



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

**Submitted as one of the requirements to obtain
Degree of Sarjana Komputer**

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PRESIDENT UNIVERSITY
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CHAPTER I

INTRODUCTION

A. Background of the Problem

UMKM (Micro, Small, and Medium Enterprises) are an important part of the Indonesian economy. These enterprises are usually run by individuals, families, or small groups that serve as the main driver of economic growth and employment growth. According to the Ministry of Cooperatives and UKM, in 2019, Indonesia had around 65.4 million UMKM units, which provided employment to 123.3 million people. This shows the important role of UMKM in reducing poverty, reducing unemployment, and improving economic stability [1][2].

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Although UMKM contribute to the economy, traditional UMKM processes often face ineffectiveness. Issues such as human error, poor inventory management, and limited access to markets reduce productivity and limit growth potential. Dependency on traditional methods and lack of data analysis further heighten the impact of these challenges. These limitations highlight the need for digitization, which can streamline operations, reduce human error, and improve decision-making processes. With digitalization, UMKM can overcome these barriers and open up new opportunities for growth and scalability.

The advent of the Industry 4.0 era has brought technological advancements that have changed the way businesses operate. Digitalization,

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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