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COURSE: IT 318 – QUANTITATIVE RESEARCH

ACTIVITY #3

Identifying and Defining Concepts/Variables from the Research Problem

Identifying and Defining Concepts/Variables from the Research Problem From the case material, perform the following:
(1) Identity the important concepts/variables.
(2) Determine which is the dependent variable and the independent variable/s.
(3) Define the variables operationally based on the context of the case.

Research Problem # 1:
"What is the effect of implementing AI-based fraud detection systems on the rate of fraudulent transactions and customer trust in online banking?"

1. Concepts/Variables
    - AI-based fraud detection systems
    - Rate of fraudulent transactions
    - Customer trust in online banking
2. Dependent Variables
    - Rate of fraudulent transactions
    - Customer trust in online banking

    Independent Variables
    - Implementing AI-based fraud detection systems
3. Definition of the variables
    - AI-based fraud detection systems - systems that use artificial intelligence algorithms to detect and prevent scams in online banking networks
    - Rate of fraudulent transactions - the rate or percentage of fraudulent activity occurring on an online banking platform over a given time period
    - Customer trust in online banking - customers' trust and belief in the security and reliability of an online banking service

Research Problem # 2:

"How does the use of virtual reality (VR) training modules impact employee learning outcomes and knowledge retention in IT companies?"

1. Concepts/Variables
    - Virtual reality (VR) training modules
    - Employee learning outcomes
    - Knowledge retention
2. Dependent Variables
    - Employee learning outcomes
    - Knowledge retention

    Independent Variables
    - Virtual reality (VR) training modules
3. Definition of the variables
    - Virtual reality (VR) training modules - virtual reality training are designed to teach or develop specific abilities
    - Employee learning outcomes - improvements in knowledge or skills as a result of the training
    - Knowledge retention - the ability of employees to recall and apply the knowledge gained during training

Research Problem # 3:

"How does the integration of cloud computing in data storage systems affect data accessibility and operational costs in healthcare organizations?"

1. Concepts/Variables
    - Integration of cloud computing in data storage systems
    - Data accessibility
    - Operational costs in healthcare organizations
2. Dependent Variables
    - Data accessibility
    - Operational costs

    Independent Variables
    - Integration of clous computing in data storage systems
3. Definition of the variables
    - Integration of cloud computing in data storage systems - the use of remote servers hosted on the internet to store, manage, and process data for healthcare organizations

- Data accessibility - the ease with which healthcare professionals and stakeholders can retrieve, share, and use data stored in the system
- Operational costs in healthcare organizations - the total expenses associated with running the data storage system

Research Problem # 4:

"What is the effect of implementing biometric authentication on system security and user experience in e-commerce platforms?"

1. Concepts/Variables
    - Implementing biometric authentication
    - System security
    - User experience
2. Dependent Variables
    - System security
    - User experience

    Independent Variables
    - Implementing biometric authentication
3. Definition of the variables
    - Implementing biometric authentication - the use of unique biological characteristics (e.g., fingerprints, facial recognition) to verify users' identities when accessing e-commerce platforms
    - System security - the protection level of the e-commerce platform against unauthorized access, data breaches, or cyberattacks
    - User experience - the ease, satisfaction, and efficiency with which users engage with the platform, as assessed by user feedback, surveys, or usability testing

Research Problem # 5:

"How does the deployment of 5G technology in smart cities affect network performance and the adoption of Internet of Things (IoT) devices?"

1. Concepts/Variables
    - Deployment of 5G technology in smart cities
    - Network performance
    - Adoption of Internet of Things (IoT) devices

2. Dependent Variables
    - Network performance
    - Adoption of Internet of Things (IoT) devices

   Independent Variables
    - Deployment of 5G technology in smart cities
3. Definition of the variables
    - Deployment of 5G technology in smart cities - the installation and implementation of 5G cellular network infrastructure in smart city environments
    - Network performance - the speed, reliability, and capacity of the network
    - Adoption of Internet of Things (IoT) devices - the rate at which individuals, businesses, or organizations incorporate IoT devices into their systems