

Modulus Tollen

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Modus tollens is a reasoning concept that is used to make decisions. According to the theoretical prepositions, if the consequent is false, the antecedent is denied. The concept of modus tollens has been used to make decisions on the assumption that no other factor comes into the mix except for the two available ones making the argument valid. It uses the if-then sentence format to create the conditions. ¹ For example, if P is true, then Q is true, and if P is false, then it follows that Q is false. The reasoning concept conditions that P implies Q.

The History of Modus Tollens

The concept of Modus tollens is said to have been first described by Theophrastus dates back to antiquity. It is closely related by Modus Pollens, which though similar, have different invalid forms of arguments. The concept has been used in various fields and settings to create reasoning statements by setting conditions to help make critical decisions. For example, it uses the reasoning that the first concept confirms the second, thus the idea of the "mode that by denying denies."

How Modus Tollens is applied and use in making decisions

Modus tollens are used to make decisions by setting conditions. Since numerous factors affect a particular decision, it will be easier if conditions are set to help make it easier. For example, if I have the car keys, I am the owner. This is a modus tollens premise that sets the first conditions. Therefore, if I am the car owner, but I do not have the keys, the decision to be made is that I am not the car owner, even if the car is mine.

Modus tollens has been applied in many settings, including analyzing other people's ideas, writings, and many issues in life. For example, an article by Danley (1991) uses the

concept to analyze the concept by DeGeorge, trying to explore more about the ethical responsibilities of engineers (Danley, 1991). The article written provides the necessary conditions that help answer any other questions related to the issues raised.

Comprehensive examples of Modus Tollens

Modus Tollens concept is used in various professional fields and thus has numerous examples. An example of the modus tollens is;

If I have the phone's password, then I can unlock it.

I cannot unlock the phone

Therefore, I do not have the password.

By accepting the two premises, the argument in the above example is considered to be valid even though in real life, there are many other reasons why I can fail to unlock the phone even if I have the password.

Another example of modus tollens is:

If the dog barks, then there is someone outside

The dog did not bark

Therefore, there is no one outside

When we assume the first premises to be true means that the only time there is someone outside is when the dog bark. Therefore, the failure of the dog to bark means there is no one outside. It makes this a valid statement considering the idea that the second premise cannot be right when the first is wrong. The argument is valid according to the modus tollens even though

there are possibilities that the dog might fail to detect an intruder. Therefore the argument cannot be invalidated since if the first premise is true; then the second is true too.

A third example of modus tollens is:

If an animal is a bird, then it can fly

An animal cannot fly

Therefore, it is not a bird.

Similar to the previous arguments, the two premises are considered to be valid arguments. Therefore, if an animal is a bird, then the first condition is met. The second condition, its ability to fly, is automatically met according to the valid statement. Of course, some birds cannot fly in real life, and others that are not birds can fly, but this does not invalidate the argument either.

How modus tollens is used in various settings

Modus tollens is a well-known decision-making tool that is used in many professional fields. In addition, it is widely used in educational settings, organizational settings, and financial decision-making.

Use in an educational setting

Modus tollens is used in educational settings to help measure co-curricular activities and non-academic activities as well. For example, the application is used to measure and improve leadership in these institutions by bringing to the table ideas both old and new and helping the leaders make the right decisions to help run the schools better (Halpin, 2017). Measuring these non-academic activities and incorporating them into the educational system sometimes proves

challenging. However, with this concept, it is easier to apply it and validate all statements, thus making better decisions by leaders

The concept of Modus tollens is also used in grading students both in academic competencies. Setting conditions during grading and arranging students' names from top to bottom is a typical use of modus tollens. After grading the papers and deciding on the grades, the lecturers then decide which students have passed which ones have failed. For example;

If a student has an A, B, C, then the student has passed.

A student has a C.

Therefore, the student has passed.

These valid arguments are then included in computer programs like excel to help sort the students' performance. The educational setting also teaches the students about Modus tollens to help them understand when they are employed.

A study by Leighton (2006) from the University of Alberta includes how the application of this deductive reasoning helps teach the students and run the institutions. Modus tollens is meant to help people make decisions by eliminating certain factors and remaining with the few, which are then easy to pick from. The study found out that the reasoning and decisions made by the students depended on the reasoning strategies that they were exposed to and trained with (Leighton, 2006). Besides, these strategies boosted their thinking abilities making these strategies essential for training students.

Found Use in an organizational setting

Similar to use in educational settings, modus tollens is applied the same way. Modus tollens is widely applied in developing cognition skills and reasoning abilities which are helpful in innovation and creativity. Organizations are training their employees to obtain 'hard-wired' reasoning skills to help them make decisions they face within their daily work at the organizations. For example, the Use of Erasmus syllogism uses logic and invalidity to reason and make decisions in these organizations (Bye & Johansen, 2020). A better comprehension of semiotic conditions and how they are applied in rationality and understanding ideas explains how and why ideas are altered and changed.

Therefore, companies have partly depended on the concept to help design better organizations and define many companies' future. For instance, in hiring exercises, there are tests and marks set for the candidate to pass. The candidates are given tests which are then marked with the set conditions. For example, if a candidate fails a drug test, then they are a drug addict. A candidate fails a drug test; therefore, he is a drug addict. These valid arguments set at interviews and recruitment exercises help vet these candidates and determine who is fit to be hired and who should be dropped. Setting these conditions helps the hiring department assess the available candidates and identify what they are good at.

Use in financial decision-making

Modus tollens involves hypothesis testing, which is essential in making financial decisions. These tests are meant to identify uncertainties and calculate the possibilities of loss and gain in any available options in the table. For example, modus tollens calculates and determines the truth and false values of uncertain formulas using uncertain formulas helps the financial department make decisions from calculated risks and the possibility of events. An article by Magni (2008) details one of the applied budgeting criteria using the same concept in the

modus tollens. The concept is applied in the additivity and description invariance during calculations to help determine the best course of action. More specifically, modus tollens is used in corporate finance to show how disequilibrium net present values are determined using the concept (Magni, 2008). Therefore, modus tollens is widely used in making financial-related decisions by examining the uncertainties and modeling results, thus coming up with the best options for the organizations.

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