EMPLOYING PREDICTIVE TREND ANALYSIS TO DECREASE CONSTRUCTION SCHEDULE DELAY

ROLE PLAYING OR PLAYING WITH ROLES? A CASE STUDY OF WOMEN IN THE WORKFORCE DURING WORLD WAR II

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SOCIOTECHNICAL SYNTHESIS

The construction industry is a very complex and intricate system of players which requires the cooperation and communication of all involved parties to produce a successful end project. The technical research aims to identify delays within the construction industry to create an inclusive guideline for companies to engage with in order to generate project plans and schedules with greater efficiency for future endeavors. In order to adequately understand and improve the efficiency of the construction workforce today, a comparison to the model of the diverse workforce during World War II (WWII) will be used as the STS research topic. By performing this case study as compared to women in the industry today, an evaluation of gender inequalities over the two time periods can be evaluated, and the root cause of these discriminations may also be identified.

Delays within the construction industry can be detrimental to numerous players involved, including a loss of money, positive relationships, time, etc. The technical research seeks to provide insight into delay causation and prevention for Hourigan, a general contracting and construction firm. This work focuses on the analysis of scheduling data and project teams' input from three medium-sized construction projects recently completed by Hourigan, referred to by the projects A, B, and C. These data sets were interpreted using statistical analyses to assess correlations between owner, designer, or contractor-related delays. Interviews with the project team for each Hourigan project were also conducted to obtain qualitative data regarding specific delay events.

As discovered from the statistical analysis, the main causes of delay for Project A were found to be the owner and designer; for Project B the designer and subcontractors; and for Project C the subcontractors, materials, and external factors. Across the three projects, over 60%

of the days of delay entitled Hourigan to financial responsibility regardless of the source. In order to address the three repeating sources of delays (owner, designer, and subcontractor), recommendations have been created for Hourigan to follow in the future to avoid similar delay types from occurring. In order to avoid the issue of subcontractor inadequacy in the future, an internal rating system within Hourigan would be useful to keep a log of subcontractors' performance, as well as a required work portfolio and references to ensure reliability and work quality. Next, for the designer, it is critical that the contractor go through the design documents as early as possible in the project life-cycle in order to bring up any issues with the drawings before the actual activity is performed. Lastly, the biggest issue in terms of the owner was the delay in decision making procedures, which could be resolved by building days into the planned schedule to account for changes in the owner's court. It is believed that these recommendations will greatly help Hourigan to deviate from further delays in the future.

In the early 1940s, the disappearance of available working men due to their commitment to WWII caused employers who previously discriminated against hiring women to suddenly open their doors to meet production needs. With this new arrival of women, gender discrimination was a major issue. Extensive research of the required role of women in the engineering workforce as compared to today was performed in order to help determine a reasoning behind the profound lack of women in STEM today, and its possible origin. The general hypothesis at the beginning of the researching phase was that gender discrimination is one of the root causes for the underrepresentation of women in this field, and was further proved true.

Women were discriminated against in similar manners during World War II and present day, negatively affecting women’s job performance. Discrimination has harvested a space where

these individuals feel less accepted or welcomed, limiting their possibility to be more creative and take risks within the workforce. Without the American women of World War II, the place for women engineers in society today would be largely lessened. These women were concrete examples of how valuable and advantageous their abilities are, and demonstrated their benefit through multiple avenues during the war. Due to their advancement for women in general in the workforce, they deserve far more recognition and appreciation than previously given.

Although challenging, the women of WWII paved the way to provide space for women in present day to enter into STEM fields. These women should be recognized for their contribution not only to the American war effort, but also for their advancement of diversity within the industry. In order to continue this advancement in present day, more aid and education should be given to women at an early academic stage in order to encourage and support their entrance into a STEM field.

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