ASSESSING SOCIAL ACCEPTANCE OF ENERGY PRODUCTION FROM FOOD WASTE IN MUNICIPAL SOLID WASTE MANAGEMENT

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Integrated Sustainable Waste Management should not be perceived only as a technical issue but as a concept in which policy and social acceptability factors play an important role (Abrelpe & ISWA, 2013, Repuclic of Türkiye Ministry of Environment, 2010). It is important to realize that while it is not impossible to utilize municipal solid waste (MSW) in material recovery and energy recovery rather than in landfill, this is an issue that only needs to be well managed, taking into account the priorities of all stakeholders (including the local community, investors, politicians, technology providers, municipalities, public, etc.) (Ma & Hipel, 2016). A considerable amount of MSW is disposed of in landfills, either sanitary or not, instead of harnessing its potential for energy production worldwide, such as 33% is open dumped and 32.9% is landfilled (Kaza et al., 2018). In Türkiye, although significant steps have been taken and various achievements have been made in terms of both legislation and technology compared to 20 years ago, it is thought-provoking that the vast majority of waste is still being landfilled (In 2002, 92% of waste was deposited in landfills and open dumps, while in 2020, it was 86%) (TurkStat, 2021). The widespread dependence on landfills instead of implementing more sustainable solutions shows that there is a missing aspect that needs to be considered besides technology and legislation in achieving the sustainability of MSW management. At this point, the concept of social acceptance becomes significant. As explained by Wüstenhagen *et al* (2007), social acceptance has three pillars: community, socio-political, and market. In this study, a quantitative research technique was applied to investigate these aspects of social acceptance in the MSW management sector.

The structural equation modeling-partial least squares methodology on data gathered via 392 questionnaires was employed, and the multifaceted determinants of social acceptance for deriving sustainable energy from food waste were determined by prospered the model used by Sarı *et al* (2023). Factors impacting social acceptance include experience, knowledge, distributive and procedural fairness, trust, perceived benefits and risks, positive affect, personal and social norms, perceived behavioral control, problem perception, and intention to accept. SmartPLS 4.0 (version 4.0.9.5) software to analyze the data were used (Ringle et al., 2022).

While this study has prioritised the aim of contributing to a multidimensional understanding of a sustainable waste-to-energy system by identifying prominent factors that will enhance and improve collaboration among stakeholders, the waste specifically addressed is biodegradable portion within the municipal solid waste stream. When the term waste-to-energy is used, the general belief is that it refers to chemical thermal treatment technologies. However, the term includes all physical, chemical, and biological technologies . In this study, waste-to-energy refers to the renewable energy production from food waste via biological processes. Furthermore, this study aims to link social acceptance with MSW management and climate change. This research's distinctive impact of this research can be briefly summarized;

1) Not only direct effects but also indirect effects have been investigated. Investigating indirect impacts provides a more in-depth and holistic understanding and thus facilitates more informed decision-making and risk management. Ignoring indirect impacts can lead to a poor understanding of an issue. Investigating indirect impacts allows the issue to be assessed from a broader perspective. Thus, it goes beyond the effects observed only on the surface and provides a more in-depth examination.
2) The relationships identified in the conceptual model were assessed and examined across various demographic categories. By understanding the specific relationships that exist between various demographic groups, it becomes possible to develop customized strategies for these cohorts. This allows for the adoption of more effective and purposeful policy approaches. The research made it clear that consistency between the different pillars of social acceptance is critical. This underlines the idea that it would be insufficient to address only one aspect of social acceptance in isolation.
3) The factor trust was segmented into three distinct pillars in a novel approach, enhancing analytical depth and revealing nuanced relationships. This decision to disaggregate trust into different categories instead of treating it as a single variable enriches the evaluative scope and increases the depth and breadth of the analysis. This approach allows a clearer understanding of how each trust pillar impacts specific variables.

Notably, 'Intention to accept' emerged as the predominant predictor of social acceptance, trailed by social and personal norms and perceptions of risk and benefit. The study also delves into relationships within the conceptual model across different demographic segments according to the measurement invariance determination and direct and indirect interconnections. The model's constructs, factors, and actors were aligned with dimensions of social acceptance. Within the structured model, the relationships identified among constructs were explained while considering the sequence depicted in the visual representation of the model. In other words, the explication of relationships commenced with the construct situated farthest and most distant from the social acceptance construct. Subsequently, the complicated relationships were interpreted. Policymakers, municipalities, and other stakeholders engaged in this sphere can use the insights gleaned from this study to amplify the utilization of food waste as a renewable energy source, thereby diverting waste away from landfills.

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