Library Science, Knowledge Management, Competitive Intelligence: Archive Theory– The Common Link

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SUMMARY. The gathering, organization, and archiving of critical business intelligence is a complex task. Competitive Intelligence systems gather information for use in the decision making process. Knowledge Management Systems are used to organize this knowledge. Library Science provides structure for the storage of published documents, in both printed and electronic formats. This paper proposes that the common link among the three disciplines is Archive Theory, which is the process by which an archive of information is built. This process provides a framework for analysis of what documents or information to retain and what format to use when retaining them. The paper details the linkage and concludes with an example of a working system that ties all parts together.

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The gathering, organization, and archiving of critical business intelligence is a complex task that no single system is currently capable of managing. Competitive Intelligence, Knowledge Management, and Library Science may seem like very different disciplines but they have a commonality that ties them together. That commonality is data or information. Competitive Intelligence gathers information to assist in the decision making process for many organizations. Knowledge Management Systems are used to organize the knowledge generated by CI programs and other sources both internal and external to the organization. Library Science provides structure for the storage of published documents, in both printed and electronic formats. The common link among the three disciplines is Archive Theory, which is the process by which an archive of information is built. This process provides a framework for analysis of what documents or information to retain and what format to use when retaining them.

Breeding (2000) identified several problems that users of Competitive Intelligence have with the information that they receive from CI professionals. These problems include Shallowness, Credibility, Timeliness, Focus, Providers, Quantity, and Sharing of Information. These problems are often the result of the way in which the Competitive Intelligence process is carried out. Often CI providers are consulted late in the decision making process and the limited amount of time that remains for information gathering leads to shallow and poorly focused information, and that information often is in a quantity that overwhelms the reader. Lack of lead-time also limits the sources that can be accessed, thus calling the credibility of the sources of information into question. However, if decision-makers wait for better information and analysis, it may possibly come too late to be useful in the decision process. Other sources of problems include lack of clear objectives, numerous users, massive quantities of information available, organizational barriers, lack of feedback and low budgets. Each of these problems can degrade the quality of information that CI professionals can provide to identified users, but they can be addressed by proper use of good Knowledge Management and Library Science techniques.

Competitive Intelligence is the process by which organizations gather information and analyze it to solve a wide variety of problems or satisfy requests for information. These range from competitive information

about competitors or customers, to information on mergers and acquisitions or recruiting. The types of information needed to answer these requests can range from financial information to demographics to biographies to economic indicators to news articles. Some types of information are easily gathered, while others take larger amounts of time and money to obtain. Once the information is secured, it must be analyzed and proper reports must be generated and disseminated to the appropriate individuals within the organization.

This is why the use of Library Science techniques and Knowledge Management techniques is so vital to a good CI program. Library Science's Archive Theory provides a mechanism that will help organize the information that is gathered, and Knowledge Management provides the means to store and disseminate the information to the proper individuals within the organization.

ARCHIVE THEORY

In archive theory, a record center is an intermediary point between the beginning and the ending for a piece of information that is storable in a form that is reusable (Angel, 1987). A record (i.e., any printed, electronic or other recorded form of information) has a three to five step life cycle. A life cycle of records is defined as "the concept that records pass through a continuum of identifiable phases from the point of their creation, through their active maintenance and use, to their final disposition by destruction" (Stewart, 1987; p. 341). The first, second, and third steps are required, but because the third and fourth steps may not be utilized the life cycle may be as brief as three steps or as long as five steps. Figure 1 illustrates this concept.

The first step is the creation and publication of the record by an organization for a specific purpose. For example, the company publishes an annual report each year to inform stockholders about the status of the company. The second step occurs when the intended targets of the record (stockholders) receive the report. The third step, if used, is the utilization and retention by the receiver of the record (the annual report) in a

FIGURE 1

file or other easily accessible location for later use. The fourth step, if used, is the relocation of the record to a less accessible location since the record has some long-term value. The last step is the final disposal of the record when it is no longer deemed useful.

A record may make this passage very quickly or very slowly depending on the significance associated with the record by the receiver of the record. An illustration would be a stockholder who receives an annual report and immediately tosses it in the waste paper basket. Here, steps one, two and five have taken place. Alternatively, another stockholder may examine the information in the annual report and decide to retain the information in a file. The record could remain in the file for days, or even years, before the stockholder either uses it or disposes of it. The stockholder may move the record from a file of current information to another location because although it has no immediate significance, it should still be retained. The stockholder will, at some point, either refer to the record to help in assessing company performance or dispose of it since its information has become outdated or unnecessary. This scenario involves all five steps. If the stockholder were a member of a competing company's CI program, the annual report could be retained and used to uncover information about the company that could be strategically useful.

Record Storage and Disposition

The building of a collection of records is not a precise activity. A collection is "an artificial accumulation of materials devoted to a single theme, person, event, or type of document acquired from a variety of sources" (Stewart 1987; p. 340). Examples include such themes as products, pricing, marketing communication, distribution, human resources, or manufacturing capability information. A collection is subject to many limitations such as the availability of records, physical storage space, and usefulness of the information contained in the records. Records are kept either for their evidential value or for their informational value. This distinction is not meant to imply that the two forms of records are mutually exclusive. A record may in fact have both evidential and informational value. The distinction is made in an attempt to illustrate that records are kept for more than one reason.

A record with evidential value is a record that can be used to verify that something existed or happened. For example, companies produce and keep books and records, manuals, or other items to substantiate at some future date that something existed or happened in a particular

manner. Companies keep records by publishing annual reports, 10k's, manufacturing records, warranty information, and return information as well as many other records.

Records are kept because of their informational value about people, objects, problems, conditions or the like. For example, a corporation may keep records about particular products that they have manufactured, and how well or how poorly consumers received those products. A company may keep information about competitors' goods or services that directly compete with its own offerings. This information is then available should it be needed to evaluate product decisions in the future.

Records that are kept for their informational value are judged on three bases: *uniqueness*, *form*, and *importance*. First, uniqueness refers to either the uniqueness of information that is contained in the record, or the uniqueness of the format of the record. Uniqueness of information does not mean that the information is not available in any other record, but rather that the information in the record is more complete and more usable than the same information in other records. Since several records may be available with similar information, the record keeper must decide if each new record possesses unique information that will justify keeping that record. The uniqueness of the format also may cause someone to keep a record. If the person finds that the format of the record has an interesting feature that offers a unique benefit, then the record is more likely to be retained. As the decision to keep a record is made, old records must be judged against the new ones as to which to keep.

Second, the form of the record is considered when deciding whether or not to keep a record. The form of the record relates both to the information in the record and the physical format of the record. As for the form of the information in the record, this pertains mainly to the "concentration" of the information in the record. The information may be considered extensive, intensive, or diversified. A record that contains extensive information is one that has only a few facts about many related persons, objects, or phenomena. One that is intensive has many facts about a few related persons, objects, or phenomena. And, one that is diversified has many facts about diverse persons, objects, or phenomena.

The physical format of the record is important in that a person may not wish to keep very large or very small items. For example, a CI investigator may not keep small direct mail fliers but will keep larger catalogs of competitive products. Also, as new electronic and video formats become more popular, a record keeper may not be able to use a particular electronic format even though the record contains important and

unique information that would otherwise be kept. For example, if information is disseminated on a DVD and a company is not equipped to use DVDs, they may not keep this information even if it is useful.

Third, the importance of the information in the record must be considered. This is a subjective decision since the importance of a record is relative. One person may only want to build a collection of records that pertain to the automobile industry while another person's collection concentrates on pharmaceutical information. Thus, only records that pertain to the person's area of interest will be kept. Although the decision regarding importance is listed as the last of the three bases that are considered in building a public record archive, the record keeper may evaluate importance first. This is because the collection of information may be restricted to limited subjects, which is the case for CI collections.

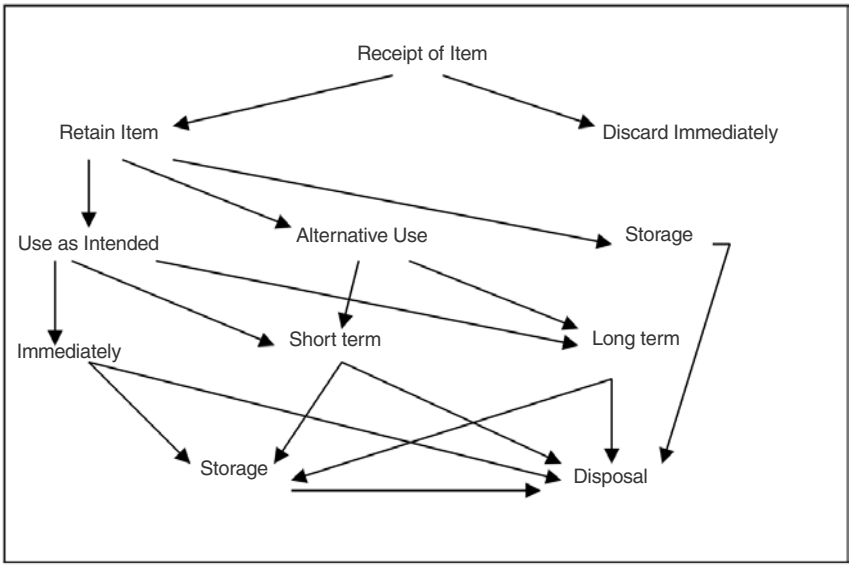
APPLICATION OF ARCHIVE THEORY TO COMPETITIVE INTELLIGENCE

An illustration of the decision process dealing with keeping or disposing of a record is shown in Figure 2. The process begins when a record is received. A decision is made at that time as to the immediate merit (*Importance*) of the record. If there is immediate merit, the CI investigator may elect to retain the record for immediate use. If no immediate merit is placed on the record, it may be disposed of or kept for future reference. For records that the CI investigator feels may have long-term merit, a decision is made whether or not to keep the record. This process involves an assessment of the *uniqueness*, *form*, and *importance* of the record. A negative decision on any of these points will cause the investigator to dispose of the record. If positive decisions are made, the record will be kept. The assessments of *uniqueness*, *form*, and *importance* are not made in a given order, because the decision as to which comes first will vary by situation.

Form and Uniqueness

The concepts of form and uniqueness can be approached from the informational aspects of the document or from the physical aspects. The informational aspects can be examined from the understanding of source effects while the physical aspects can be examined from the viewpoint of source and vehicle effects.

FIGURE 2



Source Effects

The source of a message has been shown to exert a strong influence on the receiver of the message. Early studies in advertising research supported the premise that the persuasiveness of the message increases as the credibility of the source increases (Kelman and Hovland 1953; Patzer 1983; Wynn 1987). Bettinghaus (1973) suggests that the consumer's perceptions of the credibility of the source are more important than the characteristics of the source. Also, Shimp and DeLozier (1986) suggest that both the company and the spokesperson are important in the credibility of the source.

Source credibility is not a simple trait to identify. Current conceptual thought suggests credibility as a set of perceptions that receivers of the message hold toward a source. Understanding and defining these perceptual sets is often difficult because of the many different operationalizations existing in the literature. Ohanian (1990), in a comprehensive review of the source credibility literature, developed fifteen common indicators underlying the construct of source credibility. These indicators focused on attractiveness, trustworthiness and expertise. Research

by McGinnies and Ward (1980) and Miller and Baseheart (1969) indicate trustworthiness of the source to be an important dimension in persuasion and attitude change. Source credibility literature indicates that a message recipient's initial opinion toward a source can affect credibility of the source (McGinnies 1973; McGinnies and Ward 1980).

An example of source credibility would be an investigator's reaction to a story from different sources. A story related to an investigator by a low-level employee of a company would probably be ignored because of a lack of credibility associated with the person's position. The same basic story by a mid-level employee might be perceived with a greater level of credibility but perhaps not enough to warrant immediate action. However, the same story by the CEO would warrant immediate action.

Vehicle Effects

In addition to source effects, vehicle effects may also operate to influence perceptions of information. MacInnis and Jaworski (1989) and Leigh (1991) suggest that the ability to process information will be moderated by the mode of information delivery. The major issue associated with vehicle effects is that attributed to different vehicles used. Each different vehicle has relatively different impacts on affective and behavioral response, according to Buchholz and Smith (1991). The major premise is that the message environment contributed by the vehicle can have a substantial effect on the resulting communication (Aaker and Myers 1987). While very little empirical research has been conducted exploring these vehicle attributes, conceptual thought is that different vehicles demonstrate different levels of prestige-related attributes. In addition, different vehicles uniquely provide different mood induced qualities (Assmus 1978; Axelrod 1963). Therefore, vehicles providing such attributes may also provide more effective exposure than other vehicles (Crane 1964).

An example of vehicle credibility would be an investigator's reaction to a story in a tabloid magazine, a news magazine and a trade journal. The story in the tabloid would probably be ignored because of a lack of credibility associated with the magazine. A similar story in a news magazine would be perceived with a greater level of credibility, but perhaps not enough to warrant immediate action. However, the same story in a trade magazine might prompt immediate action.

Importance

Involvement is a well-recognized construct in marketing. It relates how involved a person is with the object that is being studied. Generally, the more involved the person is with an object, the more important that object is to the person. Therefore, the concept of *Importance* can be explained by this well-recognized construct.

While there is no research showing the significance of this construct in Competitive Intelligence, there is research that can be drawn on from other areas in marketing. Aaker and Myers (1987) state that a message must pass through a "hierarchy-of-effects" (i.e., create awareness, develop interest, impact desire, and induce action) to achieve the desired results, and the level of involvement a person has with a product/service impacts their keep/dispose decision. Krugman (1965) termed involvement as a continuum describing the frequency with which a person makes a conscious connection between his/her life and a stimulus. Celsi and Olson (1988) defined involvement as perceived personal relevance, and felt involvement was a subjective experience or feeling of personal relevance. They found that persons with high felt involvement paid more attention to and had higher comprehension of product/service information. Attitudes are more predictable when involvement with the product/service is high (Petty, Cacioppo, and Schumann 1983).

Building on this information, the more connections or involvement that a person has with a product/service, the more attention that he/she will pay to the information that is uncovered during a competitive intelligence search. The more attention that an investigator pays to the informational piece, the more likely a conscious decision will be made regarding the keep/dispose decision.

Also, there is a connection between involvement and perceived risk. Several researchers have found that risk influences involvement (Chaffee and McLeod 1973; Laurent and Kapferer 1985; Rothschild 1979). Risk is a function of both the person's feelings of uncertainty related to a behavior and the person's perceived importance of avoiding negative behavior consequences (Rothschild 1979). For example, an investigator may not be certain that a particular report is important to the current project, but will keep it just to be sure that they are not criticized for discarding it. This leads to the problem of retaining too much information, as noted earlier.

KNOWLEDGE MANAGEMENT

As noted previously, Knowledge Management Systems are used to organize the knowledge generated by CI systems. Knowledge management includes "[c]ombining indexing, searching, and push technology to help companies organize data stored in multiple sources and deliver only relevant information to users" (Hibbard 1997). Knowledge management "caters to the critical issues of organizational adaptation, survival and competence in face of increasingly discontinuous environmental change" (Malhotra 1998). Knowledge management is getting the right information into the hands of the appropriate people at the time they need it to make decisions (Petrash 1996). Therefore, it encompasses all aspects of the Intelligence Cycle from the planning to the gathering to the analyzing to the reporting phases that companies use to stay competitive (Fuld 2001). The following example demonstrates the interaction between Library Science, Knowledge Management and Competitive Intelligence.

SHELL SERVICES INTERNATIONAL EXAMPLE

Shell Services International recently implemented a CI Knowledge Management System (see Breeding 2000). This system has three main components consisting of sixteen embedded modules. The main components are the Level-set, Research and Knowledge Management Components.

The Level-set component serves as a beginning point for use of the system, and it is designed to provide the basics needed to use the other components. This component includes the Knowledge Broker and the Gloss modules. The Knowledge Broker provides basic Competitive Intelligence tools, and the Gloss provides a glossary of terms used in the system.

The Research Component is the heart of the system and provides information in distinct modules that are designed to segment the data by the needs of the users and the types of projects most often investigated. It is divided into the Executive Themes, CI News-to-Go, Competitor Profiles, HR Manager, Yellow File, and marcom@competitor.com modules. The Executive Themes module contains profiles of competitors using a broad-based perspective. The CI News-to-Go module is the home of the company's newsletter and thus contains all necessary information that goes into the newsletter. It is also the archive of past news-

letters. The Competitor Profiles module is the main module of the entire system. This is the module that stores detailed competitor profiles divided into four categories: Tier-One, Emerging, Regional, and Niche Competitors. The HR Manager module provides human resource information on competitors. Much of the information may be elsewhere but this module uses the HR perspective to showcase the information. The Yellow File module contains information on competitor mistakes and weaknesses that have been uncovered. The marcom@competitor.com module contains information about how the company's competitors communicate with the marketplace.

The Knowledge Management Component provides a way of sharing knowledge and is divided into the CI Community of Practice, Pursuit/Deal Tactics, Private Discussion, Benchmarking, The IT Landscape, 3rd Party Research, Conferences and Events, and RequestNet modules. The information in these modules comes basically from the core audience of the system. The CI Community of Practice module is a directory of people who are providing CI activities. The Pursuit/Deal Tactics module contains information on Tier-One Competitors and the deals and tactics that they are employing in the marketplace. The Private Discussion module allows users of the system to input information or discuss information about what is happening in the field. The Benchmarking module has benchmarking information about pricing, quality, satisfaction, HR capabilities, and industry indicators. The IT Landscape module provides basic information on all customers, competitors and suppliers the company is doing business with at the current time. It also provides information on prospective customers and competitors. The 3rd Party Research module itemizes 3rd party vendors who supply information on IT services. The Conferences and Events module provides information about conferences and other events that the users of the system might find useful. The RequestNet module contains information about all ad hoc projects that were requested. It also allows requestors to track projects.

CONCLUSION

This system is reliant on information that conforms to the basics of archive theory's uniqueness, importance, and form. The data in the system comes from the research of Competitive Intelligence researchers and their source. The data is filtered either consciously or unconsciously using a scheme such as Archive Theory, and then is analyzed

for inclusion in the Knowledge Management System laid out in the previous example. The SSI system is probably more elaborate than most, but it provides an enlightening example of what can be done when Library Science, Knowledge Management and Competitive Intelligence come together to solve informational problems.

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