

**INFORMATION PROCESSING OF SERVICES:
IMPLICATIONS FOR NEW SERVICES AND RELATIONSHIP MARKETING**

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Abstract

This paper examines consumer information processing under two conditions: 1) under initial service evaluations and 2) over the course of long-term service relationships. Marketing researchers have examined consumers' information search and choice decisions for services (cf. Zeithaml 1981; Murray 1991). However, consumer information processing over the course of services marketing relationships have not yet been addressed. First, two modes of information processing -- piecemeal-based and category-based processing -- are discussed. Next, the two modes of information processing are discussed in the context of evaluation of new services and in the context of services marketing relationships over time.

Piecemeal-Based and Category-Based
Information Processing

Piecemeal-Based Information Processing

"Piecemeal processing" is a term used to describe an active mode of information processing. Discrete bits of information -- evaluations of service attributes, estimates of service attribute importance, comparisons of service attribute evaluations among service providers or to an ideal, and trade-offs among service attributes -- are combined "piecemeal" fashion through some attribute integration heuristic (for example, adding or averaging). In product literature, for example, piecemeal-based processing models (in the form of algebraic multiattribute attitude models) approximate effortful or active information processing by consumers (Sujan 1985; Wilkie and Pessemier 1973).

Services marketing literature has also, albeit implicitly, adopted a piecemeal-based processing perspective. Zeithaml (1981), for example, suggested that a piecemeal-based model might well explain consumers' choice and evaluation of services. The model is more limited than information processing models of product evaluation, because experience and credence qualities of services mean that consumers are able to utilize fewer prepurchase information sources (see also Murray 1991), rely on fewer cues, and choose from a more limited evoked set than when evaluating products. The model is piecemeal-based, however, in its assumption that consumers evaluate services on an attribute-by-attribute basis. Similarly, models of service quality have properties consistent with the assumptions of piecemeal-based models of information processing. SERVQUAL, for example, posits that differences between expectations and perceptions of service quality dimensions are

evaluated on an attribute-by-attribute basis and combined into an overall judgment of service quality (cf. Parasuraman, Zeithaml, and Berry 1988).

As with products, piecemeal-based processing is likely to provide a reasonably good description of consumer information processing of services under effortful conditions. For example, as Zeithaml (1981) suggests, piecemeal processing is probably activated for service choice and initial evaluation. However, effortful processing is just that -- too effortful to continue over the course of repetitive interactions. It is the position of this paper that, over time and with experience, consumers will develop a network of abstract ideas -- called a schema -- about the service provider to facilitate efficient handling of subsequent encounters.

Category-Based Processing

An alternative to the piecemeal-based processing view is "category-based processing" (Sujan 1985). Category-based processing theory recognizes that individuals do not face each new stimulus as if it were a completely novel experience but compare incoming data against information stored in memory (Sujan and Bettman 1989). If a new stimulus (for example, a new restaurant) is recognized as an example of, or as similar to, a category already held in memory (French restaurants), the "schema" for the category (the "French restaurant schema") will be triggered. A "schema" is a cognitive structure, formed through experience, that represents organized knowledge about the stimulus and which organizes incoming information relative to previous experience (Fiske and Taylor 1984; Sujan 1985). For example, a schema is likely to contain information and conclusions derived from the original piecemeal-based processing phase, such as beliefs and expectations about salient attributes, the importance of those attributes, relationships among the attributes, and overall evaluative conclusions (Rumelhart and Ortony 1977; Taylor and Crocker 1981). In addition, a schema may store context, such as typical sequences of events or scripts (Graesser, Gordon, and Sawyer 1979; Graesser, Woll, Kowalski, and Smith 1980).

Over time and with experience, information will be stored in the schema in an increasingly abstract form. That is, rather than storing a collection of all the original encounters (for example, a history of every visit to a French restaurant), the schema may become dominated by prototypical information abstracted from features most commonly associated with the service. For example, the consumer may develop a picture of the quintessential French restaurant, comprised of

the most representative or most memorable elements of all French restaurants ever visited. This prototypical French restaurant may not, in fact, exist. In total, the prototype does not represent any actual French restaurant but represents a little of all of them. More sophisticated schemas may also include estimates of the distribution, central tendency, and variability of information in the schema (Park and Hastie 1987; Sujan and Bettman 1989).

Which Do Consumers Use -- and When?

Some researchers take the view that the move from piecemeal-based to schema-based processing is a natural evolution. They believe schema development to be a logical progression for individuals trying to simplify a complex world. Bartlett (1932, p. 201), for example, notes that a schema is "an active organization of past experiences which must always be supposed to be operating in any well-adapted organic response." Taylor, Crocker, and D'Agostino (1978) concur, "schematic processing would seem to be the rule rather than the exception." As Fiske (1982, p.61) notes, "the first time a novel stimulus is encountered, its components may be evaluated and their evaluations combined, piecemeal fashion...After I decide how I feel about [x], by whatever process, I perceive and evaluate them as a category."

Consumer Information Processing of New Services: Category-Based Processing

Changing from Initial Piecemeal-based to Subsequent Category-based Processing

Piecemeal-based processing probably does a good job of describing a consumer's initial processing of information about services. That is, the first time customers ever visit a type of service provider (the first visit to a French restaurant), they will quite consciously observe and evaluate individual aspects of the service firm's physical surroundings (Bitner 1990), aspects of the service encounter (Solomon, Surprenant, Czepliel, and Gutman 1985), and other customers of the service firm (Bateson and Hui 1986). These individual evaluations will then be combined to form not only the overall, initial evaluation of the service provider but the embryo of a schema. Subsequent visits to various French restaurants will continue to develop the schema, adding new information, new evaluations, increasing the variability of experiences tolerated by the schema, and strengthening the schema.

Certain conditions may moderate the length of time that a consumer requires to shift from piecemeal-based to schema-based processing. Conditions of high involvement (Petty and Cacioppo 1979) or risk (Cox 1967), for example, will probably encourage a consumer to persist in a mode of more effortful

processing. Further, certain categories of services may be evaluated via piecemeal-based processing over a greater number of visits than other categories of services. For example, services that are performed on an individual's person (such as health care services), services with intangible results, services that require prolonged and intense interaction with the service provider, or infrequently patronized services may be evaluated via piecemeal-based processing for a longer period of time (perhaps, indefinitely) than services performed on an individuals' possessions (such as mechanic services), services with tangible results, services that require minimal personal interactions, or frequently patronized services.

Implications of Category-Based Processing of New Services

However, it can be seen that only the most inexperienced consumers would come to a service provider without at least some history (even children are taken to restaurants with their parents). Therefore, it is reasonable to assume that most consumers will evaluate a new service provider based on their knowledge of previous service providers in the category. Perhaps the most important implication of category-based processing theory is that the consumer is believed to store emotion or affect with the generic knowledge structure (Fiske 1982; Fiske and Pavelchak 1986). When a new stimulus (service provider) is successfully categorized, category affect is believed to be immediately transferred to the current stimulus. Indeed, schema processing is believed to evoke strong and extreme affect (Fiske 1982). Therefore, when the new restaurant (La Chaumiere) was categorized as a "French restaurant," the consumer was also likely to decide that he/she loved (or hated) La Chaumiere in the same way that he/she loves (or hates) all French restaurants.

Furthermore, a schema is accessed in an all-or-nothing manner. All schema-relevant information - correct and incorrect, specific and evaluative, cognitive and affective -- is "copied" onto the new stimulus (Smith and Graesser 1981). It is the "copying" of the generic schema onto the specific instance that is believed to explain the individual tendency to make inferences and fill in missing information. Rather than puzzle over ambiguous or missing information, individuals infer the details from "default values" stored in memory (Thorndyke and Hayes-Roth 1979). Therefore, if the French restaurant schema includes the information that "all French restaurants are expensive," then the consumer will believe that La Chaumiere is expensive, even before reading a menu. Individuals will even "remember" schema-relevant information that was not presented (Graesser et al. 1980) and may have difficulty distinguishing schema-based inferences from other schema knowledge (Fiske and Taylor 1984). The first time visitor to La Chaumiere may "remember"

that La Chaumiere serves escargots, if the French restaurant schema includes "serves escargots," even if La Chaumiere does not, in fact, serve escargots.

Finally, an activated schema functions as a top-down theory guiding both perception and memory. Incoming information is compared to information in the schema and judged as to degree of consistency or inconsistency (Fiske and Pavelchak 1986; O'Sullivan and Durso 1984; Sujan and Bettman 1989; Taylor and Crocker 1981). As long as incoming information is consistent with the information in the schema, schema-based processing will continue and La Chaumiere will be evaluated like all other French restaurants. However, "La Chaumiere's" fate is not sealed. If La Chaumiere can provide a service experience that is uniquely different -- dramatically different -- the consumer will be stimulated to process the experience by piecemeal-based processing. The process is described in the next section.

Consumer Information Processing of Services Over Time

In the same way that consumers form schemas about types of restaurants, or types or service providers, this article suggests that consumers may form a schema about a single service provider, over time. That is, not only does the consumer have superordinate schemas about "restaurants" and "French restaurants," but regular customers will develop a schema about a typical service experience at La Chaumiere (for example). If consumers do, in fact, form subordinate schemas about specific service providers over time, this has implications for relationship marketing strategies and tactics. For the customer to consider La Chaumiere different from other French restaurants, however, a return to piecemeal-based processing must be stimulated.

Interrupts: Inconsistency, Relevance, and Attributions

As noted above, incoming information is compared to the schema and judged as to degree of consistency. If incoming information is only mildly discrepant from the schema, it will be assimilated into the schema or ignored. Schemas tend to be robust and, especially among experienced consumers, will persevere even in the face of somewhat inconsistent information. In the event of information judged to be only mildly inconsistent, schema-based processing is again expected to continue.

When a stimulus is too inconsistent to be assimilated into the schema, the information will be actively processed to explain the inconsistency. For example, if La Chaumiere were inexpensive, served Mexican as well as French food, or was self-service, such information would be inconsistent with the

French restaurant schema. Any number of events might trigger an interrupt in a service encounter: failure to provide good service, disruptive behavior on the part of fellow patrons, or crowding are three examples. One particular type of schema-based processing known as script-based processing is particularly relevant to service encounters (Smith and Houston 1983). A script is an event schema that includes an ordered sequence of actions that satisfy certain goals, identification of the players and their respective roles, as well as information about typical props, the set, and actors' lines (Fiske and Taylor 1984; Graesser, Woll, Kowalski, and Smith 1980). Any breaks in the script will cause an interruption in script-based processing.

Before further processing of inconsistent information, however, the consumer will judge whether or not the inconsistent information is relevant to the schema. Irrelevant information will be ignored (Taylor and Crocker 1981; Srull, Lichtenstein, and Rothbart 1985) and the consumer will return to a mode of schema-based processing. For example, in Smith and Houston's article, an example is given of a bank guard who interacts with a customer on an inappropriately friendly level. Smith and Houston suggest that this break in the script may cause the consumer to experience negative disconfirmation thereby leading to a more negative evaluation of the bank. However, an alternative explanation is that the consumer would consider the guard's friendliness as essentially irrelevant to the overall bank schema and would thus ignore it. To continue the French restaurant example, if the maitre d' were exceptionally friendly, the behavior may be dismissed as irrelevant and the incident is quickly forgotten (or even ignored). The consumer's evaluation of La Chaumiere would remain schema-driven.

If the inconsistent information is judged to be relevant, the consumer may then make an attribution as to its cause. If inconsistent information can be attributed to unstable causes, they may be forgotten (Crocker, Hannah, and Weber 1983). Similarly, if the inconsistency is judged to be beyond the control of the service provider, the consumer may also decide to ignore or overlook the information (cf. Bitner 1991). Again, schemas are robust and, particularly in the case of experienced consumers with well-developed schemas, consumers are predisposed to preserving rather than changing their schemas.

Inconsistent information that is judged to be relevant, and which cannot be explained away by attributing it to external, uncontrollable, or unstable sources, must be reconciled. How this is done depends of the level of inconsistency. Moderately inconsistent information may simply be "tagged" as a mental note to the schema. The schema remains intact and evaluation is made on the basis of schema-driven affect, but a

note is attached that says, in effect, "All is well, except that this one, odd event occurred." Because it received additional attention and processing at input, this atypical "tag" is initially very well remembered (Schmidt and Sherman 1984; Smith and Graesser 1981). If no additional "odd events" occur, or if the occurrence of "odd events" is dispersed over time (Sujan and Bettman 1989; Taylor, Crocker, and D'Agostino 1978), this tagged information will be rather quickly forgotten (Graesser, Woll, Kowalski, and Smith 1980; Schmidt and Sherman 1984). Indeed, there is some evidence that the processing of inconsistent information will act to strengthen the schema by the process of "defending" it (O'Sullivan and Durso 1984).

If the information is highly inconsistent (for example, is encountered in a few, concentrated incidents), the consumer may create a subtype to explain the inconsistency. With creation of a subtype, service provider is no longer evaluated by affect transference from the original schema, but is evaluated "piecemeal" until the new subtype schema is formed (Fiske 1982; Sujan 1985). The original schema remains intact though some modifications are made: estimates of variability and importance of the highly inconsistent attribute are likely to be increased (Sujan and Bettman 1989). Thus, for La Chaumiere to merit its own "subtype," it must create an experience that is unambiguously, undeniably, and extremely different from other French restaurant experiences.

Implications of Category-Based Processing of Relationship Marketing Situations

If La Chaumiere does indeed stimulate piecemeal-based processing, the consumer will form a new subtype. This subtype will function in the future as a schema. Future encounters with La Chaumiere will be compared to past experiences, organized and abstracted in a "La Chaumiere schema." The implications for relationship marketing are many. For example, only dramatically inconsistent behaviors will be noticed and remembered. Small changes in menu, personnel, decor, or other service attributes will be assimilated into the schema and the consumer's affect for La Chaumiere will remain unchanged. If attention is drawn to the changes, or if the changes are sufficiently discrepant from the consumer's schema, the consumer may "tag" the information ("now, La Chaumiere makes their own desserts"). However, if the schema is only tagged, the information will be quickly forgotten and the original schema will dominate. Therefore, if a La Chaumiere patron is asked about La Chaumiere's desserts, he/she will respond from schema memory rather than the tag (and will not remember that they now make their own desserts). Only if changes are unambiguous and dramatic -- the addition of an outdoor patio -- will changes be deeply processed and well-remembered.

Note that all examples provided to this point emphasized that to further improve a schema, change must be dramatic. However, schema-based processing can also be a boon to providers of chronically heterogeneous services like restaurant services. That is, small negative variations in service may also be assimilated into the schema, or if tagged, relatively quickly forgotten. Because consumer schemas are robust, they resist changing their opinions of La Chaumiere and original schema-driven affect will be remembered. It is critically important, if consumers do build subordinate level schemas, to create extremely positive initial experiences since future evaluations may be based upon schema-driven affect.

Finally, it is important to recognize that a regular customer already has a positive schema (else, why return?). Thus, for regular customers, any negative experiences may be considered quite inconsistent (and thus processed). Care must be taken to "neutralize" negative experiences, especially for regular customers, so that the experience is not deeply processed. Good experiences, within the range of schema expectations, may therefore be a safer strategy for regular customers rather than risking an outstanding experience that fails to please the customer. Indeed, it is conceivable that regular customers may not like any change from their schemas, but prefer the "effortless" processing of similar experiences. Marketers would benefit from a greater understanding of the information processing procedures of their customers, before executing service changes.

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