TRACING THE EVOLUTION OF HUMAN FACTORS AND ERGONOMICS IN ORGANISATIONS ACROSS CLASSICAL, NEO-CLASSICAL AND MODERN THEORIES OF MANAGEMENT

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ABSTRACT

Human factors and Ergonomics can be defined as a discipline concerned with the understanding of interactions among Humans and other elements of the Organisation. Ergonomists apply human-organization interface technology for the design/redesign of the interface between humans and system components using principles, guidelines, specifications, methods and tools.

Human-Organisation interface technology aims for the design of a system, product or environmental design which can be used in different applications since every socio-technical system involves the human-system interface which considers the human capabilities, limitations and competencies. The main objectives of optimising work systems are for improving the quality of working conditions.

Human Factors and Ergonomics

The elements of Management discipline, such as job design, job analysis and job specification, work stress management and safety and health management are essential components of Human Factors and Ergonomics. According to (Hendrick, 2001), a sub-discipline of Human Factors and Ergonomics – Macroergonomics is concerned with the analysis, design and evolution of work systems which range from single individual to a complex MNC. A work system consists of people interacting with some form of

- Job Design
- Hardware or Software
- Physical parameters and psychosocial factors
- External Environment
- Work systems structure and processes used to accomplish desired functions

An important component of Human Factors and Ergonomics is the Human-System interface technology. This can be classified into 5 parts each with a related design focus (Kleiner, 1999)

- Human-Machine interface technology – Hardware Ergonomics
- Human-Environment interface technology – Environmental Ergonomics
- Human-Software interface technology – Cognitive Ergonomics
- Human-Job interface technology – Work design Ergonomics
- Human-Organisation interface technology – Macroergonomics

Though the term Human Factors and Ergonomics has been coined recently, the practice has been there since the Classical and Neo-Classical era of Management. Frederick Winslow Taylor pioneered the “scientific management” method, which proposed a way to find the optimum method of carrying out a given task. Taylor in his studies found that he could triple the amount of coal that workers were shovelling by reducing the size and weight of coal shovels. Frank and Lillian Gilbreth expanded Taylor’s methods in the early 1900s to develop the “time and motion study”. They aimed to improve efficiency by eliminating unnecessary steps and actions. By applying this approach, the Gilbreths reduced the number of motions in bricklaying from 18 to 4.5, allowing bricklayers to increase their productivity from 120 to 350 bricks per hour.

There are very few studies that try to understand the evolution of Human Factors and Ergonomics in Organisations across Classical, Neo-Classical and Modern Theories of Management. I will, in my paper try to establish this connection.

(Keywords: Ergonomics, Management Theories, Workplace, Ergonomics improvement process)