – distinguish among feedback processes that validate whether the provided information is indeed relevant to the citizens, review processes that help to validate information before it is published, interaction processes that make the information more easily accessible to citizens, and infrastructure maintenance processes that guarantee the smooth functioning of the underlying hard- and software. Ideally, each such process is assigned to a process owner who

oversees its functioning.[141]

As far as information quality management *tools* are concerned that can be used to improve and assure information quality in e-government applications, our prior distinction leads to the following types of instruments: For the relevance dimension, we need tools that help us to survey and monitor the citizens use of the e-government applications in order to see what kind of content is most frequently accessed and which areas of an e-government site is barely used. There is a great variety of such tools available on the market.[142] Many of them can be easily adjusted to the e-government context. For the validity dimension, there are so-called workflow tools that help to organize a review-based publication process that includes quality checks and update mechanisms. With regard to process quality, monitoring tools similar to those discussed for relevance purposes can be employed. They can be used to analyze the log files of citizens' visits to an e-government website in order to detect deficits in the current interaction process. The last group of (mostly technical) tools consists of system monitoring and maintenance tools that help to prevent security issues or system fallout. Examples of such tools are security software (firewall, anti-virus), code parsers (which detect source code compliance with accessibility standards) or site performance improvement software.

A last vital, but often overlooked element of implementing information quality management in an e-government context is the *training* of public administrators. Training with regard to information quality ranges from generally educating public officers about the most pressing information needs of their citizens, to the technical training in running websites, or training information managers about usability issues. Whereas the training related to the relevance and process dimension focuses on the expectations (in terms of content) and use (in terms of interaction) of the citizens, validity training consists of instructing public officers in how to operate review or control processes for information. Infrastructure training, finally, prepares the technical staff for security con-

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[141] All of these processes rely, of course, on the smooth functioning of the underlying administrative processes. Becker et al. (2004) show in their recent study of processes in e-Government that this is still a major challenge.

[142] Commercially available tools that provide such functionalities are for example www.opinionpoll.com, www.lets-ask.com, www.infopoll.com, www.websurveyor. com, www.webtrends. com, www.analog.cx, www.nedstat.com.

cerns or for fall-out scenarios.

If these areas are considered beyond just focusing on the information technology, then information quality improvements stand on a much broader base. Public policy makers and public officers, who strive to improve the quality of the information provided to citizens, still face, however, many barriers. These barriers are analyzed in the next section with the help of innovation diffusion theory.

4.9.4 Constraints and Barriers for Information Quality Management in G2C Relations

So far we have focused on the factors that contribute to information quality and foster information-quality oriented behavior. For a realistic assessment of the management of information quality in e-government, however, we should not neglect the many restrictions that make information quality improvements difficult, and sometimes even impossible in the public sector. In order to systemize and categorize such possible potholes in the road to information quality, we rely on prior findings from innovation diffusion theory (Rogers 1995)[143]. In order to qualify as an innovation, a novel practice must meet certain characteristics (ibid, 15); first and foremost of course that it offers advantages vis-à-vis older, established practices. These factors influence the rate of adoption of a new practice either positively or negatively. In Rogers's seminal study[144] on innovation these five factors are: the *complexity* of the innovation (i.e., how difficult it is to master it), the *compatibility* with prior practices (i.e., the

[143] For a similar application of diffusion theory to e-government (from the citizens' adoption point of view) see Carter & Belanger 2004.

[144] A communication approach, such as Rogers', towards innovation seems a fruitful perspective to understand possible limitations to information-quality induced changes in e-government for two main reasons: First, conceiving of information quality improvements as an innovation diffusion process helps *to be prepared* for possible negative reactions that occur when current processes or habits need to be modified (it is thus a particularly realistic approach that is sensitive to people's resistance to change). Second, the communication approach to innovation diffusion is, as Rogers has shown (Rogers 1995, 78), open to analyzing *any type* of innovation with the help of proven conceptual tools. In that respect, Roger himself has used many *public sector initiatives* as case studies for innovation diffusion.

degree of change necessary to adopt it), the *observability* of the new behavior (i.e., how easy it is to recognize it), the *trialability* of the new behavior (i.e., whether it is possible to test the innovation first), and the relative *advantage* of the innovation for the people affected by it (i.e., the benefits brought by the innovation). These innovation characteristics are examined for information quality management in the table below.

Innovation characteristics…	**…and their manifestation in information quality management (IQM)**
1. *Relative advantage*: the new practice is perceived as better than current practices.	IQM dramatically reduces information scrap and re-work (English, 1999) and increases citizens' satisfaction with e-government services.
2. *Compatibility*: the new practice is consistent with existing values, past experiences, and needs.	IQM requires the acquisition of new skills, the design of new processes, the purchase of new tools, and the definition of new roles and may thus often be inconsistent with current habits.
3. *Complexity*: the difficulty of applying the new practice	The roles, processes, and tools of IQM are indeed complex, as they consist of numerous, interrelated elements, but they can be mastered trough differentiated, focused responsibilities (i.e., splitting content and media quality tasks) and through adequate training activities.
4. *Trialability*: the possibility of experimenting with the new practice on a limited basis.	IQM can be gradually introduced, for example by first focusing on particularly influential information.
5. Observability: the results of a new pratice are visible to others.	Through citizen surveys and focus groups the changes in information consumer satisfaction can be measured.

Table 31: IQM and its innovation characteristics

IQ as Innovation

The above table illustrates that systematic information quality management qualifies as an innovation. Nevertheless, the table also highlights the problematic compatibility dimension of IQM, as it requires many changes in order to institutionalize information quality management. As public administrations are typically geared towards continuity and consistency with previous practices and rules (as their dominant logic), we must address this issue in more detail (see Tornatzky and Klein 1982). In the e-government practices that we have

observed (see also the contribution by Lorenzo Cantoni for this issue), there are often compatibility problems with regard to five areas:[145]

1. Existing **rules** or regulations: Establishing new processes and roles requires at times new regulations or modifications to existing ones.
2. Existing **skills**, expectations or routines: Implementing the aforementioned policies requires new skills (as indicated in the section on training) and sometimes new attitudes from public workers
3. Existing tools and **infrastructures**: Some of the existing infrastructure might not be able to support information quality management and thus has to be replaced.
4. Existing **resources**, such as staff, budget and available time: Providing high-quality information is just one of many goals of public agencies, thus this objective might be incompatible or at least in conflict with other objectives that require time, budget, and effort.
5. Existing **reference points** – such as official benchmarks or values, established institutional networks, or predefined standards of higher level public agencies – may lead to mental limitations or biases in the perceptions and attitudes of public servants.

Compatibility Elements

The fifth group of compatibility constraints includes elements that are highlighted in Rogers' theory of innovation diffusion, namely previous practices (for example of citizens or government officials), or norms of the social system (for example regarding security issues) (Rogers 1995, 163). As Rogers states in one of his insightful case studies:

"An important factor regarding the adoption rate of an innovation is its compatibility with the *values, beliefs, and past experiences* of individuals in the social system" (ibid, 4).

Following this logic, any type of initiative that aims at improving the quality of information provided to citizens must take into account *how to change current reference points* in a way that is not in extensive conflict with the norms of the social system. In the following diagram we have summarized these compatibility constraints visually. The main implication for e-government managers is thus to reflect whether their information quality policy is actually *fundable* (in terms of

[145] See also OECD 2003, 13: "Legislative and *regulatory* barriers, *financial* barriers, *technological* barriers and the digital divide, among others, can impede the uptake of e-government".

the budget allocated to assuring high quality information), whether it is *allowable* (in terms of the existing regulation), whether it is *doable* and *conceivable* with the existing skill base and infrastructure and how it will influence the relationship with existing *reference points*. Pro-actively changing these reference points, for example by comparing an agency's information quality level with that of a comparable agency in another country, is one effective way of confronting these limitations and motivating public servants for information quality improvements that lead to truly *competitive* e-government services.

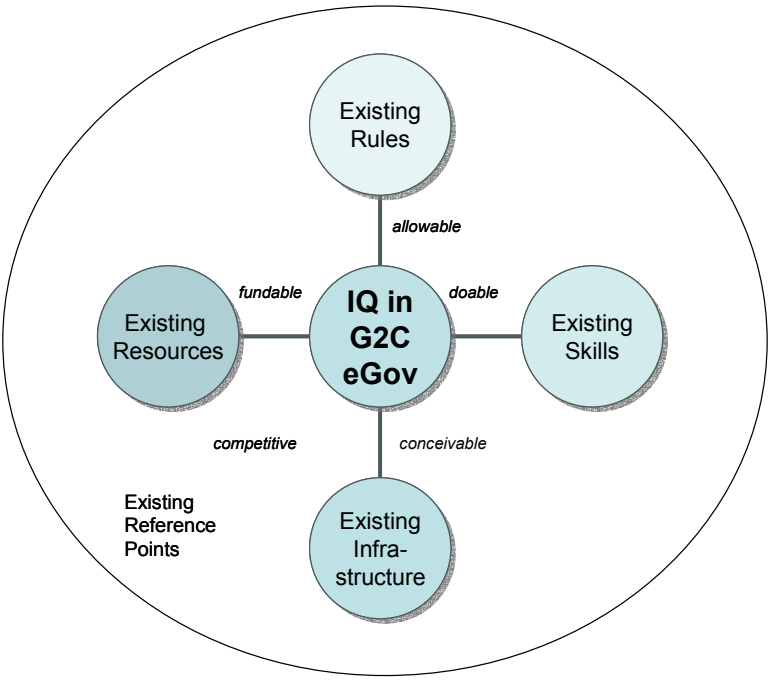

Figure 37: Compatibility constraints for information quality improvements in e-government initiatives

4.9.5 An e-Government Study: Italy's Ministry for Public Administration[146]

This case study illustrates a number of instruments that can be used to analyze and improve information quality in eGovernment websites. It presents a pilot experience of the *Italian Ministry for Public Administration* in collaboration with other parties, aimed at building a *culture* of user-centred website design and management among public administration officers. An operationalization of the information quality model has been developed and tested in two different administration bodies, and then made available to all the others through the diffusion of a CD-ROM, a website and dedicated training programs.The case shows how design, evaluation and improvement of public administration websites can fit into an information quality model, and how its operationalization can lead to a sustainable virtuous circle of continuous improvement.

The Italian law requires that public administrations of a certain kind or size run a Public Relation Office (URP: Ufficio per le Relazioni con il Pubblico). URPs are ruled by a national law: n. 150 (7 June 2000). The goal of information governance is clearly defined in its first article, stating its objectives and application scope. Its goals are: to illustrate and to foster the knowledge of norms, to illustrate the activities of institutions, and their functioning, to foster access to public services, to promote a wider and deeper knowledge about issues of relevant public and social interest, to help internal simplifying processes of procedures, and to help the modernisation of apparatuses, to promote the image of administrations.

While in the 2000 law the use of digital means was listed as a possibility among many others (art. 2, 2), Italy has further progressed in the way toward information governance through e-government means; in particular, it has adopted a law to promote the access of disabled persons to IT tools (9 January 2004, n. 4) and a Code of the Digital Administration ("decreto legislativo", 7 March 2005, n. 82) stating that all the messages foreseen by the 150 law have to be made available also trough websites (art. 54, 1, e). At the beginning it declares that: "The State, Regions and local autonomies ensure information availability, management, access, transmission, preservation and usability in digital form, organise themselves and operate toward this end using information

[146] This case experience has been provided by Lorenzo Cantoni.

and communication technologies in the most apt ways" (art. 2, 1).

In recent years, many URPs have published websites in order to improve information accessibility, and to offer various interactive services. While both citizens and operators wanted to enter the web, in a context where the Internet was conceived as being a must, the lack of previous experience and knowledge of the field, together with the will to go immediately online, without careful planning and testing, were the main reasons for low quality online services. Moreover, limited budgets did not allow for a careful quality analysis, aimed to maintain, evaluate and refine the services, hence yielding problems in information currency, accuracy, comprehensiveness (coverage), and others.

After the first hype, the URPs have been considering that simply having a running website is not enough. They have become aware that citizens require high-quality online services that provide high-quality information; moreover, they have started to learn from each others' strengths and weaknesses.

In this context, the Usability CD project was born, promoted by the Italian Ministry for Public Administration (www.funzionepubblica.it), the URP consortium (www.urp.it), the City of Modena (www.comune.mo.it) and the Regione Campania (www.regione.campania.it). The TEC-Lab, Technology Enhanced Communication Lab of the University of Lugano (www.tec-lab.ch) assisted the project in designing, running and evaluating the research activities, as well as in producing educational materials to help government officials improve their information quality. The output of the project was the production of a CD-ROM to be distributed to Italian URPs. The CD-ROM contains a tutorial on website usability issues, a detailed description of two cases of usability analysis and improvement, as well as many additional related materials. Due to the many requests, the content of the CD-ROM has been made available also through a website (http://cpusabile.officinedigitali.it), also a dedicated training program has been designed in collaboration with the CSI, Consortium for IT Services, (Turin) and successfully tested with about fourty Italian public administration officers (12-13 September 2005).

In order to assess the quality of URPs' websites, two cases were chosen: a website run by the city of Modena, called Unox1 ('one by one') and that of the Campania region.

It should be emphasized that "usability", in this project, has to be understood in the context of information quality,

refering also to content usability/usefulness; in fact, content usability is becoming an important and challenging usability issue, as stated by Jacob Nielsen (in the preface to Cantoni et al. 2003): "Unfortunately, it is more difficult to study the usability of communication than the usability of navigation. It is pretty clear-cut whether the user can find something or not. *It is more difficult to test the quality of information.* But it can be done. It's an open research question how to improve the methods for evaluating content to make them as efficient and easy to apply as the mainstream usability methods we recommend for testing the usability of websites, intranets, software, and most other user interface designs".

Analysis Results

Available data about websites' actual use (usages) were analysed mainly through log files (answering questions like: how many users are there? which areas/services do they access most? What time do they enter the website? How much time do they stay on it? etc.), mailing lists sub-scriptions/un-subscriptions and received e-mails, all these data helped to better understand what kind of information users were interested in (relevance dimension). In one case, the results of a research conducted through telephone interviews were used, to assess the level of satisfaction of citizens with respect to public administration communication activities. Front office personnel was interviewed, and focus groups were run, in order to further focus on what is relevant for citizens in their interactions with those public administration online services.

Thanks to these analyses, user profiles have been identified, recording age, profession, Internet access type, goals and expectations of different kinds of users. A distintion had to be made between novice and expert users of the concerned websites, in fact, they have quite different approaches and fruition patterns: information that is needed the first time to understand the service offered by an eGovernment website and its "coverage", could become useless and even annoying for frequent users.

Once the user profiles of the eGovernment websites were defined (13 different profiles for one website, 16 for the other one), user scenarios were developed with the help of all concerned stakeholders. User scenarios are task-oriented vivid descriptions of envisioned use of the eGovernment application, expressed in narrative form, as stories of typical users using the site, with their motivations, goals and expectancies. Inspections have been conducted, in order to assess if user scenarios could be effectively conducted, as well as to measure how easy or difficult it was to conduct them

(efficiency); a list of recommendations has been compiled for each of the concerned websites, which have been eventually modified and refined.

Recommendations for improving the websites have been divided into the areas of *content quality* and *media quality*.

Content quality recommendations for improvement ranged from adding missed content, to rephrasing it, to update it, to make it more suitable for the intended target public, etc. Media quality recommendations covered navigation, layout and graphic design. Closely connected to both areas, also the work-flow / processes needed in order to accomplish certain procedures as well as the labelling system (how active parts / links are labelled, how pages / sections are titled) were tested, and recommendations given to make them more useful and sound.

An analysis conducted applying Nielsen's heuristics (Nielsen 2000) and user testing activities complemented the profiles and scenarios strategy.

These two cases have been documented and presented, together with a tutorial and otrher related material, in a CD-ROM presented at the ComPA and ForumPA, the most important Italian events in the field of public administration communication and management. The CD-ROM has been distributed to Italian URPs and made available on a dedicated website, inviting its users to follow the same steps and to enter a continuous information quality improvement process. To complement the CD-ROM self-learning model, also a two-days seminar has been designed and tested, aimed to increase the awareness of the information quality issue among URPs' personnel, to equip them with cognitive and operative tools, as well as to give them hands-on experience in the field, and the opportunity of meeting colleagues with similar interests and problems.

Lessons Learned

Among the many lessons learned during the project, the following ones are worth to be mentioned:

- A continuous improving process needs a strong commitment by the involved public administration offices, hence the importance of having evangelists in URPs, and to offer them a common forum where to get in contact; for this goal, the training experience has proved to be very successful.
- URPs have a quite frequent personnel turnover: hence clear and simple steps are to be proposed, which can easily be followed by people who were not involved in the process from its very beginning.

- A *pass or fail* approach does not seem to be viable; instead, a virtuous circle of continuous information quality improvement seems to be more apt, effective and efficient.
- Working on similar cases greatly helps people to better understand procedures, as well as to feel more at ease and to become committed.
- Considering the law not as a constraint, limiting possibilities, but as a departure point, opening opportunities, greatly helps operators in devising and running an information quality improvement project.
- The IQ model for eGovernment presented in this book contributes to understand this case; let us see how in the following points.

Regarding the restrictions to information quality, they apply in this case, as the following list illustrates:

- *Regulation, Laws, Codes*: URPs are ruled by a national law, and regulated according to local regulations; they require that URPs improve public administration transparency and accessibility.
- *Skills, Expectations, Routines*: on the one hand, poor websites' quality depended mainly on the lacking experience of the operators, hence the opportunity to provide a simple framework, together with actual cases to all URPs by the national Ministry; on the other hand, citizens ask for more and higher quality online services.
- *Tools, Bandwidth, Infrastructure*: the availability of technologies by the administration and by citizens has always been considered in evaluation activities, in order not to produce a digital divide. This also meant not always suggesting the best technology available on the market, if at an early stage of adoption.
- *Budget, Time, Staff*: limits in all of them suggested to reduce expensive analyses (e.g.: user testing), while adopting a sustainable approach, which could be easily iterated and implemented in a continuing quality improvement process.
- *Benchmarks, Initiatives, Networks*: the Italian government has taken the initiative, but public administrations of different levels are involved; there has been a continuous attention to what other URPs have been doing.

Regarding information quality itself, the previously presented conceptual framework highly clarifies this experience, both from the *content quality* and the *media quality* viewpoints:

- *Relevant information*: citizens require *applicable* information, *accurate* (as needed by a public administration), *clear*, so that every citizen can understand it, and *comprehensive*, covering all the range of G2C information flow.
- *Sound information*: web communication requires that information is particularly *concise*, different sources have to provide *consistent* information, *correct* and *current*.
- *Optimized Process*: *interactivity* is the main keyword, while *convenience*, *timeliness* and *traceability* are also concerned, again, in many cases also due to legal requirements (e.g.: in order to identify the information provider and its authority).
- *Reliable infrastructure*: *accessibility* is required to avoid or reduce digital divide, while *security*, *maintainability* and *fastness* are needed both from the point of view of the public administration operators, and from the point of view of citizens/users.

Conclusion

This case study has illustrated that the distinctions introduced in this book help to organize information quality improvements systematically. It also illustrates that improvements in information quality cannot just rely on technological or process innovations, but require dedicated training and education.

4.9.6 Conclusion: Extending IQ to e-Government

This sub-chapter has been based on the premise that the rich field of information quality research and practice can be productively applied to the area of e-government, or rather information government. Especially in government-to-citizen relationships, the quality of the provided information is a key success factor for e-government initiatives. This is the reason why information quality approaches can be and should be applied to this important area. We have argued that a systematic management of information quality must address at least four levels: content relevance, content validity or soundness, the interaction process, and the underlying infrastructure. Clear responsibilities must be assigned to each of these areas within an agency and management processes should be designed and deployed accordingly. These processes can be supported by a variety of tools and facilitated by targeted training. In this way, information quality improvements can be iteratively achieved, for example by first focusing only on highly influential or sensitive information. We have also highlighted that public leaders need to take into account the

often considerable barriers to information quality improvements. The factors highlighted by innovation theory, especially the compatibility with past practices, can be useful indicators in that endeavor. To overcome these barriers, government officials must create incentives and competitive reference points to motivate and mobilize public servants to improve their information quality online. Beyond that, they must provide adequate funding, tools and training so that this motivation can ultimately lead to an information government that does not just focus on the electronic channels through which it provides information, but on the actual information itself and its value to citizens.