HYSTERESIS IN BUYER ATTITUDE TOWARD REPEATED TRANSACTIONS

Harold J. Ogden, Saint Mary's University
Ronald E. Turner, Queen's University

ABSTRACT

This paper considers the nature of buyer attitude resulting from satisfaction with repeated transactions. Literature is reviewed that proposes a range of response patterns varying along a dimension of hysteresis or lag in response. A learning model, previously used to describe purchase probability, is presented as possibly having some application to capture the entire range of response patterns.

INTRODUCTION

Many types of products, ranging from breakfast cereal to industrial supplies, are purchased repeatedly. These transactions yield levels of satisfaction that influence further purchases. Of interest to marketers is the relationship between the level of satisfaction experienced in a transaction, and the predisposition of a prospective buyer to repurchase the product. That predisposition can be conceptualized as purchase loyalty (Oliva et al 1992), but this concept of loyalty could lead to confusion in the case of repeated transactions. For example, the notion of loyalty could be thought of as a pattern of behavior such as the delay in the switch away from a brand rather than simply the predisposition to purchase. This paper will consider buyer attitude that results from satisfaction with transactions rather than from loyalty. First, a model with lagging response will be considered, then a learning model will be presented. Finally, a way of combining these alternative models will be proposed.

BACKGROUND

The concepts of buyer satisfaction and attitude have been closely related in the literature. The satisfaction - attitude link has been noted in such work as Oliver (1980, 1981). In fact, Latour and Peat (1979) suggested that the satisfaction construct may simply be one measure of an attitude. Holbrook and O'Shaughnessy (1984) made finer distinctions in their study of emotion in advertising. They presented a typology of affective constructs that ties together immediate reactive states such as satisfaction with the active, chronic state of attitude or disposition to type of behavior. This paper considers buyer attitude as a more enduring, less changeable variable responding to repeated satisfying or dissatisfying experiences.

Catastrophe

Coyne (1989) described a situation where behavior lags behind satisfaction and suggested the notion of critical thresholds where abrupt changes occur. Oliva et al (1992) incorporated these ideas when they used a cusp catastrophe model to propose and test a relationship between purchase loyalty (L) and satisfaction (S) for different levels of customer transaction cost (T) in this non-linear equation:

$$L^3 - S - LT = 0 \tag{1}$$

Equation 1 has two interesting properties. First, as Oliva et al (1992) pointed out, when customer transaction costs are high, the relationship between loyalty and satisfaction exhibits discontinuities. At some point in the experience of a large enough dissatisfaction, there will be a sudden large shift in loyalty. Second, after such a discontinuous change occurs, a subsequent reversal in the satisfaction experienced does not reverse the change in loyalty. The resulting effect will be one of inertia. Coyne predicted a similar effect for repeated transactions as well.

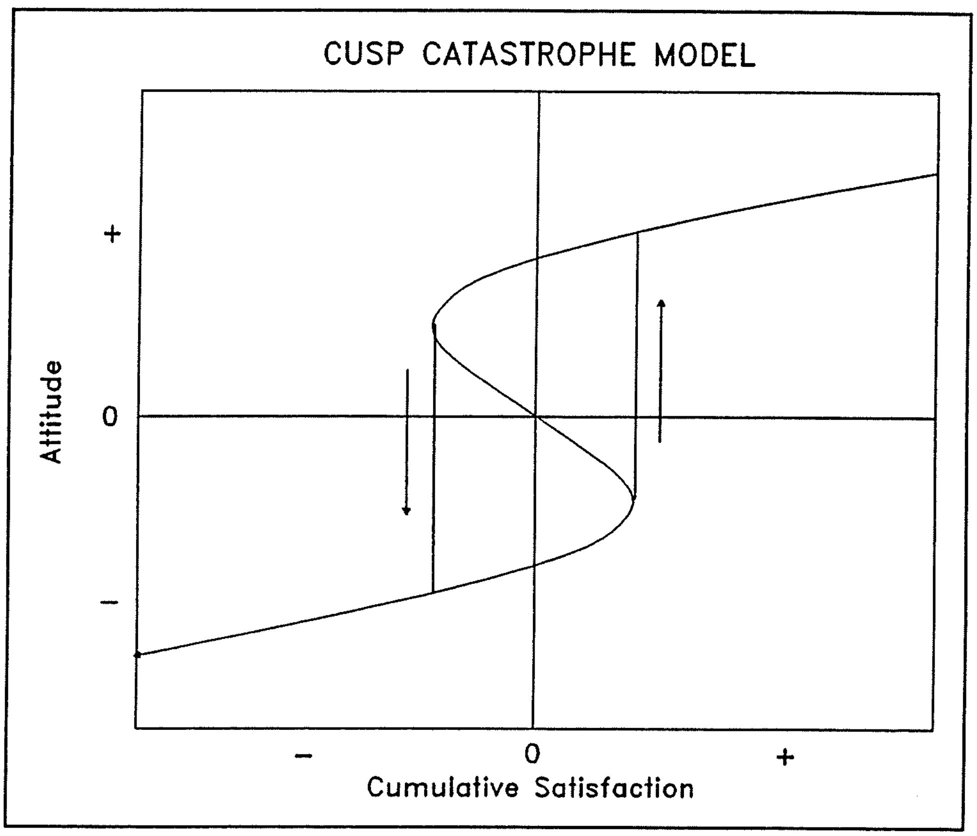
Extension of this effect from loyalty to attitude would appear reasonable. It could be expected that after repeated dissatisfactions, a sudden decrease in attitude would be seen; the last dissatisfaction would be, in effect, the "straw that breaks the camel's back". The effect would not be reversible at that point by satisfying experiences. The effect might thus be viewed as some function of the sum of satisfactions from the series of transactions. Figure 1 depicts the path that buyer attitude would take in the process of repeated satisfactions or dissatisfactions under the catastrophe model. The inertia effect is referred to as hysteresis or the "lag in response exhibited by a body in response to a change in forces" (Webster's Dictionary 1991) and is represented in Figure 1 by the area between the upward and downward paths. (The term has been previously applied by Oliva and Burns (1977) to describe other aspects of consumer behavior.)

Such a situation might exist when a customer, perhaps an industrial buyer, has a high level of involvement with a supplier (as in Oliva et al, 1992) and is reluctant to switch suppliers with the first sign of a slip-up but experiences a sudden negative shift in attitude after a number of disappointments.

Attitude as a Learning Process

Learning theory may also explain the effect of repeated transactions on attitude. Attitude has been observed to be part of a learning process. Fazio, Powell and Williams (1989) proposed that consumers learn associations between objects and evaluations and store the resulting attitudes in memory for future retrieval. Hulse, Deese and Egeth (1975, Ch 2) described the learning curve as reacting with progressively smaller increments of response to sequential stimuli. After repeated reinforcements when the learning curve has flattened, omission of the stimulus will result in initially large results. The final result of the learning is very much dependent on the order of the events which have led up to it. The effect of this sensitivity of the final condition to the order of

Figure 1



events has been discussed with reference to "commutativity" by Bush and Mosteller (1955). In other words, without commutativity, one disappointment followed by several pleasant experiences would yield a different level of attitude than the same series of pleasant experiences followed by the same disappointment. Other authors predict similar effects to the learning model above. Tse and Wilton (1988) defined consumer satisfaction/dissatisfaction as "the customer's response to the evaluation of the perceived discrepancy between prior expectations...and the actual performance of the product as perceived after its consumption". Helson (1948) discussed the notion of adaptation level or "the stimulus evoking a neutral or indifferent response" and how this can change. This adaptation level would likely be similar to prior expectation and will change as a result of previous transactions.

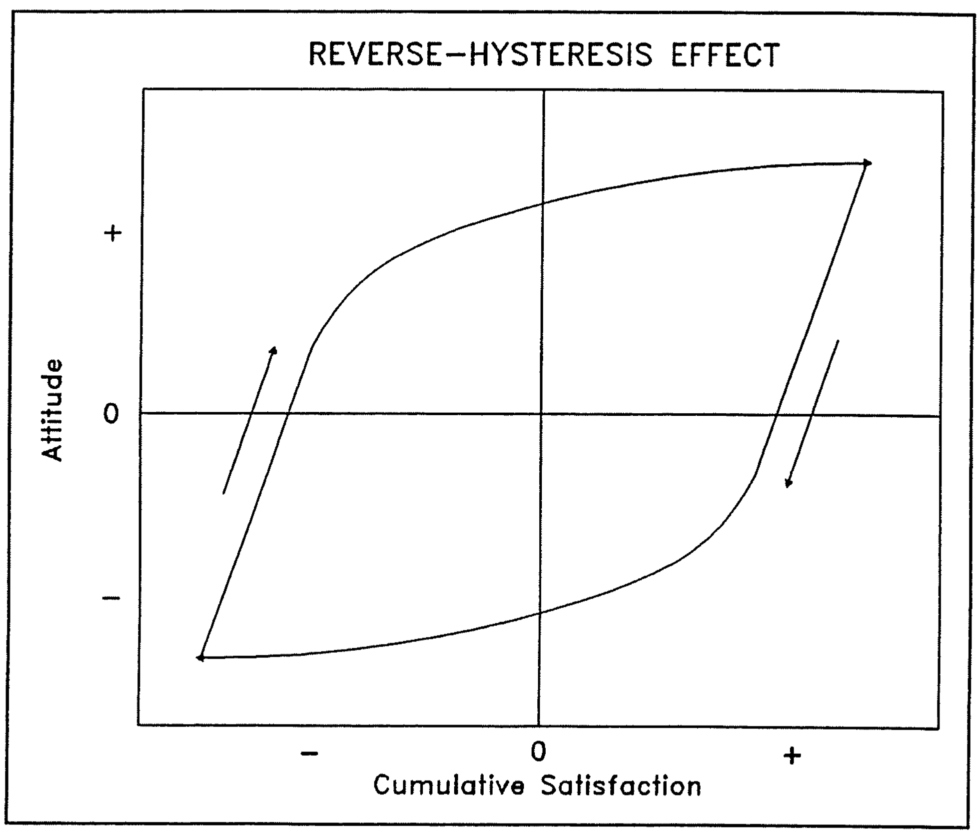
Both the learning and adaptation models predict the following: 1) that repeated positive or negative stimuli will result in attitude approaching a limit, and 2) the most recent exposures will have greater influence than earlier ones. These effects have been observed in such work as the advertising recall curves presented in Zielske and Henry (1980).

The effect of involvement has also been incorporated into learning theory. Social judgement theory (Sherif and Hovland, 1961) describes how consumers' learning processes vary on the dimension of involvement with an issue.

Modelling Attitude

The relationship between satisfaction with a purchase and the resulting attitude of has been represented most generally by Oliver (1980) as

Figure 2



$$A_{(t+1)} = f(A_t, S) \quad (2)$$

where A=attitude
S=satisfaction

In one form of equation 2, the level of attitude in the next period (t+1) is determined by the following weighted combination of the current levels of satisfaction and attitude.

$$A_{t+1} = pS_t + (1-p)A_t \quad (3)$$

where p = a parameter representing the relative influence on the next period's attitude of the satisfaction resulting from the most recent transaction.

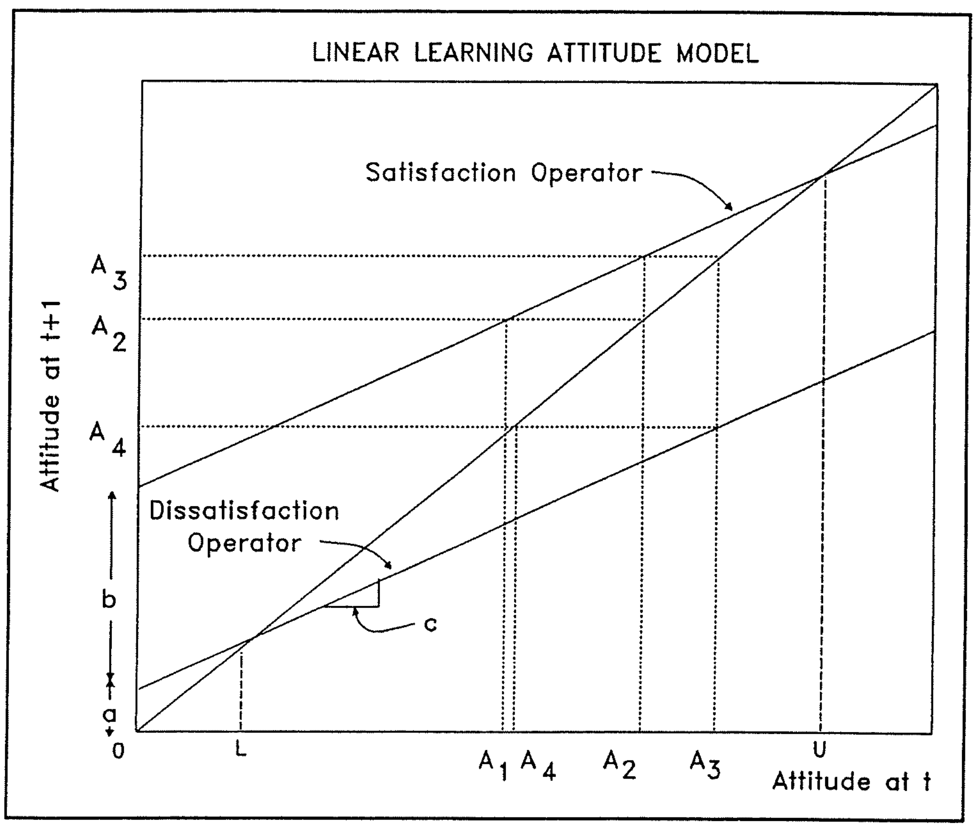
By successive substitution for A_t, that relationship can be rewritten this way:

$$A_{t+1} = pS_t + p(1-p)S_{t-1} + p(1-p)^2S_{t-2} + \ldots \quad (4)$$

Thus, the effects of previous levels of satisfaction on buyer attitude decline exponentially over time. If the parameter "p" is close to unity, then attitude is relatively responsive to changes in the current period's satisfaction. Otherwise, the responsiveness of buyer attitude tends to follow changes in satisfaction but in a different way than that shown by the catastrophe model. Under the model in equation 4, the most recent transaction would have the greatest effect, and repeated stimuli would approach an asymptote, as described above. This might be described as a reverse-hysteresis effect (see Figure 2).

Such an effect might be expected when a customer has little involvement with a seller and is quick to react to the first sign of poor

Figure 3



performance.

A Linear Learning Model

Another approach to modelling this same effect would be to use linear operators or functions that describe the pattern of sequential responses. The relationship of A_t to A_{t+1} given either a satisfying or dissatisfying transaction, could be imagined to be linear as

$$A_{t+1} = d + cA_t \qquad (5)$$

where "d" is the offset of the operator that describes the satisfaction response and c is its slope. This expression of the relationship could be expanded to include two operators, one for satisfying experiences and one for dissatisfying experiences. As Figure 3 shows, the satisfaction operator would be

$$A_{t+1} = a + b + cA_t \qquad (5A)$$

for a transaction involving a positive disconfirmation, where b represents twice the magnitude of an initial disconfirmation. Similarly, the dissatisfaction operator would be

$$A_{t+1} = a + cA_t \qquad (5B)$$

for a transaction involving negative disconfirmation.

Equations 5A and 5B can be interpreted as a variation of the linear learning model (Bush and Mosteller 1955, Kuehn 1962). Figure 3 illustrates the parameters described above and the intertemporal operation of the model. Note that the parameters "a" and "b" are implicit in the exponential model described in equation 4 above.

To illustrate how the learning model functions, consider a consumer with the initial attitude A_1, having a satisfying experience with the product. The consumer's new satisfaction is A_2. That is derived by projecting the intersection of A_1 with the satisfaction operator horizontally to the 45-degree line and then vertically to the horizontal axis.

A purchaser with a very positive attitude will probably continue to purchase the product but subsequent iterations of the above process will result in successively smaller increases in attitude. Ultimately, attitude level will asymptotically approach a limit at the upper intersection U. Thus, despite repeated positive performance, the result will be an upper limit to attitude improvement.

If, however, after numerous satisfying experiences have resulted in decreasing improvements in satisfaction, a dissatisfying experience transpires, a relatively large decrement in attitude will result, as shown in the drop from A_3 to A_4 in Figure 3. In a fashion similar to that of satisfaction, repeated dissatisfactions will yield a series of progressively smaller decrements. Attitude will approach the lower intersection L, which is the lower limit to attitude generated by repeated negative disconfirmations of a given magnitude.

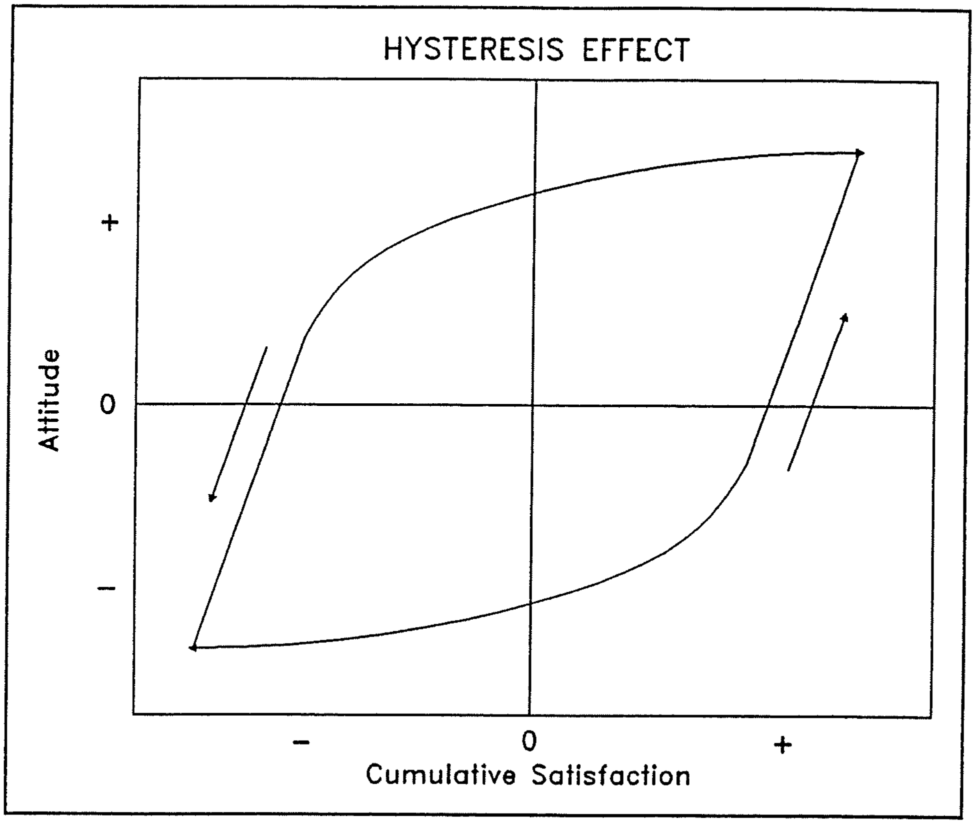
Similar to the learning theory and adaptation theory approaches, and in contrast to the catastrophe model, the learning model exhibits reverse-hysteresis. The customer who develops a positive attitude to a series of satisfying transactions will, when presented with a dissatisfying transaction, respond with a large decrease in attitude. This is in contrast to the catastrophe model, which predicts an initially small response to a change in stimulus followed by a larger change after multiple exposures. In a situation of repeated satisfactions or dissatisfaction the reverse-hysteresis effect on attitude would occur as shown in Figure 2.

The reverse-hysteresis curve of the linear learning model is not necessarily inconsistent with the findings of Oliva et al (1992). They found that catastrophic hysteresis occurred at high levels of transaction costs. However, reverse hysteresis may apply at the very low end of the transaction cost axis. It is possible that buyers with very low levels of involvement might have more volatile attitudes and be more easily swayed by the most recent transaction.

Variations of the Linear Learning Model

The notion that the degree or type of hysteresis might vary along the dimension of transaction costs raises the question of whether the linear learning model might apply at other points on the dimension. In this context, it is noteworthy

Figure 4



that the linear learning model in Figure 3 and the reverse-hysteresis curve in Figure 2 were both based on versions of Equations 5A and 5B in which parameter $c<1$. Parameter settings of $c>1$, in which the satisfaction and dissatisfaction operators intersect the 45-degree line from below, would produce standard hysteresis curves like the one shown in Figure 4.

Thus, changing the c parameter from below unity to above unity changes the respective hysteresis curves from leading to lagging. Logic suggests that in the intermediate situation when $c=1$, the trajectory of attitude and satisfaction values should become a single line and no hysteresis would result. This interpretation would be consistent with the concept of commutativity (Bush and Mosteller 1955), whereby such changes are completely reversible. Presumably at this point recency effects or changes in expectations will exactly offset loyalty or inertia effects.

Not all buyers will be described by perfect symmetry in response patterns as shown in the example however. For example, a cautious buyer dealing with a suspected untrustworthy seller may have a response curve characterized by a slow increase in attitude on repeated satisfactions, followed by a rapid decrease in attitude on the first dissatisfaction. Such a situation would call for a relaxation of the assumption of parallel operators. In this case, c for the satisfaction operator would have a value of less than one while for the dissatisfaction operator, it would have a value of greater than one. Additionally, if the operators were allowed to be non-linear as well, the shape of the response curves could be altered to describe almost any situation.

Several problems do remain with the application of the linear learning model to the commutative and hysteresis situations. In the hysteresis situation, when $c>1$ the limits of the model are only implied by the intersection of the operators with the diagonal. If $c=1$, the limits of the model are not defined. These issues will have to be dealt with if the linear learning model is further developed in this application.

CONCLUSION

The relationship between satisfaction and buyer attitude, which is longer term and more slowly changing, is not a simple one. It can be complicated by disproportionate changes in attitude as a result of repeated satisfactions. It can be characterized by leads or lags that make such changes irreversible. Moreover the response can be different for one type of product than for another and could range from traditional inertia-hysteresis to reverse hysteresis. The nature of the response may vary along a continuum of involvement or transaction cost. The above considerations make the task of modelling quite challenging. The linear learning model looks promising, however, as it ties together a range of different responses and it deserves consideration for future empirical testing.

REFERENCES

Bush, Robert R. and Frederick Mosteller (1955), *Stochastic Models for Learning*, New York: John Wiley and Sons Inc.

Coyne, Loren (1989), "Beyond Service Fads-Meaningful Strategies for the Real World," *Sloan Management Review*, 30 (Summer), 69-76.

Fazio, R. H., M. C. Powell and C. J. Williams (1989), "The Role of Attitude Accessibility in the Attitude-to-Behavior Process," *Journal of Consumer Research*, 16, 280-288.

Holbrook, Morris B. and John O'Shaughnessy (1984), "The Role of Emotion in Advertising," *Psychology and Marketing*, 1, 2, 45-64.

Helson, Harry (1948), "Adaptation Level as a Basis for a Quantitative Theory of Frames of Reference," *The Psychological Review*, November, 297-313.

Hulse, Stewart H., James E. Deese and Howard Egeth (1975), *The Psychology of Learning*, New York: McGraw-Hill Inc.

Kuehn, Alfred A. (1962), "Consumer Brand Choice as a Learning Process," *Journal of Advertising Research*, 2 (December), 10-17

LaTour, Stephen A. and Nancy C. Peat (1979), "Conceptual and Methodological Issues in Consumer Satisfaction Research," *Advances in Consumer Research*.

Oliva, Terence A., Richard L. Oliver, and Ian C. MacMillan (1992), "A Catastrophe Model for Developing Service Satisfaction Strategies," *Journal of Marketing*, 56, 83-95.

Oliva, Terence A. and Alvin C. Burns (1977), "Catastrophe Theory as a Model for Describing Consumer Behavior," *Association for Consumer Research Proceedings*, 5, 273-276.

Oliver, Richard L. (1980), "A Cognitive Model of Antecedents and Consequences of Satisfaction Decisions," *Journal of Marketing Research*, November, 460-469.

Oliver, Richard L. (1981), "Measurement and Evaluation of Satisfaction Processes in Retail Settings," *Journal of Retailing*, 25-48.

Sherif, Muzafer and Carl I. Hovland (1961), *Social Judgement Assimilation and Contrast Effects in Communication and Attitude Change*, New Haven: Yale University Press.

Tse, David K. and Peter C. Wilton (1988), "Models of Consumer Satisfaction Formation: An Extension," *Journal of Marketing Research*, XXV (May 1988), 204-212.

Webster's Dictionary (1991), *Random House Webster's College Dictionary*, New York: McGraw Hill.

Zielske, Herbert A. and Walter A. Henry (1980), "Remembering and Forgetting Television Ads," *Journal of Advertising Research*, 20, 9, 7-16.

Send correspondence regarding this article to:
Harold J. Ogden
Department of Marketing
Saint Mary's University
Halifax, Nova Scotia B3H 3C3
CANADA

are entertainment, gaming, gambling and even sports although, within selected cultural settings, these terms have perceived negative connotations. Among the less obvious -- and more negative -- are abuse, addiction, compulsion, delinquency, dependency, deviance and pathology and their respective derivations, such as compulsive or pathological gambling.

The most interesting of literature (pre-1994) was that found under the headings of compulsive gambling and gamblers. (See LIST 1 at the conclusion of the paper for selected readings.) Beyond the basic conceptual understanding of events surrounding this paper, this literature provided the basis for confirming many of the findings of this paper. More recently, at a conference on gaming and risk behavior held in Las Vegas, Nevada in 1994, 52 out of 156 papers presented dealt with various forms of problem gambling including pathological gaming, and familial, occupational and medical problems attributed to gaming behavior (Ninth International Conference 1994). The primary emphasis was on individuals who sought satisfaction in their shopping basket of products/services through the purchase of gaming services, but not only had difficulty finding it, but had experienced a ripple effect of numerous less-than-satisfactory results or outcomes.

BACKGROUND TO THE GAMBLING INDUSTRY IN THE UNITED STATES

It is evident that gambling, in its many facets, is enjoying rapid growth and is delivering an abundance of satisfaction, not only in historical pockets of gambling such as Las Vegas, Nevada but throughout the entire country. There are many manifestations of consumer satisfaction with the services offered by the gambling industry. The rapid growth in gambling revenues would indicate both a societal support for this particular service as well as a high degree of consumer satisfaction being realized.

In Clark County (including both Las Vegas and Laughlin), Nevada (the historical Mecca of gaming in the United States as well as in the world in the past fifty years), growing demand and satisfaction are clearly evident. As shown in TABLE 1, Gross Gaming Revenues in the Clark County market increased from $1.646 billion in 1980 to $4.729 billion in 1993, an increase of 287 percent in thirteen years. This was an increase in Gross Gaming Revenues nearly four times faster

Table 1
Clark County Gaming Revenues: 1980 - 1993

Year	Total Games Revenue*	Total Slot Revenue	Total Gaming Revenue
1980	$972,538,352	$673,816,374	$1,646,354,726
1981	$967,298,190	$768,863,612	$1,736,161,802
1982	$921,379,435	$864,650,025	$1,786,029,460
1983	$975,333,911	$974,558,378	$1,949,892,289
1984	$1,049,369,461	$1,104,520,377	$2,153,889,838
1985	$1,077,648,632	$1,217,551,053	$2,295,199,685
1986	$1,167,964,842	$1,400,147,525	$2,568,112,367
1987	$1,228,202,084	$1,603,106,394	$2,831,308,478
1988	$1,356,324,387	$1,819,965,328	$3,176,289,715
1989	$1,457,766,319	$2,110,780,287	$3,568,546,606
1990	$1,655,897,476	$2,379,602,928	$4,035,500,404
1991	$1,714,500,425	$2,445,316,865	$4,159,817,290
1992	$1,676,924,000	$2,704,192,000	$4,381,116,000
1993	$1,831,279,000	$2,897,814,000	$4,729,093,000

*Includes Table & Card Games
Source: 1980-1994 Las Vegas Perspectives; State of Nevada Gaming Control Board