

Research on the Availability Heuristic and Its Application

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Abstract: The availability heuristic refers to individuals making decisions based on the availability of relevant events as a shortcut. The paper focuses on the availability heuristic and its own unique information processing mode through literature reading and analysis. According to the discussion of the application, it can be concluded that the availability heuristic affects individual risk cognition and decision-making behavior. Future research should explore the root causes, explore the relationship between the availability heuristic and other phenomena, and expand the research field of its application.

Keywords: availability, heuristic, risk, decision-making

1. Introduction

As the competitive environment becomes more and more changeable, complex, and uncertain, people increasingly realize that due to their own "bounded rationality" and the decision-making environment with incomplete information, they cannot collect all the information to make rational probability statistics and judgments. In real life, people make decisions based on the availability of relevant events as a shortcut. The paper concentrates on the availability heuristic and its own unique information processing mode by literature reading and analysis. This paper reveals the application of research accessibility heuristics to decision making, which leads to a better understanding of the decision-making mechanism to optimize decision-making behavior.

2. Introduction to Availability Heuristic

The availability heuristic refers to individuals making decisions based on the availability of relevant events as a shortcut. Individual judgment and decision outcomes are regulated by the degree of availability. Specifically, the more readily an event is perceived or recalled, the more likely an individual will perceive it to have occurred. This is known as the availability heuristic. Tversky and Kahneman first tested the existence of the availability heuristic in a series of studies, the most well-known of which was the Judgment of Word Frequency, in which people were asked to answer whether there were more words beginning with the letter K or more words with a K as the third letter in an English passage. The results found that nearly 70 percent of participants thought there were more words beginning with the letter K, even though there were far fewer of the former than the latter. In general, people can more easily recall words beginning with the letter K, such as key, keep, kill, etc., than words with the third letter K, so they will think that there are more words beginning with the letter K, leading to incorrect likelihood judgments [1].

Previous studies have suggested that the availability heuristic usually exists in two kinds of decision tasks. One is the decision task related to the existing memory, in which the individual needs to extract the information from the memory. The other is a decision-making task that has nothing to do with existing memory. The individual needs to construct information according to the known conditions. In real-life situations, the more frequently an event occurs, the easier it is to be remembered and retrieved by an individual. Therefore, the availability heuristic is reasonable in nature, which is why researchers emphasize it as an ecologically effective decision-making strategy. However, due to the influence of various factors unrelated to event frequency, accessibility heuristic decision-making is not always reasonable and effective. The accessibility heuristic is a shortcut for cognitive decision-making with both advantages and disadvantages, which is commonly used in the possibility judgment of events and daily behavior decision-making. Therefore, the understanding and research of accessibility heuristic is of great significance.

3. The Mechanism for the Availability Heuristic

According to the definition of the availability heuristic, the individual's assessment of the degree of availability of events determines the outcome of the availability heuristic judgment decision. At present, there are two main evaluation mechanisms for availability.

According to one view, individuals evaluate the availability based on the extracted information content. The larger the number of recalled events, the higher the individual's perception of availability, and thus the more likely they are to occur in reality. Hertwig, Pachur, and Kurzenhauser found in their study of situational frequency estimation of risk that when comparing the prevalence of heart disease and gastric cancer, individuals tend to compare the prevalence of the two diseases by recalling actual instances of each disease and judging the prevalence of the two diseases in the entire population based on the number of instances. This was confirmed by Hills and Pachur [2]. Another point of view is that individuals evaluate accessibility according to their subjective feelings in the process of information extraction. The stronger the ease of feeling in the process of extraction, the higher the accessibility will be considered by individuals, resulting in the heuristic judgment result of accessibility. OSchwarz and others separated the subjective feelings of the information extraction process from the extracted information content. The subjects were asked to report 6 (easy task) or 12 (difficult task) instances of their dogmatism or non-dogmatism to induce the availability heuristic decision, after which the degree of dogmatism was self-rated. Individuals need to extract more events when recalling 12 cases than when recalling 6 cases, and the ease of the information extraction process is lower [3]. According to the first assessment mechanism, subjects who completed the difficult task of dogmatic behavior rated themselves as more dogmatic than those who completed the simple task of dogmatic behavior. When the difficulty of the information extraction process is used as the evaluation criterion of accessibility, the availability heuristic judgment will get the opposite result. That is to say, two different mechanisms of action will produce different evaluation results.

Relevant studies have confirmed that the availability heuristic is also affected by the motility, salience and recency of the event. First of all, the vividness of an event can improve its accessibility, and Keller, Siegrist and Gutscher's experiments confirm this conclusion. The study found that participants who viewed pictures of flood-affected houses rated the risk of flooding higher than those who viewed neutral pictures, which made the damage more vivid. The reason why vividness can affect the availability heuristic may be that vivid information can make events visible and concrete, which can leave a deep impression on individuals and be easy to remember, and then can be more easily extracted by individuals to affect their decisions when making decisions. Second, the prominence of the event is enough to affect the usability of the heuristic. The reason is that the familiarity of an individual depends not only on the knowledge of the event, but also on the characteristic

points. The latter is very prominently affected by events. Finally, Tversky and Kahneman found that recent events are more readily available than previous experiences, and individuals tend to use recently acquired information to make likelihood judgments. [4]

4. Discussion of the Applications

4.1. Application 1

When people see a female driver backing up and causing a car accident, they will immediately remember that a few days ago they had a collision with a female driver. Whenever the news reports a car accident, if the driver is a woman, the media workers always specify "female driver" specifically, thus separating the female driver from the crowd of drivers. What about big data and facts?

The China Academy of Judicial Big Data released the Special Report on the Characteristics and Trends of the Crime of causing Traffic Accidents (2016.1-2019.12), which analyzed some characteristics of the crime of causing traffic accidents in China in recent years.

According to statistics, 94.60 percent of defendants in traffic accident cases are men, while 5.40 percent are women. Female drivers had an average case rate of 0.25 per 10,000 people from 2016 to 2019, while male drivers had an average case rate of 2.20 per 10,000 people, which was 8.8 times higher than female drivers.

It has been determined that men, not women, are the primary traffic offenders. The paper also mentions the male-to-female driver ratio. According to the Ministry of Public Security's 2021 motor vehicle and driver data, there were 319 million male drivers and 162 million female drivers, with a male to female driver ratio of 1.97 to 1. In other words, given the male-female driver ratio, this conclusion can be confirmed.

4.2. Application 2

When a hot stock is about to go public, the entire news media will be focused on that event. And many investors will unknowingly care about, or even buy, this stock as a result of the media bombardment.

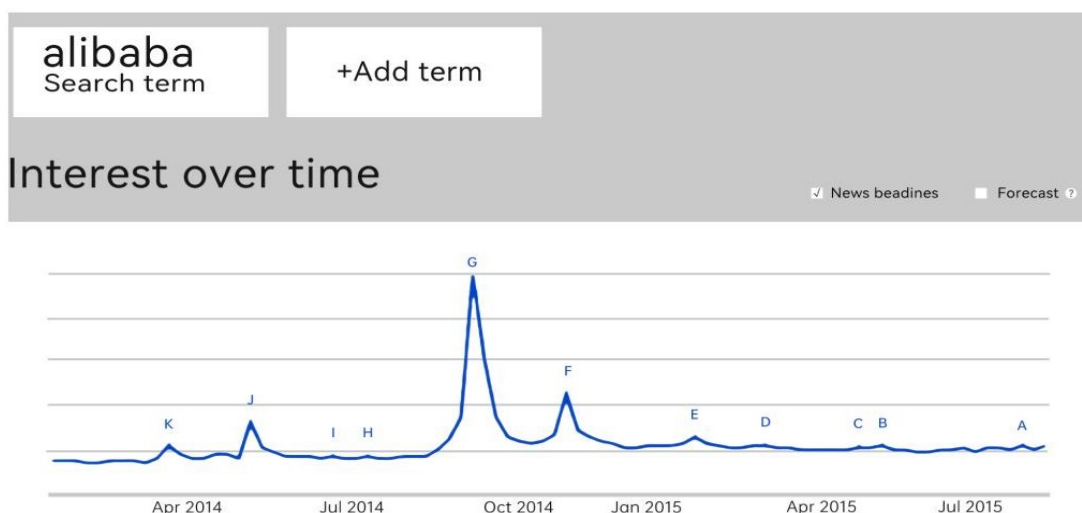


Figure 1: The number of searches for "Alibaba" on Google.

For example, Figure 1 shows the number of searches for "Alibaba" on Google. We can see that the search volume on Alibaba peaked around September 2014, which was right around the time

Alibaba went public in the U.S. Sometimes investors even feel that what they are buying is not Alibaba's shares, but a Chinese dream with unlimited expectations of their own. As Jack Ma put it, "the dream or to have in case it comes true?"

It means that people tend to judge the possibility of an event according to the cognitive availability. For example, investors attach too much importance to the information they know or can easily get while ignoring the in-depth exploration of other information in the decision-making process, resulting in the bias of judgment.

4.3. Application 3

If Jack is the most diligent employee in the department, he gets up early and leaves work late every day and strives to make progress, and he will be recognized as the most diligent person. Just two days this month, Jack was late or left half a day early because of some small things in life, and just let everyone know. Although these two days are less than 1% of the 250 working days of the year, how many colleagues will change their impression of Jack's diligence and punctuality at this time?

If Q1 is not easy to answer, we change it to Q2: Suppose A is the manager of a team with 20 people. Jack is recognized as the "star employee". But, A made a very low-level mistake, which caused a bit of loss for the team. Will A still determine to give the only "excellent employee" to Jack in the year-end performance review?

If Q2 is to let A swing, then we can come to Q3: A is still the manager. Jack still made low-level mistakes. But at a team dinner A praised Jack in public and called on everyone to learn from Jack. In this case, what will A think about the year-end performance review?

Scene 1: "Availability Heuristic Determination" tells us that once an example is readily available in our memory, it usually tends to overgeneralize. Therefore, a diligent employee is likely to be noticeably late once or twice a month, affecting other colleagues' original favorable impression of him.

Scene 2: For the same reason as in Scenario 1, A is likely to be less determined to give the only "excellent" to Jack, even though Jack is still objectively the most valuable contributor to the team.

Scene 3: Compared to scene two, A is relatively more likely to award Jack as the only excellent employee. The reason is that people are harder to act against public.

According to the discussion of the above application, availability heuristic decisions are not always rational and effective. One way to reduce intuition and bias is to slow down our thinking, especially when people are coming to important decisions. People need to practice mobilizing their thinking patterns rather than letting the intuition make decisions. Here are seven suggestive questions to ask :

1. Why did I come up with this idea/make this judgment decision?
2. What is the evidence for this view/decision?
3. Did I come up with this idea/judgment decision quickly because there were familiar events affecting me?
4. Is it because something similar happened to me recently?
5. Is it because I have seen similar news or stories recently?
6. Is it easy? Can I find more objective data to support this view/judgment decision?

When we're done with these seven questions, you're going back to the rational thinking and decision-making for me to imagine similar results?

5. Conclusion

It is found that the availability heuristic has its own unique information processing mode. The availability heuristic affects individual risk cognition and decision-making behavior, which has important application value and theoretical value. Future research should explore the root causes, ex-

plore the relationship between the availability heuristic and other phenomena, and expand the research field of its application.

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