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A THEORY- BUILDING CONCEPTUAL PAPER

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Technology–Human Disequilibrium: A conceptual paper for human-centered technological systems

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*This paper introduces the concept of **Technology–Human Disequilibrium** and proposes a theory-building conceptual framework that explains how imbalances emerge when technological development exceeds human adaptive capacity. Drawing on insights from socio-technical systems theory, technology adoption research, and digital transformation literature, the framework analyse technological change as a dynamic interaction between technological expansion and human adaptation across individual, organizational, and societal levels. The paper distinguishes between **Technsology–Human Equilibrium** and **Technology–Human Disequilibrium**, identifies key manifestations and consequences of imbalance.*

Keyword: human-centered technology; digital transformation; technological acceleration; technology adoption

1. INTRODUCTION

Society adopts technology faster than it develops the capacity to understand it.

The exponential acceleration of digital innovation has created a systemic gap between the pace of technological implementation and the intrinsic capacity of users to adapt to new operational paradigms. While technological innovation has been widely studied, significantly less attention has been given to the systemic balance between technological development and human adaptive capacity.

The critical problem of our decade is that massive investments in technology are not accompanied by an equivalent investment in the development of the human capabilities required to integrate and effectively use these technologies.

This paper introduces the concept of Technology–Human Disequilibrium and proposes a conceptual framework that explains how technological decisions and adoption processes influence the alignment between technological systems and human capabilities.

1.1 The era of technological acceleration

In the modern digital society, technology no longer functions merely as a set of tools supporting human activity. Instead, digital technologies and data-driven systems have become pervasive infrastructures that structure economic processes, knowledge production, and social interaction (Leshkevich & Motozhanets, 2019). Advances in artificial intelligence, autonomous systems, and integrated digital ecosystems have introduced unprecedented