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Inferring Competitors' Intention:

Using Content Analysis and Product Concept Trajectory

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Abstract: Content analysis proves to be very useful in inferring the intention among competing firms. Content analysis is the systematic and replicable examination of symbols of communication. Like individuals, firms render messages outside of themselves. Their daily activities are, so to speak, communications process. Therefore researchers are able to apply content analysis to the exploration of firms' behavior. This paper will take up, as one of these cases, new products news releases made by inkjet printer makers. Through the analysis, the product concept trajectory is developed. These depicted trajectories show us the intention of competing firms.

Keyword: content analysis, news release, inference of intention

Hamel and Prahalad (1989) asserted that "strategic intent" was the key to success rather than to seek "strategic fit" in the competitive environment. Current industry structure that is the objective of strategic fit reflects the strengths of the industry leader: playing by the leader's rules is generally competitive suicide. However, "traditional competitor analysis is like a snapshot of a moving car. By itself, the photograph yields little information

about the car's speed or direction　whether the driver is out for Sunday drive or warming up for the Grand Prix (Hamel & Prahalad, 1989, p. 64)." In this way they point out the limitation of static competitor analysis and advise managers to possess strategic intent for their companies' future leadership. Viewed in this light, the strategist's goal is not to find a niche within the existing industry space but to create new space that is suited to the company's unique

strengths. Thus strategic intent is a guideline to competitive innovation: Anyone who wishes to analyze competitors' behavior need to infer their intention. To infer the intentions among competitors, the strategist must establish practical understanding of the dynamic competitive environment. Encouraged by the discernment of competitors' intention, the company could find its further favorable step.

However, in practice, it is very hard for strategists or researchers to infer competitors' intention. This is why strategic intent-based competitor analysis has never yet become popular. Nonetheless, once an effective method to infer the intention has been developed, the analysis should be fully accepted. This paper will propose a competitors' intention inferring method, on which content analysis has bright prospects.

1. Advantage of Content Analysis

Communication process in which people transfer each other's message occupies a central position in human activities. In practice, messages are delivered through a great variety of media (e.g., newspapers, magazines and TV/radio programs as mass communication media; letters, telephones, e-mails and web pages as personal communication media; or movies, music, pictures and novels as artistic expression media, and so on). Content analysis focuses on the content of the media messages. Defining this formally, quantitative content analysis is the systematic and replicable examination of

symbols of communication. The symbols are assigned numeric values according to valid measurement rules, and the analysis of relations involving these values using statistical methods describe the communication, draw inferences about its meaning, or infer from the communication to its context, both of production and consumption (Riffe, Lacy, & Fico, 1998, p. 20).

Content analysis has four main strengths (Riffe, et al., 1998). First, it is an unobtrusive and nonreactive measurement technique. The content with messages is separate and apart from communicators and receivers. Researchers can analyze the message without attracting neither communicators' nor receivers' attention (Webb, Campbell, Schwartz, & Sechrest, 2000). Therefore content analysis has advantage to exclude interviewer effect, which interviewer influences the reaction of interviewee.

Second, because content has a life beyond its production and consumption, longitudinal studies are possible using archived materials that may outlive the communicators, audiences, or the events described in the communication content. Therefore it is able to use content analysis as a complement to investigate historical records.

Third, quantification or measurement of content permits reduction in numbers for large amounts of information or data that would be logistically impossible for close qualitative analysis. Using properly operationalized procedure, such a process of information reduction nonetheless retains

meaningful distinction among data. According to valid measurement rules, content analysis data can be handled to compare objectively with each other like analysis of compiling figures from reliable sources (e.g., statistical data, financial data).

Finally, content analysis has virtually no limitation in its applicability to a variety of inquiries important to many disciplines and fields owing to the centrality of communication in human activities.

Obviously, corporate activities are a part of human activities in society. There is no doubt that firms are giving off numerous messages in their communication processes. Most messages are compiling as documents in many firms, which can be suitable for content analysis.

In short, such advantage of content analysis will contribute to the study of corporate business behavior. Especially in case study of business, it is

the fundamentals that researchers grasp a fact on that case. To understand the case, researchers usually try to interview with the parties concerned, to investigate historical records, or to analyze compiled figures from reliable sources statistically. The advantage of content analysis complements weak points of such tools (Table 1). Researchers who want to know about the case in depth may be able to make use of content analysis with other studying method to improve its accuracy of grasping facts (Gephart, 1991) and to infer the intention of actors.

Following is an application of content analysis to the study of corporate behavior. The systematic procedure in analysis and the direct use of recorded messages, which are major characteristics of content analysis, enable researchers to infer competitors' intention directly and to compare such intention with each other along a measure crucial to the study.

Table 1.

	Interview investigation	Historical records investigation	Statistical figures analysis	Content analysis
media	human memory	documents, articles	statistical data, financial data	various content
understanding on the case	strong dependence on interviewee	archives speak as witnesses	data only represent ostensible results	messages in content suggest the background
objectivity, systematization	interviewer effect and poor memory unavoidable	subjectively judged by each researcher	operative figures express the state clearly	systematic procedure of analysis ensured, replicability
inference of intention	inferring directly	inferring indirectly through the context	outcome data may not follow intention	inferring directly, each data comparable

2. Inferring Competitors' Intention

In the late 1990s, there was an oligopolistic competition in inkjet printer industry. The big three, namely, Hewlett-Packard (HP), Canon, and EPSON shared the market almost entirely. In such competitive situation, who are the rivals considered is obvious, and each firm is forced to comprehend their own competitive position in the market. To take advantage to rivals, a firm must develop more attractive proposal for customers than rivals. However, "attractiveness" is erratic. Even in a market segment, there is no one right answer for creating attractiveness. Every firm can feature its products attractively based on the unique interpretation of product concept. In fact, the big three inkjet printer makers have been adopting substantial different product concepts respectively. Such difference among product concepts partly comes from the difference of strategic intent held by competing firms.

The purpose of this paper is to present a way which researchers infer competitors' intention with the assistance of content analysis. To be concrete, inferring what the big three inkjet printer makers have intended in oligopolistic market respectively is our aim. The analytical focus is not on the consequence of business activities but on the intention of actors. Content analysis is implemented to unfold to what each subject has been paying attention overtime as a preparation for inference of intention.

Products, that is, inkjet printers themselves, contain the makers' intent. Product concepts sprung from their own intention guide product design and product attribute (Nonaka & Takeuchi, 1995). Therefore it is useful for researchers who want to know about the intention among competing firms to analyze their product concepts.

In this paper, we will read the messages from news releases of new products by inkjet printer makers to understand product concepts. A news release is a media delivering information about the firm or the incident to the press. News releases are usually printed documents of few pages, but they are also opened to the public as on web pages these days. The ultimate purpose of news releases on new product introduction is to convey advantages and attractiveness of the product precisely to reporters. News release writers evade using hyper exaggerated expression in the text. Hence, messages appeared in news releases stand for straightforward "self image" of the product concept that the firm concerned holds. Such content analysis of news releases would give fundamental data for inferring intention to researchers.

The inkjet printer as PC peripheral has been changing amorphously the product concept since its invention in the late 1980's. The initial product developed was used as monochrome document printer. While the PC performance enhanced, users came to handle more and more color graphics and color images on PCs. To catch such trend, inkjet printer also shifted its product concept to color printer. In the late 1990's, inkjet printer technology

was developed further, which changed the product concept to photo-image printer. This was a result of each maker's product strategy that such fluid characteristics of the product concept were observed in the inkjet printer industry. In the changing process of product concept, each maker seeks competitive advantages over rivals. It is the unique intention of each maker that varies the product concept.

In next section, we examine how different the product concepts of the big three inkjet printer makers are, and infer what intention they have, based on data collected through content analysis.

3. Utilization of Content Analysis

The data we use in the following analysis is acquired from news releases of new products for Japanese market issued by the big three inkjet printer makers during 1995-1999. In this term, the inkjet printer enhanced performances in various aspects. The print quality improved with the minute resolution technologies (e.g., micro droplet, fine ink, color management software), and achieved accelerated print speed with the high throughput technologies (e.g., multi nozzle, high frequency spouting, advanced data processing). Also there was a trend that transformed inkjet printer as a document printer into inkjet printer as a color photo-image printer in usages of customers. Such context shows us what attributions of the product concept are worthy of note in our analysis, namely; print quality, print speed, document print, and photo print, which are critical to understand the product concept which

each maker intended in its product development process. Therefore it becomes the first step to analyze the messages relative to those four attributions in news releases to see where emphasis are laid on by makers respectively.

To implement content analysis of news releases, we treat annually integrated news release document by each maker as a unit of analysis. The unit includes all news releases of new products on the market by each maker in a year (January-December). Then, we count the frequency of appearances of the words relative to four critical attributions within each unit. We assume when the words concerned have higher frequency of appearances, the more the concerning maker is laying emphasis on the attribution associated with the words. Comparing such words frequencies among makers, differences in the product concept become visible.

However, the number of products released by each maker per a year is not equal. It is so naïve to count the frequency of the relative words without adjusting the difference in length of the analytical unit that the numbers of products affect. Every product accompanies a news release. As a result, a larger number of products makes a longer document, that is, a larger unit of analysis. Naturally, the larger unit of analysis contains more frequent reference about the words concerned. Analysts who compare data have to adjust the difference in length of the unit to avoid this problem. Therefore we use the adjusted unit of analysis equalized by the document length. Then, we count the frequency of appearances

of the words relative to four attributions (print quality, print speed, document print, and photo print) utilizing PC software named Content Analyzer ver. 2.02. This software can process text files written in Japanese and output adjusted frequency data automatically.

The results show us a unique difference between makers in frequency. Figure 1 illustrates the product attribution each maker had intended through the period of time. Vertical axis is composed of the difference of two values which denote the frequency both of words relative to print speed and words relative to print quality. Dots in graph area above zero signify the more speed-intended attribution while dots in graph area below zero signify the more quality-intended attribution. The horizontal axis is composed of the difference of two values which

denote the frequency both of words relative to document print and words relative to photo print. Area left to zero of the graph signify the more document print-intended attribution while area right to zero signify the more photo print-intended attribution.

It must be noted that these numerical values showed as dots are not absolute values; they only present the relative stress level on four conception quadrants (i.e., fast document printing, high quality document printing, high quality photo printing, and fast photo printing). The trajectories traced for each maker in Figure 1 express the transition of intended product attributions themselves because those data are linguistic data from content analysis of news releases. This implies that the data of trajectories can represent a bundle of some product attributes which

Figure 1.
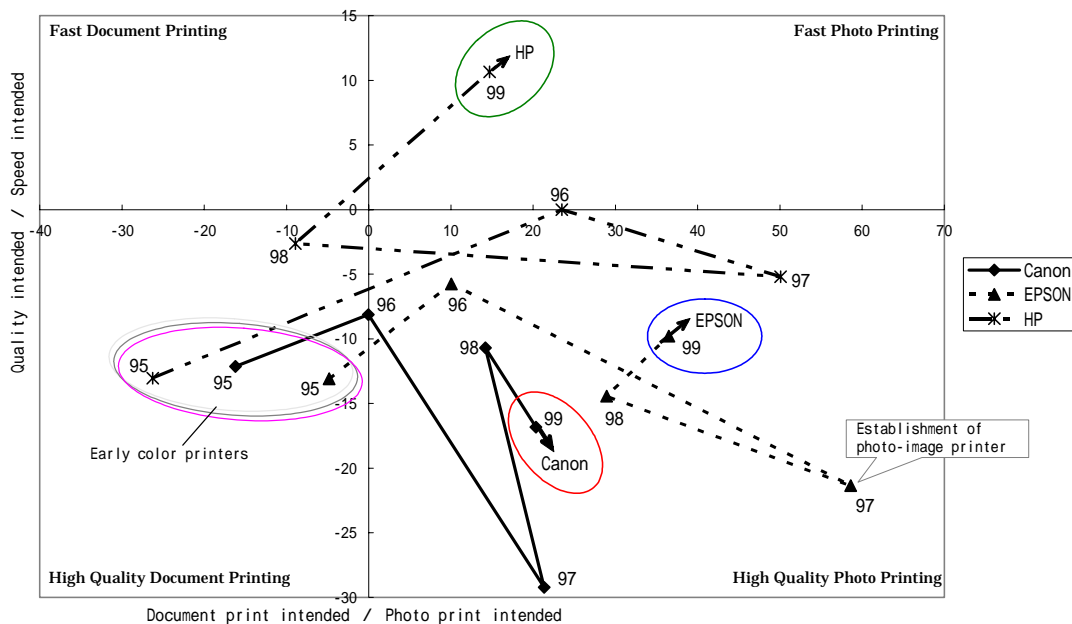
makers propose to consumers at the time of release to feature their own subjective product concept. Hence, we name the trajectory as product concept trajectory (PCT).

Figure 1 shows the main product attribution of inkjet printers shifting from document printing to photo printing as a whole in this period. We can derive the inference that all makers have attached importance to photo printing than to document printing since 1995. However, the PCTs depicted do not trace the same course: those differ among makers. EPSON excels two other makers by emphasizing photo printing in 1995/97/98/99. This can derive the inference that EPSON continuously seeks development in "photo printers." HP excels two other makers by emphasizing print speed in 1996/97/98/99. This can derive the inference that HP regards print speed as the important attribute in product development. Specifically, HP has insisted also on document printing since 1998. This can be interpreted as a way HP seeks to make "balanced-purpose printers" aiming to differentiate from EPSON printers specializing in photo-image printing. While these two makers have taken their pole positions, Canon has not emitted readable color of identity yet. Canon excels two other makers by emphasizing print quality in 1997/99 indeed, nevertheless, it is so noncommittal with what can be printed with high quality. This can derive the inference that Canon's main product concepts are placed elsewhere.

Figure 2 shows where Canon's product concept positions are better. The vertical axis is composed of the difference of two values which denote the

Figure 2.

Low price intended
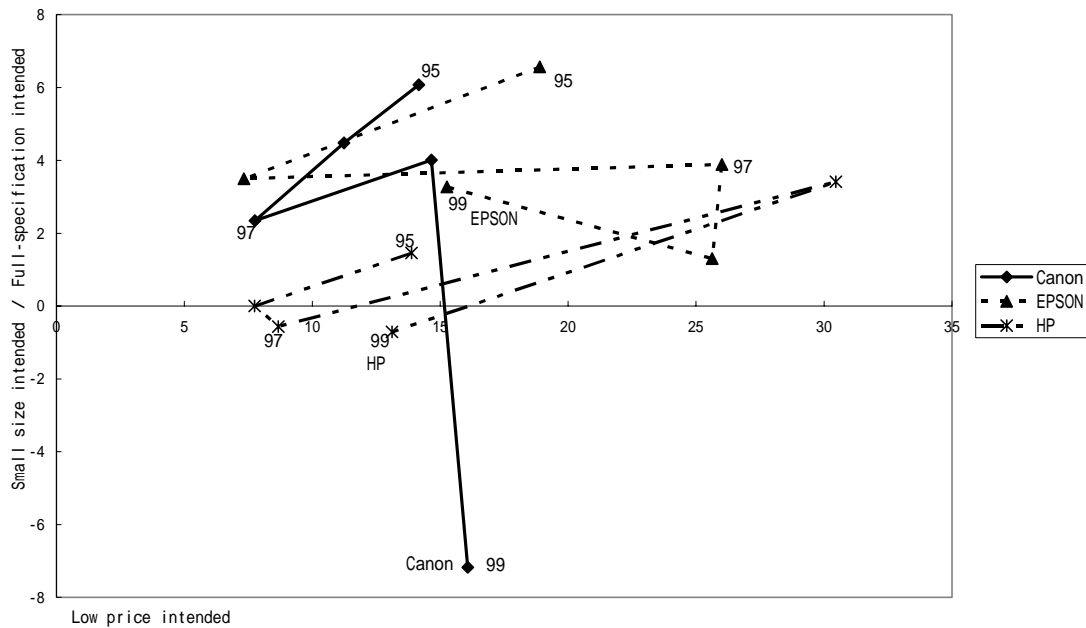
frequency both of words relative to full-specification and words relative to small product size. Dots in the upper half of the graph signify the more full scale-intended attribution for professional use while dots in the lower half signify the more small size-intended attribution. The horizontal axis denotes the frequency of words relative to lower product price setting. Needless to say, the data used in this graph are gathered through content analysis of news releases in the same method as in Figure 1.

In Figure 2, Canon's shift to "small size" at 1999 is remarkable. This can derive the inference that Canon intends to differentiate product concept to small size. In contrast to Canon, EPSON remains in upper side of the graph: It derives the inference that EPSON is not interested in small size product needs. And it seems HP intends to balance full-specification with small size, because its trajectory remains close to the horizontal axis.

4. Implications

PCT as an application of content analysis method presents us mainly three implications. First, PCT can describe the intended product concept of the time of release. This is because PCT is composed of content analysis data drawn from news release messages analysis. In other words, the maker's confession on their product concept is the data for PCT.

Second, the attention of makers is discernible respectively by depicting PCT. It can ease researchers to compare the maker's product attribution intended with each other. Quantitative

characteristics of content analysis data make possible comparative analysis.

Last, PCT makes visible the rivalry consciousness among firms. EPSON and HP in Figure 1 and 2, for example, trace similar form of PCT although relative positioning in each product attribution is radically different. Both have been keeping the position at arm's length taking the isomorphic trajectory pattern. In this case, we can interpret that they are conscious of mutual competitive reference points (Amikura & Shintaku, 1997): They are rivals on product strategy. On the other hand, Canon traces PCT, which is alike none. This can be interpreted that Canon does not follow the main trend of the industry and seeks niche strategy.

In this way, researchers can infer the intention of firms. They will get the car's speed and direction.

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