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Cybersecurity and The Use of Simulations For Decision-Making

Introduction

In today's society, it is apparent that cybersecurity has become a growing field. Many companies rely on cybersecurity to monitor the operating systems that contain important information, databases, and network security. This article provides a new perspective of using simulations to make decisions in the economy.

Decision Making and Simulations

The advancement in technology has rapidly been growing and companies have come to the realization that they have to continue to find new ways to adapt to these changes to ensure that the company is able to run operations smoothly. There are two types of knowledge that need to be developed in order for the decision-making process to be successful. Knowing the possible consequences that could potentially occur in different scenarios. The other type that needs to be

known is probability. In this article, Knight states that based off past data decisions can be made from limited knowledge on certain scenarios (Kianpour & Franke, 2025).

Implementing simulation allows for a wide variety of scenarios. Using a simulation will allow models to replicate real world systems and processes. Simulations allow for in-depth insight as well as versatility when it comes to understanding the complexity of different systems as technology continues to evolve. Using simulations allows companies to run future possible scenarios and figure out what possible outcomes and vulnerabilities they could face. When it comes time to finally face the scenario at hand the company will be fully aware of what the situation is and be able to handle the task at hand.

In class we were presented with a few different skills that were important when it came to cybersecurity. Simulations require companies to have good communication skills to allow for a smooth way to asses a plan. Thinking analytically is also very important as cybersecurity involves being able to handle complex situations. Companies are taking a risk of implementing simulations and this could impact them in a good or bad way based on the scenario at hand. A company will have to adapt as well as work as a team to be able to make sure these simulations are as accurate as possible to current real-life situations to ensure they are well prepared when an actual situation occurs. If the company implements a framework, this will allow for them to figure what the limitations of implementing simulations. Having an understanding of the simulation's limitations allows the company to prevent errors as well as misusing the simulator and its operation. People involved with designing the simulations are able to use the framework as a guidance tool and allows the team to decide the appropriate time to implement simulations.

Conclusion

When these simulations were implemented into economic cybersecurity, the decision-making process showed there were both positive outcomes as well as negative. Simulations could be useful to mimic high quality cyber threat situations (Kianpour & Franke, 2025).

For example, it allows for a multiple perspective outlook as well as experimentation. Companies will have a better understanding of a variety of potential cyber threats. Simulations also have their downsides when a scenario is misrepresented. For example, if a situation occurs and the company predicts the wrong possible outcomes this could impact the decision-making process. Although, if the company did not predict the correct situation to occur, they are able to take the risk and try to handle the situation and try to make the best decision choice. This allows the company to gain knowledge on information they are not familiar with and learn how to handle the through trial and error. In order for companies to adapt to technological advancements, they must make sure their simulations are up to date with real world situations to ensure they understand potential cyber-attacks and how to alleviate them.

Sources

Kianpour, M., & Franke, U. (2025, February 13). Use of simulations in economic cybersecurity decision-making | Journal of Cybersecurity | Oxford academic. https://academic.oup.com/cybersecurity/article/11/1/tyaf003/8011238