

## PRIORITIZING THE FACTORS AFFECTING THE SELECTION OF MACHINES USED IN DIGITAL TWIN PROCESSES: A BUSINESS EXAMPLE

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### ABSTRACT

**Purpose-** Recently, digital twin technologies have been frequently used in projects in the digital transformation processes of businesses. In digital twin processes; there are many different reasons for choosing the machines to be used, such as cost, purpose of use of the business, technology level of the business. In this study, it is aimed to prioritize the factors affecting the machines to be used in digital twin processes.

**Methodology-** Digital twin processes has brought the uncertainty process for businesses. This situation requires decision making under uncertainty. The decision-making process under uncertainty requires the examination of many value judgments together. Digital twin processes has brought the uncertainty process for businesses. This situation requires decision making under uncertainty. The decision-making process under uncertainty requires the examination of many value judgments together. For this reason, in order to make the right decisions in projects, the prioritization of the factors affecting the digital transformation processes was carried out by taking expert opinion. In this study, the Spherical Fuzzy AHP method, which was newly introduced to the literature, has been used. For this purpose, 5 important criteria were determined from the literature and expert opinions. Three expert opinions have been received.

**Findings-** The results of the model have showed that simulation process is the most important criteria for the selection of machines used in digital twin processes. And sensor based systems are the least important criteria for digital twin processes.

**Conclusion-** In this study, prioritizing factors in the selection of machines used in digital twin processes have been examined. For this purpose, the mechanization processes to be used in digital twin processes bring many control points in the background. In this study, the prioritization of the machinery and equipment to be used has been made by taking expert opinion. Opinions have been received from 3 experts in the field. The Spherical Fuzzy AHP method, which is one of the fuzzy decision-making sets, which has been recently introduced to the literature, has been used. In the study, it is expected to contribute to the literature by using digital twin technology for the first time with a multi-criteria decision-making methodology.

**Keywords:** Digital twin, MCDM, technology, process, Spherical Fuzzy AHP

**JEL Codes:** O31, M15, C44

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