CHAPTER TWO
REVIEW OF THE LITERATURE

This section reviews the following concepts and related research findings:

1. Concept of Attitude
2. Concept of Awareness
3. Social Norms and Energy Conservation
4. Attitude and Behavior
5. Related Research

2.1 CONCEPT OF ATITUDE

Attitude has been defined in many ways:

According to Oxford Student's Dictionary of English, 6th edition (2004), an attitude means the way that one thinks, feels or behaves. An attitude can be defined as the degree of positive or negative thinking feeling (or effect) a person has toward a particular attitude object such as a place, a thing, or other persons (cited in attitude of car drivers toward gasohol).

Gilbert and Churchill (1999) distinguished between attitude and opinion. To them an attitude refers to an individual's "preference, inclination, views or feelings toward some phenomenon", while opinion is a "verbal expression of attitude." For example, attitude directly affects purchase decisions which, in turn, directly affect the attitude through experience in using the product or service selected (Ratchanee, 2006, p. 14).

2.1.1 Components of Attitude

Rosenberg (1969, p.150) explained that attitude was composed of three components:

2.1 Cognitive Component: this component includes perceptions, thoughts and beliefs about an object. This component can be measured by questions in interviews and questionnaires.

2.2 Affective Component: this component can be described by positive or negative feelings about an object.

2.3 Behavioral Component: this component can be described by behaviors instigated by both inner and outer influential stimulations, such as a person, a situation or a social clique, etc.

2.1.2 Attitude Change

Formation and change of an attitude are not two separate things; they are interwoven. People are always adopting, modifying, and relinquishing attitudes to fit their own everchanging needs and interests.Attitude cannot be easily changed by education. Acceptance of new attitudes depends on who is presenting the knowledge, how it is presented, how the person is perceived, the credibility of the communicator, and the conditions by which the knowledge is received. (Hallorah, 60-61) Attitudes change when

1. a person receives new information from others or media- *Cognitive change.*
2. through direct experience with the attitude object- *Affective change.*
3. force a person to behave in a way different than normal- *Behavioral change.*

(Traindis 1978,p. 142)

2. CONCEPT OF AWARENESS

The most established and popular definition of SA (Situation Awareness) is "Situation awareness is the perception of elements in the environment within a volume of time and space, the comprehension of their meaning, and the projection of their status in the near future" (Endsley, M. R., & Garland, 2000, p. 123).

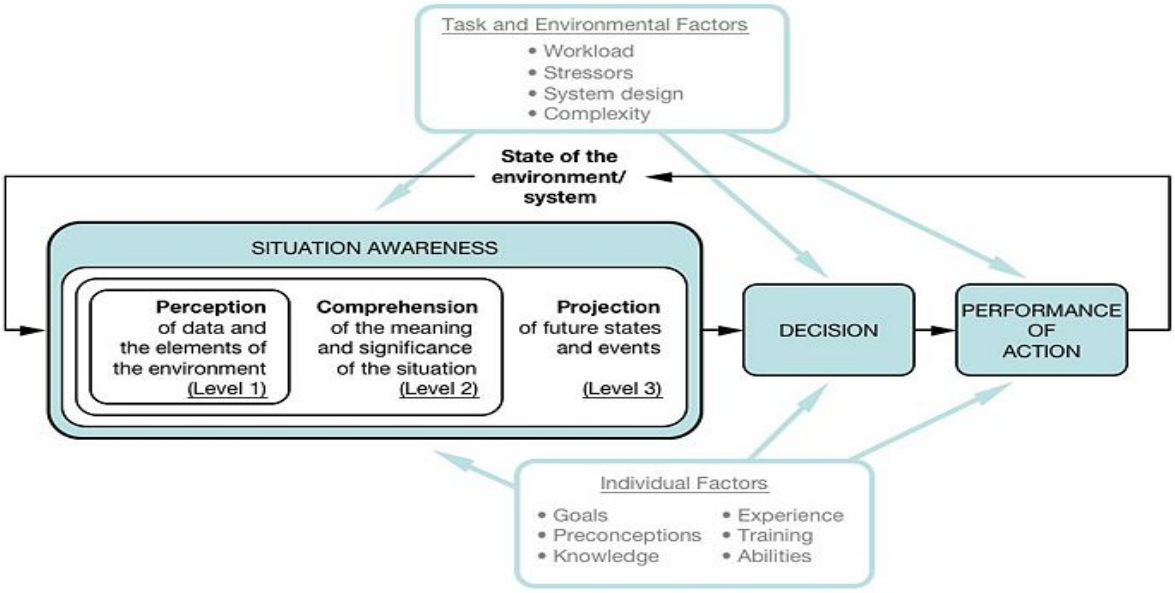
Perception, comprehension and projection are, in Endsley's report, the three essential components of SA (Situation Awareness). They support the active maintenance of an integrated mental model at three hierarchic levels:

Perception involves monitoring, cue detection and simple recognition; it produces Level 1 SA (Situation Awareness), the most basic level of SA (Situation Awareness), which is an awareness of multiple situational elements (objects, events, people, systems, environmental factors) and their current states (locations, conditions, modes, actions).

Comprehension involves pattern recognition, interpretation and evaluation; it produces Level 2 SA (Situation Awareness), an understanding of the overall meaning

of the perceived elements -- how they fit together as a whole, what kind of situation it is, what it means in terms of one's mission goals.

Projection involves anticipation and mental simulation; it produces Level 3 SA (Situation Awareness), an awareness of the likely evolution of the situation, its possible/probable future states and events. This is the highest level of SA (Situation Awareness)



From: Endsley's Model of Situation Awareness from http://en.wikipedia.org/wiki/Situational_awareness

3. SOCIAL NORMS AND ENERGY CONSERVATION

Secord and Backman (1974) define a social norm as an expectation shared by group members which specifies behavior that is considered appropriate for a given situation. Rogers and Shoemaker (1971) define norms as the established behavior patterns for the members of a given social system.

Although relatively little attention has been devoted to the influence of social factors, some studies suggest that social factors could be an important determinant of energy behaviors. R.B. Warren and D.I. Warren (1977) suggest that the neighborhood can be a major mediating institution between the individual household and the larger society. It is a social setting which transmits or fails to transmit important shared

norms or attitudes and without this influence individuals may show little or no consistency between attitudes and behaviors.

Strong social norms may compensate for a lack of belief in the energy problem. For example, if people do not believe in the reality of the energy crisis, but at the same time, see other individuals taking action regarding conservation, then, their behavior may become more consistent with the public norms, providing that they identify themselves with that neighborhood. A number of studies suggest the importance of social norms in the determination of energy conserving behavior: Warren and Clifford (1975) found greater energy conservation in neighborhoods with a high level of cohesion. Warren and Warren (1977) concluded that the extent to which one's social setting vis-à-vis energy conservation actions involves the creation or reduction of perceived discrepancies between one's own behavior and that of a person living in the same community, appears to equal or even outweights the influence of individual socioeconomic levels.

4. ATTITUDE AND BEHAVIOR

Energy-related attitudes consist of the (cognitive) beliefs about energy conservation and the (affective) evaluation of these beliefs. Attitudes may be an important determinant of behavior. If people do what they say and act according to their attitudes, an attractive change strategy may be to influence the attitudes in an energy-conserving direction and to wait for the actual energy conserving behavior to occur.

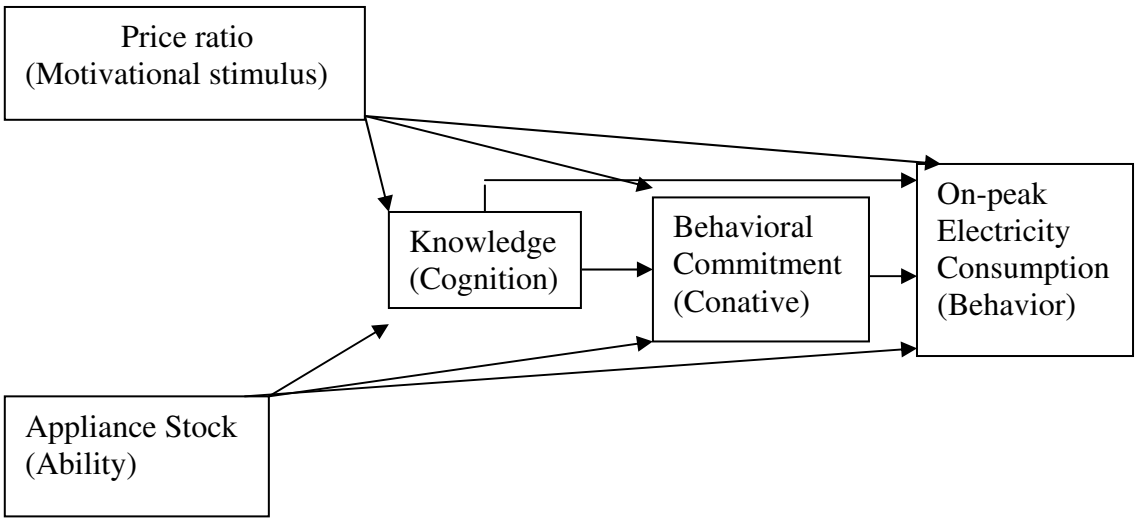
In energy studies the key criterion from the policy perspective is energy used during a particular period. This is usually measured with some sort of a meter which measures KWH (Kilowatt per Hour) of electricity or cubic feet of gas consumed during a particular period of time. Since people do not directly consume energy, this measure is not strictly a behavioral measure. Rather, it is a behavioral trace measure (cited in consumer behavior and energy policy, 1984). It is a summary measure of both immediate behaviors such as turning lights on or off, and past behaviors such as purchasing and installing a refrigerator. The sum total of energy related behaviors, both past and present, is measured by the meter. This is a very good general measure

of behavior since it summarizes thousand of conscious and non-conscious acts, acts that take place during the measurement period and past energy related acts as well.

Most studies of energy consumption behaviors have relied on verbal reports of behaviors. The tendency to over-report conservation efforts has been demonstrated by a number of studies. Geller (1981) found that persons who had attended conservation workshops (falsely) reported turning down thermostats and installation of insulation in their homes, but were in fact no more likely to have taken steps to conserve energy than those who had not attended a workshop. Heilman's (1982) research shows that self-report of energy savings by participants in a government boiler efficiency program were twice the actual energy savings which resulted from the energy conservation measures which had been implemented through the program.

Thus, measures of reported household behavior are quite fallible and are not necessary for energy conservation attitude behavior model. Attitude measures are always self-reports, since they can never be directly observed. However, the amount of energy consumed is a behavioral trace which can be measured with a high degree of accuracy if self-reports are not used. Actual energy consumption is an appropriate behavioral surrogate which has both substantive and policy relevance. As a result, this analysis dealt only with observed consumption behavior.

Figure 2. General model illustrating structural and attitudinal variables on electricity consumption.
From: Consumer Behavior and Energy Policy (p.209)



5. RELATED RESEARCH

According to Yossapumi Noppakun(2001), the economic efficiency of energy use can be increased through both energy conservation and fuel diversification or substitution. Energy conservation measured can be short or medium to long term. In short-term period, measures include revisions of operating and maintenance procedures that require little or no investment and can be implemented immediately. Medium to long term measures include complex and expensive process changes that entails plant redesign and large investment.