

A Note on Consumer Shopping Productivity

From the notes of Chuck Ingene

The concept of Consumer Shopping Productivity (CSP) combines the benefits—the outputs—of shopping and the costs—or inputs —associated with shopping, from a consumer’s perspective. Shopping includes, but is not limited to purchasing. Dependent upon the context, shopping and purchasing can be distinct from consuming. That the purchase of goods and/or services is a major purpose of a typical shopping trip is well known, although one can certainly shop without purchasing. What is less well recognized is that consumers generally acquire non-purchase *benefits* from shopping relative to four outputs: information, psychic benefits, physical benefits and the actual good/services obtained. To obtain these outputs, consumers must invest time, psychic energy, physical energy, and dollars. Hence:

Inputs	Outputs	
Time	Information	I
Psychic Energy	Psychic benefits	Ψ
Physical Energy	Physical Benefits	ϕ
Dollars	Goods and/or Services	

Consumers gain Information (I) about goods and/or services, prices, other consumers’ preferences, a store or shopping center, and the transportation network between shopping trip origination/destination and shopping location(s).

Application: What kinds of information do fans gain when involved in a sporting event?

- *Goods & services*
- *Prices*
- *Other fans’ preferences*
- *Stadiums/arenas*
- *Transportation networks*

Is this information of temporal (used only once) or enduring value (useful for next time)?

Is this information gathered purposely or accidentally/incidentally?

How can knowing the kinds of information fans want help marketers?

Such information may be of immediate or of enduring value. This is a critical distinction, for information that is only of current value has a “use it or lose it” nature. When used it will enhance the value of the shopping trip, either operating through Consumer’s Surplus (see below), or through net psychic benefit, net physical benefit, or time savings. Information that is of enduring value enhances the value of future shopping trips. Note that information may be acquired incidentally (as a side-benefit of a shopping trip) or purposively. In the latter case there may be an incremental time expense and there may also be a psychic cost.

B. Psychic benefits (ψ), include:

- Personal (internal) benefits such as:
 - role-playing
 - self-gratification
 - diversion
 - sensory stimulation
 - learning about new trends
 - satisfaction due to information acquired
 - satisfaction due to engaging in physical activity
 - satisfaction due to “getting a deal”
- Social (external) benefits such as:
 - experiences outside the home
 - interaction with others having similar interests
 - peer group attraction
 - status and authority
 - pleasure of bargaining

Psychic benefits are presumably of (relatively) short duration. Their acquisition clearly requires an expenditure of time and psychic effort, and may require a physical effort as well.

Application: What psychic benefits (personal & social) are derived from attending a sporting event?

C. Physical Benefits (ϕ), including:

- Muscular exercise
- Cardio-Vascular exercise
- (Think in terms of the elderly, or those recuperating from an injury)

D. Goods and/or Services Benefits

- Utility obtained from possession and use of a good, or from acquisition of a service.

There are also *costs* associated with shopping, including:

E. Dollars

- Spent on Goods and/or Services
- Spent to get to/from a store (parking, tolls, gasoline, etc.)

F. Time

- Spent in transit
- Spent in the store voluntarily (think of browsing amongst merchandise items, talking with salespeople, other customers, and so forth)
- Spent in the store involuntarily (think of standing in line at checkout)

G. Psychic energy

- Spent dealing with congestion traveling to/from a store
- Spent dealing with rude salespeople, noisy customers, crying children, etc.

H. Physical energy

- Spent traveling to/from a store
- Spent walking, climbing stairs, standing in line, etc.

Application: What costs (dollars, time, psychic, physical) are associated with attending sporting events?

It is important to recognize that many of these expenses occur outside the retail store, but affect a consumer's willingness to spend (dollars, time, etc.) inside the store.

Both benefits and costs have an “apples-and-oranges” nature to them. Therefore, we combine costs and benefits in the following manner, using the economic concept of “Utility:”

- Net Informational Benefit (NIB): The Utility of information that will be of *future* benefit. Simple logic suggests: $NIB \geq 0$
- Net Psychic Benefit (NΨB): The Utility of psychic benefits *minus* the Utility of psychic energy. Simple logic suggests: $N\Psi B \geq 0$
- Net Physical Benefit (NφB): The Utility of physical benefits *minus* the Utility of physical energy. Simple logic suggests: $N\phi B \geq 0$
- Net Consumer’s Surplus (NC’sS): The Utility derived from goods and/or services (Ω), including the utility value of information that is of immediate value (I) *minus* all dollar expenses (including “out-of-store” expenses). Simple logic suggests $NC'sS > 0$.
- Utility of Time (U(T)): including time spent outside the store (travel time, etc.) as well as time spent inside the store.

Inputs	Outputs	Utility	4Greekdummies	Net benefit
Time	Information	I	Iota (eye-oh-tuh)	$NI_{\text{I}}B$
Psychic Energy	Psychic benefits	ψ	Psi (sigh)	$N\Psi B$
Physical Energy	Physical Benefits	ϕ	Phi (fee)	$N\phi B$
Dollars	Goods and/or Services	Ω	Omega (oh-may-guh)	$NC'sS$

A simple method of combining these Net Utilities is to use a *productivity* measure. As in all endeavors, productivity is defined as the *ratio* of outputs divided by inputs. Given the combinatorial method applied above all costs and benefits except time have been reduced to a net utility basis. The only remaining input is U(T)—it is an input to shopping. Hence:

$$CSP \equiv \frac{(NC'sS + N\Psi B + NIB + N\phi B)}{U(T)}$$

This mathematical expression says that there are multiple routes by which the consumer may derive a net benefit from shopping at a particular store.

Application: Which of these derived utilities are most likely to produce a relatively high CSP for sporting events compared to the CSP for a grocery shopping trip? Do you think individuals value their time differently for different shopping trips & sporting events?

It is important to recognize that the four core elements of CSP are not necessarily equi-valued. A poor person probably places greater emphasis on NC'S than does a wealthy person. A busy student may place a greater weight on U(T) than does someone who is retired. Similarly a healthy person probably ignores NφB while someone with a broken leg may place great emphasis on it.

Nearly fifty years ago Gregory Stone provided evidence that there are four fundamental types of shoppers:

- Economic Shoppers (who weight NC'S highly)
- Personalizing Shoppers (who weight NΨB highly)
- Ethical Shoppers—who typically prefer local stores to chain stores (presumably they also weight NΨB highly, although they define it differently than do Personalizing Shoppers)
- Apathetic Shoppers—who regard shopping as a chore and who seek to minimize the effort they put into it. This suggests that they either regard U(T) as being very high or they regard NφB and/or NΨB as being negative

Application: To what extent do you believe we could categorize these kinds of shoppers at sporting events?

Store Choice Decision

Suppose a consumer has a choice of shopping at either of two competitors—which may be stores, shopping centers, retail districts, etc. Let the stores be the “ith” and the “jth.” A rational consumer will select the competitor generating the higher CSP. In particular, the ith competitor will be chosen if and only if:

$$CSP_i \equiv \frac{(NC'sS_i + N\Psi B_i + NIB_i + N\phi B_i)}{U(T_i)} > \frac{(NC'sS_j + N\Psi B_j + NIB_j + N\phi B_j)}{U(T_j)} \equiv CSP_j$$

This is merely a mathematical method of saying that the consumer perceives himself/herself to be better off by selecting the ith competitor rather than the jth competitor. Hence, using this model, one should be able to explain why a Chicagoan would prefer the Cubs over the White Sox.

Various Subtleties

1. Different consumers will value the core elements of CSP differently because:

- They live in different places, thus they have different time and dollar costs of shopping at the same store
- They have different socio-economic and demographic circumstances, thus evaluate the same store differently
- They have different knowledge levels and different abilities to process information
- They have different personalities
- They have different energy levels and or physical conditions
- They have different time pressures

Application: Give examples of how these factors influence the sporting events you choose to attend.

2. A single consumer will evaluate the core elements of any particular place differently at different moments in time because:

- The store and its environs change continually (for example, the roads are more crowded during rush hour than at other times of day; stores are more crowded on weekends than on weekdays, etc.)
- The consumer changes according to circumstances (time pressures differ on weekdays and weekends; sometimes a person is ill)
- Various customer related circumstances change with the situation (shopping for oneself versus shopping for a gift, shopping mainly for information versus shopping to purchase)

Application: Give examples of how these factors influence the sporting events you choose to attend.

3. The CSP model may be used to evaluate consumer satisfaction. In particular, there are at least two measures of CSP at a single store, by a consumer, only minutes apart. First, there is the CSP a consumer *expects* to receive by shopping at the store—call this $E(\text{CSP})$. Second there is the CSP the consumer *does* obtain—call this $A(\text{CSP})$ — $A(\)$ denotes *actual*. Store choice decisions are based on $E(\text{CSP})$. But, after the shopping trip we may have:

$$E(\text{CSP}) \geq A(\text{CSP}) \quad \Rightarrow \quad \text{Satisfied consumer}$$

or

$$E(\text{CSP}) < A(\text{CSP}) \quad \Rightarrow \quad \text{Dissatisfied consumer}$$

In the latter case it is clear that future expectations of CSP will be downgraded—which may ultimately lead to the consumer no longer shopping at the store. In the former case expectations will rise, enhancing the probability of shopping at the store in the future. Ultimately, of course, steady state equilibrium requires $E(\text{CSP}) \approx A(\text{CSP})$.

Application: How does this relationship between expectations and actual CSP explain where you shop or what sporting events you attend?

Loyalty

When a consumer habitually shops at the same store (at least given the time of day, day of week, and purchase occasion) we say the individual is store-loyal. The retailing term for such a consumer is a “*customer*.” The Oxford English Dictionary defines a customer as:

“One who customarily purchases from a particular tradesman”

This definition dates from 1480AD. (Incidentally, “customarily” has been defined since 1612 as “habitually, as a matter of custom.”) A customer is distinct from a *consumer*, originally defined as “one who consumes, wastes, squanders or destroys” although the current definition has been extended to “one who utilizes economic goods.”

Managerial Relevance

The purpose of the CSP model is to help us understand consumer store choice decisions at a highly abstract level. Thus, it is not intended as a “decision support tool” that will tell a manager what to do. Rather, it is an intellectual aid to thinking about a class of problems. I make the following observations:

- The model is compensatory—for example, a lower value for NIB may be compensated with a higher value for NΨB.
- The model stresses that there are limits to management’s ability to influence consumer store choice decisions. In particular, events outside the store clearly affect U(T) and NC'sS in a manner that management can do little about. Nonetheless, management needs to be aware of this.
- The model can be utilized to evaluate the impact of elements of the retailing mix on consumer store choice. In this note I focus only on personnel, although other elements of the mix could be addressed similarly.
 - **Hiring** influences the personality presented by employees and, therefore, by the store; hence, it affects NΨB and U(T)
 - **Education (Training)** affects employees’ ability to provide Information—accurately *and* rapidly; hence, it affects NIB and U(T)
 - **Resources—capital**—can affect ability to move people through a checkout line: U(T)
 - **Motivation** affects employees’ willingness to provide friendly service: NΨB
 - **Evaluation**—assessing how well employees are performing their jobs –is critical for being sure that poor employees (those who lower CSP) are given further training or are weeded out.
 - **Summarize**—providing feedback to employees—improves their ability to perform all aspects of their job well.
- Finally, it is of interest to consider “*functional shifting*”—who does the “work” in a store. Consumers may be regarded as evaluating their time expenses differentially depending on whether the time expense is “voluntary” or “involuntary.” By way of illustration, many people regard standing at checkout as a waste of time—seconds seem to last as long as minutes, minutes stretch to hours. Such time is involuntarily extracted from the consumer.

In contrast, much time is voluntarily spent shopping because NIB and NΨB are being derived—minutes seem to pass like seconds. This suggests that we may decompose $U(T)$ into two components:

$$U(T) = U_v(\text{VoluntaryTime}) + U_I(\text{InvoluntaryTime})$$

Clearly $U_v < U_I$, thus it is not just a matter of how long someone is in a store that matters, but what they are doing while they are there. Nordstrom employs pianists, Stew Leonard (a Connecticut grocer) hands out balloons to children; both of them increase NΨB and shift time from the U_I category to the U_v category; hence, both enhance CSP.

Application: At each service scene (approach, entry, seating, food, exit), how can organizations shift time from the U_I category to the U_v category?