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Ergonomics and Human Factors Concepts in Aerospace Industry

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Ergonomics and Human Factors Concepts in Aerospace Industry

Human factors as well as ergonomics in aviation together with aerospace industry contribute to safety and efficiency of airline operations. Kim (2017) argues that aviation and aerospace safety is a huge concern across the industry following the tragic event that saw Boeing 737 crash and kill over three hundred passengers. This saw the aviation industry reach a peak in measures and standards by using improved technologies to innovate safety protocols. As a result, efforts to breach this gap saw airports adopt advanced technologies and awareness. They adopted artificial intelligence-based and autonomous systems to help improve clients' experience and maintain advanced security levels. Again, aviation technology also changes training routines and programs for employees across different functions (Sanjog et al., 2015). New training modules associated with maintenance provide artificial observations that enable technicians to spot faults that would be rather catastrophic.

Another concern is designing and engineering long-haul flights accommodating passengers' expeditious lifestyles to increase travel options within the global society (De Boer & Dekker, 2017). Notably, this concern proves to be challenging for carriers when combined with the intensifying skills deprivation in the workforce. However, autonomous planes could mitigate the problem by eradicating the causes of human miscalculations or considerations under stress. If implemented, this technology can introduce single-pilot planes with an individual working along with computers or fully computerized planes taking one-flight journeys across the globe hence revolutionizing the aviation industry.

Systems thinking refers to an integrated approach based on the conviction that systems components do not operate the same when isolated from other parts. System thinking is consistent with system philosophy. Normally, it is concerned with understanding systems by

closely examining interactions and linkages across all elements of a system (Kim, 2017). Since system thinking isolates problems, it becomes easy to outline a major problem and address the issue independently and comprehensively improving human performance and airline safety.

Contrarily, design thinking is a computational, iterative method used to understand end-users, examine assumptions, redefine complications, and generate innovative resolutions to test. Design thinking involves five steps. The first step is empathizing which entails researching and gaining an empathetic understanding of the concerns users raised (Kim, 2017). The second step is defining and stating user's problems and requirements, analyzing these observations and internalizing them to outline major issues. Thirdly, formulating ideas and innovative methods of addressing these issues comes in. Consequently, the fourth step is creating prototypes to identify the best potential resolution for the problems and lastly experiment the prototypes rigorously. Following this model greatly enhances safety in the aviation sector because tracing flaws becomes easy in cases of tragic events.

On the other hand, humanistic thinking inspires individuals to incline their thinking in a perspective of what they desire other than what they do not want. Additionally, it encourages people to think more about what will work excluding that which will not. Besides, people think more of the human potential and assets than constraints and deficits they encounter (Sanjog et al. 2015). Therefore, if applied, technicians will be encouraged to develop and implement safety mechanisms that they believe in.

Last but not least, scientific thinking entails thinking about the scientific content and the reasoning processes sets that saturate the science field. Through scientific thinking, the aviation industry can work with engineers to apply the latest technology in understanding the interface

between airlines and human performance to assist in improving safety hence creating efficiency (Kim, 2017).

Whereas improvements in automation partly replaced human agency, human beings still play a major role in monitoring and operating the systems (De Boer & Dekker, 2017). The main impact is the dilapidation of operational skills and lack of automation comprehension coming from systems complexity. These concerns are challenging because automation is not fully self-sufficient hence human involvement is still needed.

Sanjog et al. (2015) argue that most aviation stakeholders are already investing in Artificial Intelligence (AI) because of the impact AI has on multiple sectors of aviation industry. Notably, with the technology gaining traction in the industry, improvements in human performance are noticeable in all facets.

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