Research Article

Situation Awareness and Decision Making from Islamic Perspective: A Deductive Approach

İslam Perspektifinden Durumsal Farkındalık ve Karar Verme: Tümdengelimsel Bir Yaklaşım

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Abstract

Humans are fallible due to responding differently to the very same environmental stimuli. This situation, which puts oneself and the safety of their work at risk, has led many disciplines, such as aviation, medicine and law, where humans are at the center, to develop procedures to minimize human errors. These procedures, that have the concept of situation awareness at their core, are based on the person being aware of one's environment and what is happening around him/her. Situation awareness, that is, perceiving and comprehending a current situation as a whole, including time and place variables, and projecting it into the near future, is the premise of decision making processes. Decision making is to choose by exerting conscious effort from alternative responses related to a stimulus. Accurate situation awareness developing where perception and fact, expectation and reality overlap results in sound decision making and safe action. Situation awareness to have vital consequences in one's relationship with the environment, should also have a counterpart in the person's relationship with oneself. The answers to the questions of "Who/where am I? What/where will I be in a while?" will create one's own situational awareness. Situation awareness to change depending on where one positions oneself, and the subsequent decisions made, affects the safety of the person. The approach of religion in general, and Islam in particular, to humans seems feasible in ensuring one's awareness of their own situation that in it.

Keywords: Situation awareness, decision making, human factor, safety, religion, Islam

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Özet

İnsan, aynı çevresel uyarana farklı tepkiler verebilmesi özelliği nedeniyle, yanılabilir. Kişinin kendisini ve iş güvenliğini riske atan bu durum, havacılık, tıp ve hukuk gibi insan faktörünün merkezde olduğu birçok disiplinin, insan hatalarını en aza indirmek için prosedürler geliştirmesine yol açmıştır. Temelinde durumsal farkındalık kavramı bulunan bu prosedürler, kişinin çevresinin ve etrafında olup bitenlerin farkında olması esasına dayanmaktadır. Durumsal farkındalık, yani zaman ve yer değişkenleri de dahil olmak üzere mevcut bir durumu bir bütün olarak algılamak ve anlamak ve bunu yakın geleceğe yansıtmak, karar verme süreçlerinin öncülüdür. Karar verme, bir uyarana ilişkin alternatif tepkiler arasından bilinçli bir çaba sarf ederek seçim yapmaktır. Algı ve gerçek, beklenti ve gerçekliğin örtüştüğü yerde gelişen doğru durumsal farkındalık, sağlam karar verme ve güvenli eylemle sonuçlanır. Kişinin çevreyle ilişkisinde hayati sonuçlar doğuracak durumsal farkındalığın, kişinin kendisiyle olan ilişkisinde de bir karşılığı olmalıdır. "Kimim ben/neredeyim? Bir süre sonra ne olacağım/nerede olacağım?" sorularının cevapları, kişinin kendi durumsal farkındalığını yaratacaktır. Durumsal farkındalık, kişinin kendini konumlandırdığı yere ve aldığı kararlara bağlı olarak değişir ve bu da kişinin güvenliğini etkiler. Genel olarak dinin ve özellikle İslam'ın insanlara yaklaşımı, kişinin kendi durumunun farkında olmasını sağlamada etkili görünmektedir.

Anahtar Kelimeler: Durumsal farkındalık, karar verme, insan faktörü, emniyet, din, İslam

Introduction

Human beings have the potential to respond differently to the very same stimulus depending on his/her context and individual situation, and due to this feature, he/she is open to making mistakes. Possible errors that a person can make during her/his actions is an issue that must be minimized for many disciplines, from aviation to medicine and law, where the human factor is at the center (Stanton et al., 2017). Models designed for this purpose aim to ensure the safety of the person and his work by preventing mistakes that the person may make, especially in dynamic, volatile and complex situations.

A person's response (reaction) in the form of action or inaction to an environmental or internal-origin stimulus to which he/she is exposed appears as an observable behavior. In short, behavior, a response developed by the cognitive structure of the mind to the effects of sensory/motor stimuli on the human body, is shaped in the brain, the organ where stimuli are perceived and processed (Ziv & Hadad, 2021). Stimuli perceived through receptors in the body are transformed into a meaning, depending on the nature of the stimulus, through sequential processes fed from a single source or parallel processes developed by feeding from multiple sources simultaneously. In this process called "information processing", cognitive elements such as perception, memory and

attention play an active role. Processing information is important because it is the precursor of a person's "decision-making" mechanisms (Wickens et al., 2015).

Decision-making is to choose with conscious effort from alternative responses related to an input. Sound decisions require predicting what would occur if different choices are made. Consequently, a failure to recognise the situation or state that requires a decision or action can result in serious incidents or even accidents (Mangus & Mahajan, 2022). The key concept in a person's ability to process available information and make decisions effectively and accurately, especially in dynamic and physically/mentally demanding environments, is **situation awareness** (Orique & Despins, 2018) (see Figure 1).

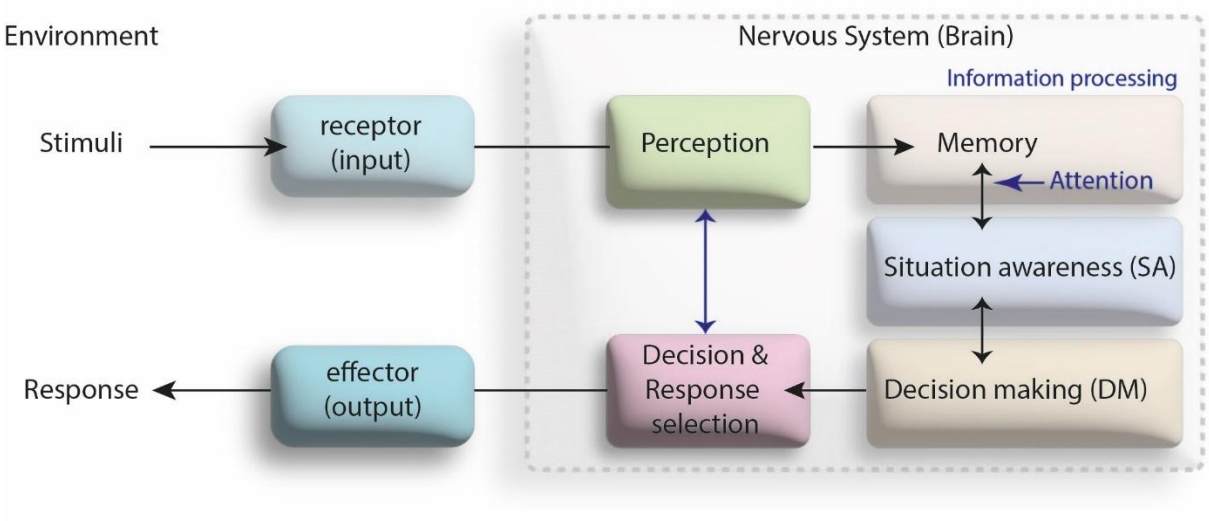


Figure 1. Situation awareness and decision-making process to respond to environmental stimuli modified from Wickens et al. (2015), Orique and Despin (2018), and Nguyen et al. (2019).

Being aware of one's surroundings and the activities going around them, that is situation awareness, is the ability of a person to perceive and comprehend the situation he/she is in as a whole, and project it into the near future. It is the ability of a person to perceive (Level 1) and understand (Level 2) the current situation as a whole, including place and time variables, and anticipate it into the near future (Level 3) (see Figure 2) (Nguyen et al., 2019).

Attentional control has an important place in the processing of the "input" that is perceived and has an equivalent in memory. Thanks to memory recall mediated by internal attention, the information acquired through knowledge, skills and experience is used in the processing of the current stimulus, while the real-world counterparts of the current stimulus are found with 5 Ws, which require external attention; answers to the questions who, what, when, where and why (importance) constitute the first step of situational awareness (detection and representation of the situation). Comprehension and understanding of the data collected through scanning and gathering data and creating a mental model constitute the second stage of situational awareness. The mental model, consisting of imaginative, conceptual, conscious and unconscious elements, is a representation of the external reality – the surrounding world, the relationships between its various parts and a person's intuitive perception about their own acts and consequences. Mental models are progressively generated and modified on the basis of our past experiences, knowledge, perception and learning problem-solving strategies. The last step of situational awareness is the mental model's "thinking ahead" and "anticipating future events", making predictions about future events (see Figure 2)(Nguyen et al., 2019).

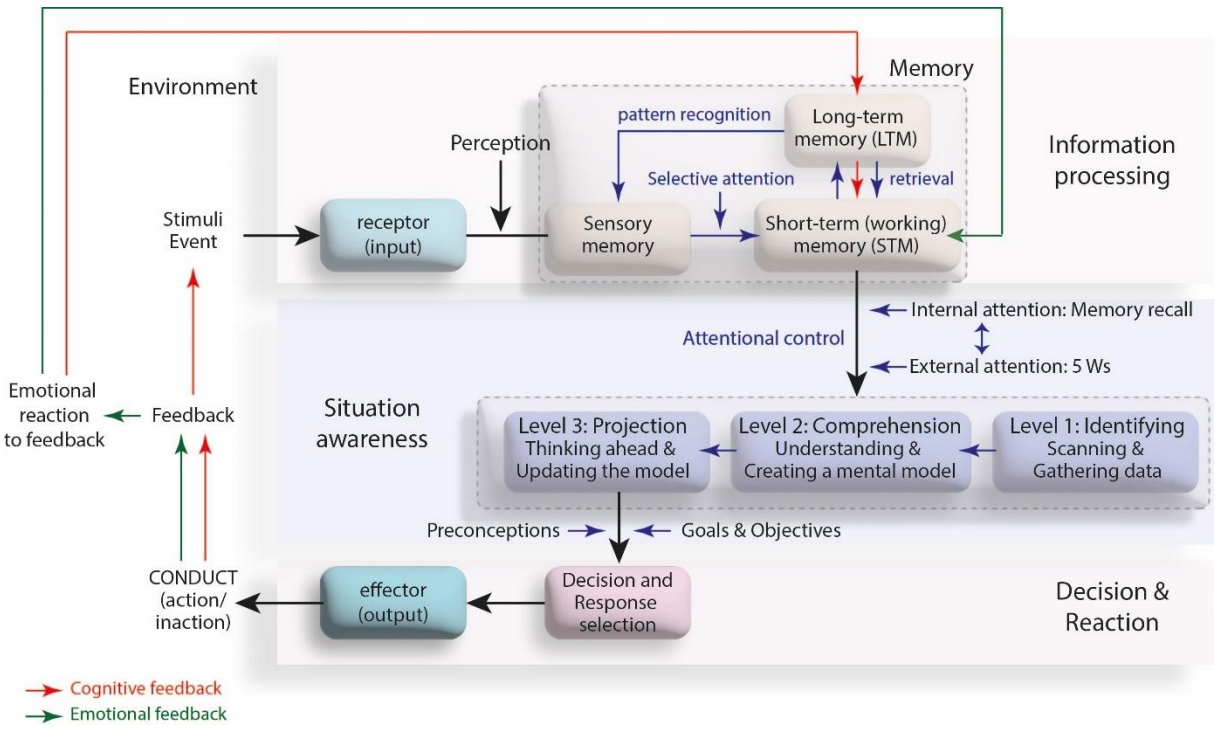


Figure 2. Role of situation awareness: From input to action through information processing and decision-making

The fact that situation awareness includes a structure consisting of possible alternatives constitutes the premise of the person's "decision-making" process. In summary, "Where am I right now – what am I doing?" Where was I just now – what was I doing? "Where will I be soon – what will I do?" What are my circumstances? What should I do? The answers to the questions establish "situation awareness". Collecting and analyzing accurate information related to these questions and projecting what may happen in the near future provides an "effective" situation awareness. Individual factors such as goals, objectives, and preconceptions intervene in the "decision-making" process by affecting situation awareness. Correct situational awareness, which develops where perception and fact, expectation and reality, pre-prepared information and what needs to be done overlap, results in making the right decisions. Conversely, misperception and misunderstanding of the situation may result in losing situation awareness and "poor decision" (Nguyen et al., 2019).

In the literature, there are publications from many different disciplines pointing to the importance of situation awareness. In aviation, for instance, up to 80% of incidents or accidents that put flight safety at risk are caused by "human factors", and a significant portion of these are due to "loss of situation awareness" or "poor decision-making" (Besco, 2004). Situation awareness studies in medicine showed that it increases the effectiveness of emergency medical interventions and patient safety (Sedlár, 2020), facilitates the clinical follow-up of hospitalized pediatric patients (Sosa et al., 2022), and enables emergency response in mass-casualty events (Demchak et al., 2006). Finally, situation awareness of the law enforcement in mass emergency was reported as an effective instrument in establishing operational safety (Huhta et al., 2023).

Situation awareness that can have "vital" consequences in a person's relationship with their environment, should also have a counterpart in the person's relationship with "oneself". The answers to the questions of **"Who/where am I? What/where will I be in a while?"** will enable the development of a mental model of the person's "own situational awareness". The real-life projections of these answers given will be based on their counterparts in the person's memory built on formal education and other social factors including culture and religion.

The answer to the "Who", the first and foremost important of the questions, is crucial in terms of perceiving and comprehending one's own emotions, thoughts, beliefs and actions as a whole, that is, ensuring the development of "self-awareness" (Lage et al., 2022). **Self-awareness** is the precursor to the answers to other questions in ensuring the person's situational awareness regarding oneself. The answer to the question of **Where am I?** likewise varies depending on the information in the person's memory. Answering this question of individuals from a secular perspective background, human existence may be understood in terms of evolutionary processes including "I am in the world by chance or as a result of somehow changing in my heritable characteristics of some biological populations over successive generations" (Schlebusch et al., 2017; Lipson et al., 2020). The answer to the question of what will happen to this person in the future is that "it is mystery ending with death". Having said that, it should be taken into account that different secular, scientific, or evolutionary approaches may not necessarily adopt the same interpretation regarding human existence and the afterlife. Nonetheless, the decisions that a person who looks at one's coordinates from this perspective will make about oneself in his/her life will be in the light of these assumptions. The answers of people fed by theological sources to the above questions are different from these. According to monotheistic sources, **religion**, declared by a supreme creator, exists to direct the human beings to their creator. Evaluating humans in the context of **body-spirit**, religion sees the **body** as a vehicle that the **spirit** uses to turn toward its Creator. Within the Islamic conceptual framework adopted in this study, the spirit performs this function through the heart, where it comes into contact with the body. The effects caused by sensory or motor stimuli on the human body are transformed into a voluntary action (action/inaction) with the decisions made by the **heart**; In this process, the **brain** acts as an interface that transmits the orders it receives from the heart to the implementing organs (Goker, 2024)(see Figure 3).

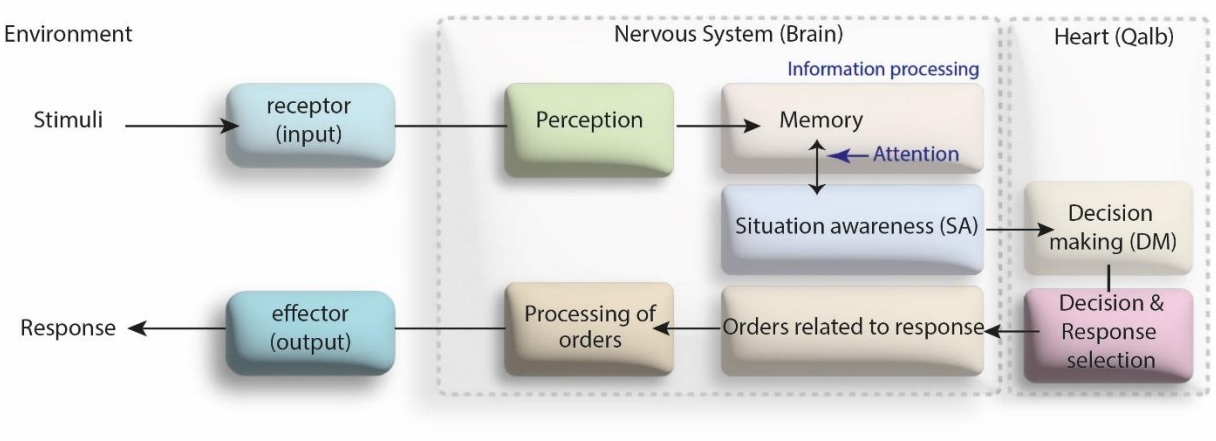


Figure 3. Heart (qalb) as a decision-maker as a conceptual model

The concept of **religion**, which regulates human responses through behavioral norms and codes of conduct could leads to behave as one should resulting in contributing the possibility of making mistakes or reducing some type of errors in one's relationships with oneself and the environment. Islam, one of the Abrahamic religions, considers the person through their **behavior** and their **heart** that orchestrates this behavior. Islam attaches man's existence in this world to the concept of **displaying the best behavior** [Qur'an 67:2; "He who has created death as well as life, so that He might put you to a test [and thus show] which of you is best in conduct) (Al-Razi, 2008a)]. It also discusses the concept of **action** together with **heart** (see: "Verily, Allah does not look at your appearance nor to your possessions but rather He looks at your hearts and actions (Commission, 2014). By keeping the **heart** in a constantly awake-alert position through the provisions (commandments, prohibitions) it contains, it ensures that the person has the correct "decision-making" mechanisms in action in the face of events or situations.

It has been consistently shown in the literature of aviation, medicine and law disciplines, that awareness of the situation in which humans interact with their environment is "vital" (Besco, 2004; Sedlár, 2020; Sosa et al., 2022; Demchak et al., 2006; Huhta et al., 2023). Awareness of the situation in one's relationship with oneself is no less important. That is, situational self-focus, or "self-awareness", prompts individuals to ask a number of fundamental questions regarding themselves. The answers to the "Who am I? Where am I? What am I doing? What will happen to me?" questions will give the persons their own situation awareness within the space and time axis. The individual

situational awareness of a person whose knowledge regarding who one is derived from sources other than religion will not be the same as the situational awareness of someone whose reference is to theological sources.

The answers given by the religion of Islam to the questions required for one's situational awareness are unquestionably clear; The person is a human being who is a descendant of the prophet Adam, created by Allah Almighty only to serve Him [see Adh-Dhariyat, The Dust-Scattering Winds, 51/56; a Qur'anic verse saying that "And [tell them that] I have not created the invisible beings and men to any end other than that they may [know and] worship Me) (Al-Razi, 2008b)]. The place where one will display his/her act of worship is the planet called Earth, for which he was created. He/She will remain here for a certain period of time until their end comes and death takes them. The reason why it is included in the death-life equation is to exhibit the best behavior. Those who come into the presence of Allah with good behavior and a heart free of evil will remain in peace forever [see Al-Shu'ara, The Poets, 26/89; a Qur'anic verse saying that "[and when] only one [will be happy] who comes before Allah with a heart free of evil!" (Al-Razi, 2008c)].

Considering that situation awareness is the premise of decision-making mechanisms, in this context, the decisions people will make and the actions they will take in the face of a stimulus about themselves seem to change depending on where the person positions "oneself". Decisions that follow loss of situational awareness or poor/incorrect judgment put the person's safety at risk. The approach of the religion of "Islam" in ensuring the safety of situational awareness in the context of oneself seems feasible.

Ethics Committee Approval

This study is a theoretical work and does not require ethics committee approval.

Conflict of Interest

The author(s) declare(s) no conflict of interest.

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