# Elimination By Aspects

Authored by

**mohammad looti**

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# Elimination By Aspects

**Primary Disciplinary Field(s):** Cognitive Psychology, Decision Making, Behavioral Economics
**Proponents:** Amos Tversky

## 1. Core Principles

Elimination by Aspects (EBA) is a prominent model of a decision-making technique developed by the cognitive psychologist Amos Tversky in the 1970s. This model describes a non-compensatory strategy individuals employ when faced with multiple options, particularly in complex choice scenarios. At its core, EBA posits that decision-makers simplify choices by sequentially eliminating alternatives that do not possess certain desired attributes or fail to meet a minimum threshold on a chosen attribute. Rather than weighing all pros and cons simultaneously or aggregating values, the process is iterative and reductive.

The fundamental operation of EBA begins with the identification of a single attribute or feature deemed most important by the decision-maker. This attribute serves as the initial filter. All available options are then evaluated against this primary attribute, and any option that fails to meet a predetermined "cutoff" or criterion for that attribute is immediately eliminated from consideration. This elimination is irreversible. Once an option is discarded, it is not revisited, regardless of its performance on subsequent attributes.

Following the initial elimination, the decision-maker proceeds to identify the next most important attribute. The remaining set of options is then subjected to the same filtering process, with further eliminations occurring based on the new attribute and its associated cutoff criterion. This iterative cycle continues, with different attributes and their respective criteria being applied sequentially to the diminishing pool of options. The process persists until only a single option remains, which is then selected as the "best" choice. This sequential and non-compensatory nature distinguishes EBA from compensatory models, where a weakness in one attribute can be offset by a strength in another.

## 2. Historical Development

The model of Elimination by Aspects emerged during a pivotal era in decision-making research, largely influenced by the work of Daniel Kahneman and Amos Tversky on heuristics and biases. Prior to this, much of decision theory was dominated by normative models, which prescribed how rational agents *should* make decisions to maximize utility, such as Expected Utility Theory. However, Tversky and his contemporaries observed that actual human decision-making often deviated systematically from these normative prescriptions, especially under conditions of uncertainty or cognitive overload.

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Tversky introduced EBA in 1972 as a descriptive model, aiming to explain how people *actually* make decisions rather than how they theoretically should. He recognized that evaluating all attributes of all options simultaneously in complex choices can be cognitively taxing. EBA offered a psychologically plausible mechanism for simplifying choice tasks, reflecting a common human tendency to reduce cognitive effort. It built upon earlier ideas of sequential processing and attribute-based choice, but formalized the elimination process.

EBA provided a significant alternative to compensatory models like multi-attribute utility theory, which require decision-makers to weigh and combine all attribute values for each option. Tversky's work, including EBA and later Prospect Theory (developed with Kahneman), significantly contributed to the development of behavioral economics and cognitive psychology by demonstrating the systematic use of simplifying heuristics in human judgment and choice, thus shifting the focus from idealized rationality to bounded rationality.

## 3. Key Concepts and Components

**Aspects or Attributes:** These are the specific features, characteristics, or criteria upon which the decision is based. In the context of buying a car, aspects might include safety rating, fuel efficiency, price, brand reputation, or aesthetic appeal. The selection and subjective weighting of these aspects are critical to the EBA process, reflecting the individual's preferences and priorities. The model implies that these aspects are not necessarily weighted explicitly but rather implicitly through their order of consideration.

**Cutoff Criteria:** For each selected aspect, the decision-maker establishes a minimum acceptable level or "cutoff." If an option fails to meet this cutoff, it is eliminated. For example, if "safety" is an aspect, a cutoff might be a minimum 4-star safety rating. The subjective nature of these cutoffs means they can vary significantly between individuals and even for the same individual across different decision contexts. These criteria act as strict filters, preventing options that do not satisfy basic requirements from proceeding further in the decision process.

**Sequential Elimination:** This is the defining characteristic of EBA. Options are not evaluated holistically. Instead, the elimination process unfolds in a series of steps, with options being discarded one by one as they fail to meet the criteria for successive aspects. Once an option is eliminated, it is removed permanently from the choice set. This sequential nature means that the order in which aspects are considered can have a profound impact on the final choice, potentially leading to different outcomes depending on the prioritization of attributes.

**Non-Compensatory Strategy:** A crucial element of EBA is its non-compensatory nature. Unlike compensatory models where a poor score on one attribute can be compensated for by an excellent score on another (e.g., a high price might be acceptable if the car has exceptional safety features), EBA does not allow for such trade-offs. If an option fails to meet the cutoff for an important

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attribute, it is eliminated, regardless of how superior it might be on other, yet-to-be-considered attributes. This feature makes EBA a cognitively efficient but potentially sub-optimal decision strategy.

## 4. Applications and Examples

The Elimination by Aspects model finds widespread application in understanding everyday consumer choices and more complex organizational decisions, providing a descriptive framework for observed human behavior. Consider the classic example of purchasing a new car, as described in the original context. A potential buyer, faced with numerous models, might first prioritize **safety**. They would establish a minimum safety rating (e.g., a 5-star NCAP rating). Any car failing to meet this stringent criterion is immediately removed from their list, irrespective of its other merits. This significantly narrows the initial field of options, making the subsequent stages of decision-making less overwhelming.

With the pool of options reduced, the buyer would then consider the next most important attribute, perhaps **gas mileage**. They might set a cutoff, such as a minimum of 30 miles per gallon. Cars remaining from the previous round that do not achieve this fuel efficiency standard are then eliminated. This iterative process continues, with attributes like **price**, then **style**, and finally other features being applied sequentially. Each step further filters the remaining options until, ideally, only one car is left, representing the optimal choice for that individual based on their prioritized aspects and cutoffs. This step-by-step reduction of choices illustrates the practical utility of EBA in simplifying complex multi-attribute decisions.

Beyond car buying, EBA is observable in various scenarios. When choosing a university, a student might first eliminate all institutions outside a specific geographic region (aspect: location), then those without their desired major (aspect: program availability), then those exceeding a certain tuition cost (aspect: price), until a manageable list, or even a single choice, remains. Similarly, in job recruitment, employers might first screen applicants based on minimum qualifications (e.g., specific degree or years of experience), before moving on to other attributes like soft skills or cultural fit. Marketers also implicitly leverage EBA by highlighting dominant attributes of their products that align with common consumer priorities, aiming to get their product past the initial elimination filters.

## 5. Criticisms and Limitations

Despite its explanatory power and psychological plausibility, Elimination by Aspects is not without its criticisms and inherent limitations. One of the most significant drawbacks is the **order effect**. The final choice can be heavily influenced by the sequence in which attributes are considered. If a highly desirable option is eliminated early due to a strict cutoff on a less critical (though initially

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prioritized) attribute, it cannot be recovered, potentially leading to a suboptimal choice that the decision-maker might regret. The model struggles to account for scenarios where the importance of attributes might shift dynamically or where a holistic view could lead to a better outcome.

Another major criticism pertains to **information loss**. By rapidly eliminating options based on single attributes, EBA inherently discards a considerable amount of valuable information about the eliminated alternatives. An option might be weak on one critical aspect but exceptionally strong on several others that are considered later. Because EBA is non-compensatory, these strengths cannot offset the initial weakness, potentially leading to the selection of an option that is not globally optimal or that lacks a better overall balance of attributes. The model prioritizes cognitive efficiency over comprehensive evaluation, which can sometimes come at the cost of decision quality.

Furthermore, EBA relies heavily on the decision-maker's ability to clearly define and prioritize aspects, as well as to establish consistent and meaningful cutoff criteria. In many real-world scenarios, aspects can be ambiguous, difficult to quantify, or their relative importance can be fluid. The process of setting strict cutoffs can also be arbitrary or subject to framing effects, introducing variability and potential inconsistencies into the decision process. The model's deterministic nature in eliminating options also struggles to capture situations where individuals might tolerate minor deviations from a cutoff if an option excels significantly in other areas, a flexibility often observed in human choice.

## 6. Related Theories and Concepts

Elimination by Aspects belongs to a broader family of heuristics and decision strategies, often contrasted with more complex, compensatory models. A closely related concept is **Satisficing**, proposed by Herbert Simon. Satisficing suggests that individuals do not seek to optimize their choices (find the "best" option) but rather to find an option that is "good enough" or meets their aspiration level. Both EBA and satisficing are strategies for bounded rationality, aiming to reduce cognitive effort in decision-making, though EBA provides a more structured, attribute-based process for arriving at a satisfactory choice.

In contrast to EBA's non-compensatory approach, **Multi-Attribute Utility Theory (MAUT)** represents a compensatory decision model. MAUT involves assigning weights to various attributes and then scoring each option on every attribute. These weighted scores are then summed to yield an overall utility score for each option, allowing for trade-offs where a deficit in one area can be compensated by an advantage in another. While MAUT provides a more comprehensive and often more "rational" outcome, it is also significantly more cognitively demanding than EBA, making it less descriptive of how individuals typically make quick, complex decisions.

EBA can also be seen as a generalization of the **Lexicographic Heuristic**. In a purely

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lexicographic strategy, the decision-maker chooses the option that is best on the most important attribute. If there's a tie, they move to the next most important attribute, and so on, until a single option emerges. EBA is similar but allows for the elimination of multiple options at each stage if they fall below a certain cutoff, rather than just identifying the single best option on that attribute. Both are non-compensatory and rely on attribute prioritization. EBA's place within the broader heuristics and biases research program by Kahneman and Tversky underscores its significance as an explanatory model for common cognitive shortcuts in human judgment.

## 7. Further Reading

Amos Tversky - Wikipedia
Elimination by Aspects - Wikipedia
Decision-making - Wikipedia
Prospect theory - Wikipedia
Heuristics and biases - Wikipedia

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