COLORADO TECHNICAL UNIVERSITY

2018 DOCTORAL SYMPOSIUM

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DESIGN SCIENCE RESEARCH METHOD

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WHAT IS DESIGN SCIENCE RESEARCH (DSR)

Activity conducted toward understanding a phenomenon

- Other research methods study naturally occurring phenomenon
- DSR creates the phenomenon for study

Design assumes inventing or bringing into existence

- DSR creates an artifact
  - If knowledge exists for artifact development, creation is routine
  - If knowledge does not exist in advance, creation is innovative

DSR is creation of an artificial design of man-made object/phenomenon versus natural science (class of objects or things already in the world around us)

Implies novel or innovative research
EMPHASIS OF RESEARCH

Emphasis covers the realms of

• Academically sound research
• Practitioner solutions development

Considered an Explanatory Science

Produces knowledge (academic) and understanding of a problem domain
SEVEN GUIDELINES OF DSR

Design as an artifact - Design-science research must produce a viable artifact in the form of a construct, a model, a method, or an instantiation

Problem relevance - The objective of design-science research is to develop technology-based solutions to important and relevant business problems

Design evaluation - The utility, quality, and efficacy of a design artifact must be rigorously demonstrated via well-executed evaluation methods

Research contributions - Effective design-science research must provide clear and verifiable contributions in the areas of the design artifact, design foundations, and/or design methodologies

Research rigor - Design-science research relies upon the application of rigorous methods in both the construction and evaluation of the design artifact

Design as a search process - The search for an effective artifact requires utilizing available means to reach desired ends while satisfying laws in the problem environment

Communication of research - Design-science research must be presented effectively both to technology-oriented as well as management-oriented audiences

Hevner, 2004
PRACTICAL CONCERNS OF USE OF DSR

Expectation that the artifact will work

- Can have issues, in which case the reasons for failure and suggestions for solutions must be presented

Artifact must be within the ability of the researcher to produce

Artifact development is expected to be prototyped during development of the research proposal

Requires detailed explanation of the artifact
Thank you for joining this session!

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Questions?