Title of Proposal:
Causes of Innovation Engineering Management Failure in Workforce Development Within the Nevada System of Higher Education

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PROJECT ALIGNMENT AREAS FOR STRATEGIC PRIORITIES

- This project aligns with the strategic priorities of (a) By what means can Nevada's public workforce development system(WFDS) meet the needs of job seekers/workers and employers? (b) How can Nevada improve the performance of the public workforce system?

- By analyzing the various ways of programming in Nevada's public WFDS meeting the needs of job seekers/workers and employers, programming has to be responsive to all individuals involved, influential in terms of retention, promotion, and leadership capacity to lead and or train others in the same or different areas where appropriate. The scholar, practitioner, and leader (SPL) model encourages and fosters teamwork, efficiency of time and resources, and shared tacit knowledge of systems and processes.

- Nevada can improve the performance of the public WFDS by offering rigorous guided career pathways utilizing federal or state financial resources. By having data on which programs are better aligned to industry hiring practices with data to show the correlation vs. causation. Note: Correlation does not equate to causation; it only demonstrates if there is a relationship, if any, and must be placed in context to be viable to the participant while being transparent.

- The NPWR system would allow the principal researcher to answer the following research question quantitatively.

INTRODUCTION

- The State of Nevada workforce development (WFD) and innovation engineering management (IEM) combined to form an integral part of society. Course program developers must apply knowledge of WFD and IEM in tandem with academia, government, and industry to continuously create innovative programming (Hicks et al., 2000; Sublett & Tovar, 2021).

- WFD programs and IEM are not interchangeable because each requires specific domain knowledge (DM) (Atwell et al., 2022; Macdonald et al., 2022). Weise (2021) concluded in that the intersection of IEM and WFD creates effective programming.

- However, IEM and engineering management (EM) overlap in skills development, creating confusion between professional engineers and non-engineers who are executives and instructors in private and public sectors (American Society for Engineering Education, 2019; NSHE, 2021a; Solis, 2021a).

Intro Cont.

- The researcher's study addressed the lack of expertise in IEM roles when creating WFD programs within NSHE which leads to an increased skills gap that has been well documented on various industry levels concerning initial alignment proposals in federal and state WFD programs (Deloitte, 2018; Education Commission of the States, 2021; Hicks et al., 2000; Levesque, 2019; Leigh & Kraft, 2017).

- By 2040, pandemic-related learning delays (PRLD) are projected to amount to $1.6 trillion worldwide. The inability to apply expert knowledge in IEM roles when creating WFD programs within NHSE leads to an increased skills gap; over 2.4 million positions may go unfilled between the years 2023-2028 due to the skills gap, with an economic impact loss of $4.1 trillion globally (Al-Haqan et al., 2020; Avramchuk, 2020; Collins & Spindle-Jackson; Deloitte, 2018; Maxwell & Gallagher, 2020; McKinsey & Company, 2021b).

NPWR ABILITY TO CAPTURE INTERAGENCY DATA

- Examined a 13-year timeframe of 2008 through 2021 of Engineering-related disciplines and wages within the Nevada Workforce ecosystem.

- NPWR system was able to provide degree enrollment and completion of 70K records from NSHE institutions with engineering backgrounds
  - CSN, TMCC, UNLV, UNR, WNC

- NPWR system was able to provide DETR comprehensive information of 280K records
  - Employee Wage Reporting Tabe
  - County Code, County Description, NAISC Codes/ Descriptions
  - Reporting Quarter, Reporting Year, and Wages

METHODOLOGY

- The multi-actor innovation policy-mix design.
  - The multi-actor innovation policy-mix design will allow the researcher to compare the respective eight institutions stated rationale/goals, targets of policy action, and implementation within the NSHE system. All institutions are dynamic and utilize various approaches to arrive at the respective outcomes. Information from DETR and NSHE

- Quantitative correlational design
  - Likert Scale and Survey

FINDINGS & RECOMMENDATIONS

- Realign all parts of WFD programs in Nevada to the State Plan for better accountability of regional supportive plans, establish a board or committee through legislative oversight of NSHE to ensure all educational programs are aligned to the regional needs with a scorecard to measure output of outcomes.

- Utilize the NPWR system to drive disaggregate decisions by county, income, and industry to determine the best multi-actor innovation policy mix.

- Analysis of NPWR data analysis demonstrated that the NSHE system trains engineers in various disciplines. However, they are not training IEM engineers. The retention incentive of $4 million to retain talent is insufficient to sustain an entry-level mid-career professional.

- There is a strong correlation between employee analysis of skills gap alignment and the role of innovation engineering management.

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