Digitizing UMKM: Transitioning from Conventional to Digital Business System by Implementing Cost-Effective Cybersecurity through Threat Landscape Reduction, Implement Identity Asset, and Security Information Management

UNDERGRADUATE THESIS

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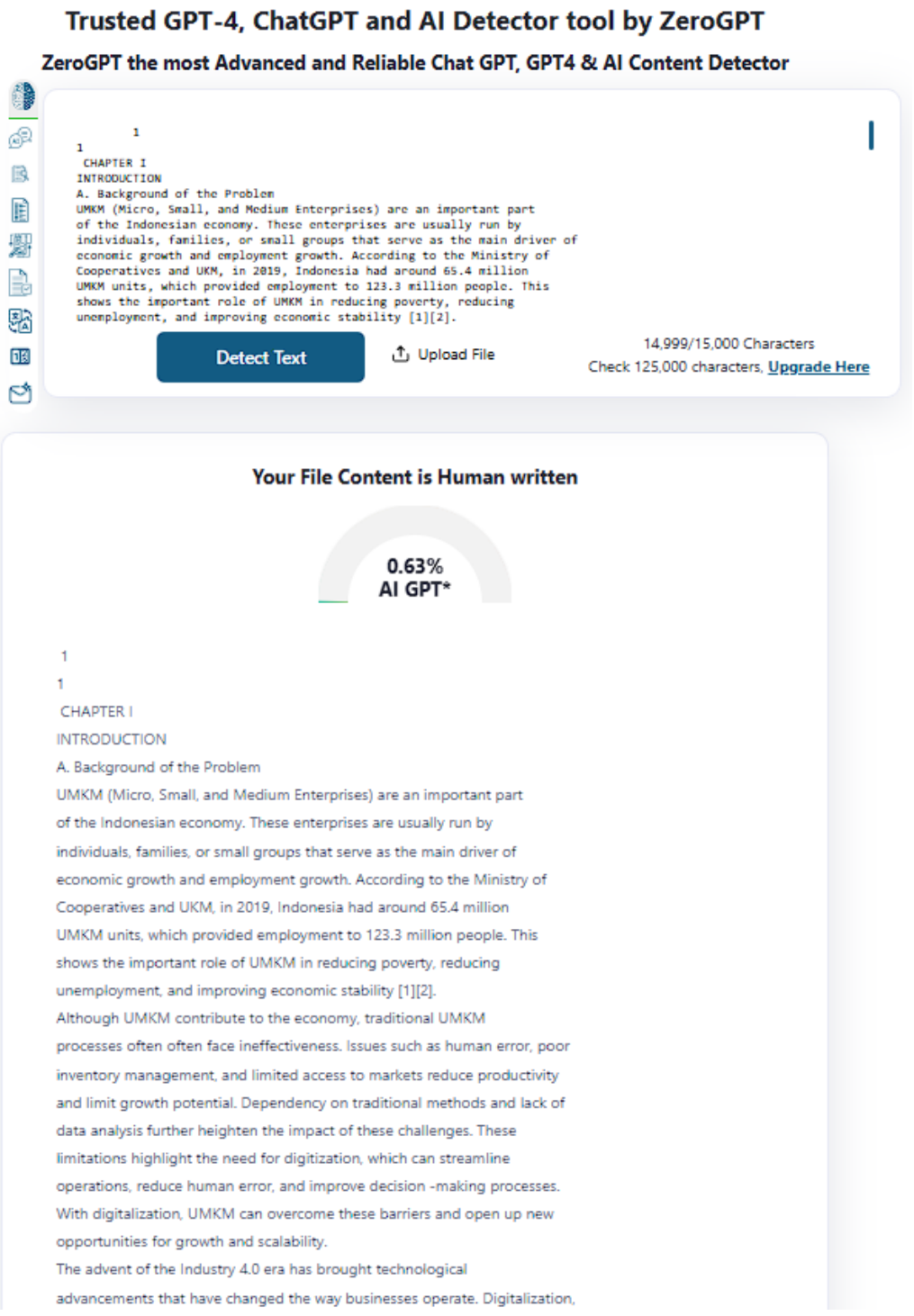

ABSTRACT

This Capstone Project was developed to fulfill the academic requirements at President University, with a focus on the cybersecurity concentration. The project collaborates with a micro, small, and medium enterprise (MSME) engaged in the sale of computers, accessories, and hardware repair services. Through interviews and discussions with stakeholders, several key challenges were identified, including the high cost of SaaS subscriptions for product and sales management, the limitations of non-customizable e-catalogs that complicate purchasing processes, and the absence of a repair progress tracking system for customers.

To address these issues, we designed and implemented a comprehensive system consisting of three main components: (1) an Admin Dashboard and Point-of-Sale (POS) system for managing products and sales, (2) a customizable E-Catalog website to improve customer experience in purchasing goods, and (3) a Repair Progress Tracking feature to enable customers to monitor their device repair status digitally. Beyond functionality, the system also integrates essential cybersecurity measures, including security logging, identity and access management, two-factor authentication (2FA), and minimization of the threat landscape by avoiding the storage of sensitive customer and payment data.

Despite its benefits, the system faces several constraints, such as dependence on stable internet connectivity, reliance on third-party marketplaces that may change their policies, and restrictions on marketplace API access, which currently limit integration to Mall-level sellers only. Overall, this project demonstrates how digital transformation tailored with cost-effective cybersecurity practices can support MSMEs in enhancing operational efficiency, customer trust, and business resilience.

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