

M4L15. Risk Tolerance

Slide #1



The slide cover is split into two main sections. The left section has a dark background with the Texas A&M University Engineering logo at the top. Below the logo, the title 'Risk Tolerance' is written in white. Underneath the title, the name 'Dr. Xiaomin Yang' is displayed. At the bottom of this section, 'TCMT 612' is written in yellow, followed by 'Technical Management Decision Making' in white. A red banner at the very bottom contains the text 'MASTERS OF ENGINEERING TECHNICAL MANAGEMENT' in white. The right section of the cover features a grayscale image of a person standing with their back to the camera, looking at a large, glowing, spherical network of nodes and lines. To the right of the sphere are several hexagonal icons containing various data visualizations like bar charts, line graphs, and network diagrams.

ATM
TEXAS A&M UNIVERSITY
Engineering

Risk Tolerance

Dr. Xiaomin Yang

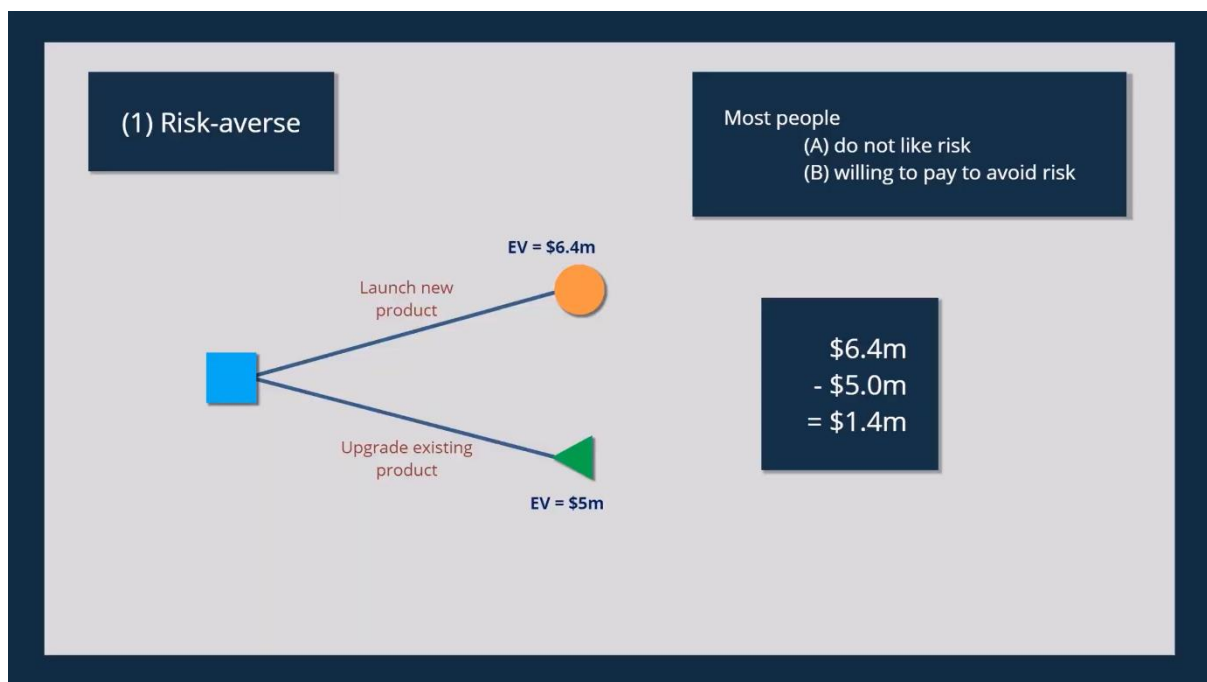
TCMT 612 | Technical Management
Decision Making

MASTERS OF ENGINEERING TECHNICAL MANAGEMENT

In this topic, we will continue our discussion on managers' risk profiles and correlate them to certainty equivalent value.

In the following topic, risk profiles will be analyzed using the utility function.

Slide #2



Most people do not like risk and are willing to pay to avoid it, such people are called risk-averse.

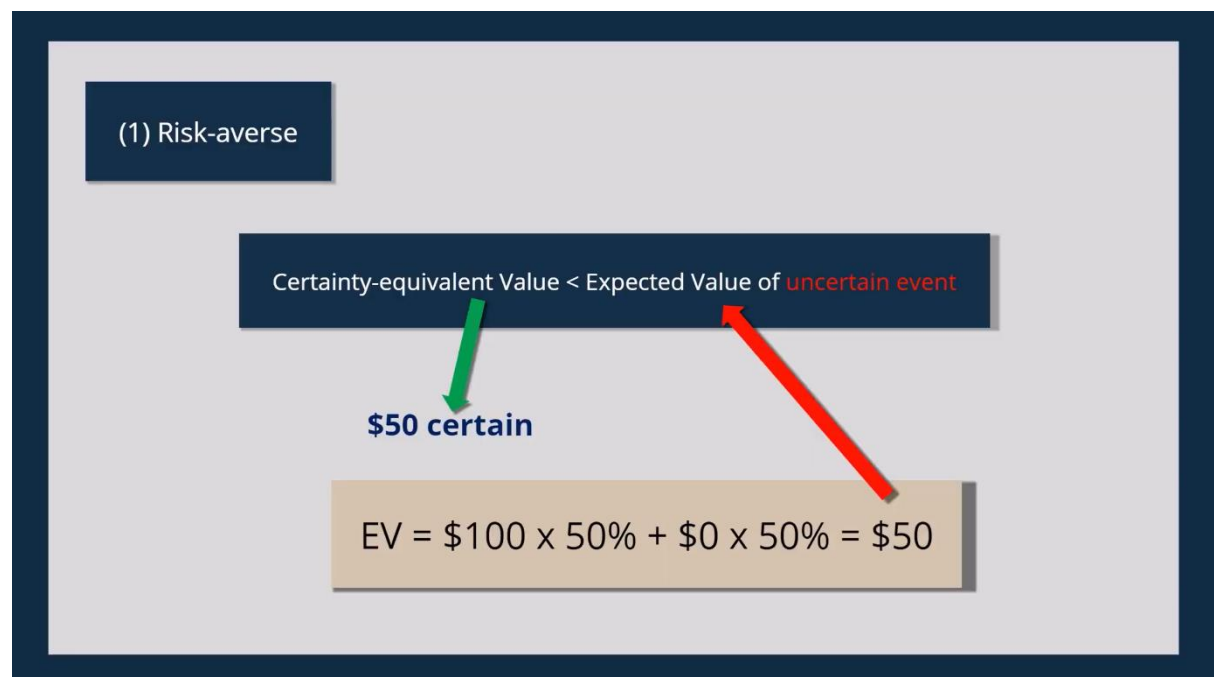
By choosing to upgrade an existing product with less than a 6.4 million dollars expected value, you are effectively paying to avoid risk.

That is, you are behaving in a risk-averse fashion.

Risk-averse people will prefer the projects with lower risk when faced with two investments.

With a similar expected return, risk-averse investors will accept a certain payment of less than the expected value of uncertain payoffs, rather than taking a chance and possibly receiving much lower return.

Slide #3



When in a risk averse fashion, a person's certainty equivalent value is less than the expected value of an uncertainty event.

A risk averse person prefers 50 dollars certain to uncertain situations, 100 dollars at 50% and 0 dollars at 50%.

Even though in those two scenarios, the expected values are the same, 50 dollars, the risk averse person prefers the 50 dollars certain.

Slide #4

(1) Risk-averse

Risk-averse in their mandate.

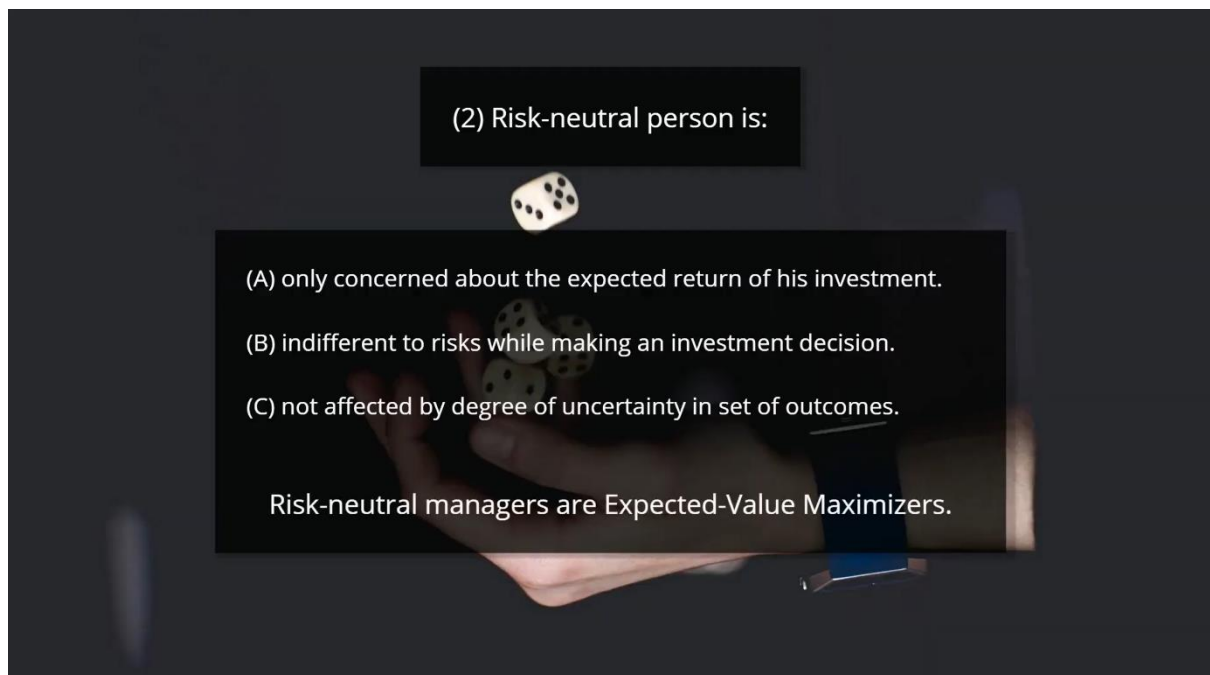
They demand that risk be minimized at the cost of losing the utility of risky activity.

Health and safety executives are fundamentally risk averse in their mandate.

This often means that they demand that risk be minimized at the cost of losing the utility of risky activity.

Also, when you buy insurance, therefore reducing or eliminating your risk, you are behaving in a risk averse fashion.

Slide #5

A hand holding a die, with a text box overlaying the image. The text box contains the following text:

(2) Risk-neutral person is:

- (A) only concerned about the expected return of his investment.
- (B) indifferent to risks while making an investment decision.
- (C) not affected by degree of uncertainty in set of outcomes.

Risk-neutral managers are Expected-Value Maximizers.

A risk neutral investor is only concerned about the expected return of his investment.

They are indifferent to risks while making an investment decision.

A risk neutral person's decisions are not affected by the degree of uncertainty in the set of outcomes.

What they are concerned with is the expected return.

Risk neutral managers are expected value maximizers.

Slide #6

(3) Risk-seeker, or risk-lover, has a preference for risk.

Willing to take on additional risk for an investment that has relatively low expected return.

Certainty-equivalent Value > Expected Value of uncertain event

Lower returns usually associated with lower risk investments.

Higher return are associated with investments of higher risk, to be compensated for taking additional risk.

Risk-lovers go against this principle.

They acquire investment of higher risk with a lower expected return.

Risk seeker or risk lover is person who has a preference for risk.

Risk lovers are willing to take on additional risk for an investment that has relatively low expected return.

When in risk loving fashion, a person's certainty equivalent value is greater than the expected value of an uncertain event, there is always a risk return trade off in investing, lower returns are usually associated with lower risk investments.

Higher potential returns are associated with investments of higher risk, as most investors expect to be compensated for taking on additional risk.

Risk lovers go against this principle.

They acquire investment of higher risk with a lower expected return.

Slide #7

Risk tolerance behaviors

Risk-averse (or risk-avoiding)	Risk Neutral	Risk-loving (or risk-seeking)
<ul style="list-style-type: none">• Prefer lower risk projects or investment• Accept a certain payment rather than taking the risk and possibly receiving less	<ul style="list-style-type: none">• Only consider expected return of investment• Decisions are not affected by the degree of uncertainty	<ul style="list-style-type: none">• Have as a preference <i>for</i> risk• Willing to take on high risk for an investment with relatively low expected return
$\text{Certainty-equivalent value} < \text{Expected value of uncertain event}$	$\text{Certainty-equivalent value} = \text{Expected value of uncertain event}$	$\text{Certainty-equivalent value} > \text{Expected value of uncertain event}$

This table summarizes the three risk tolerance behaviors presented by business managers.