
THE ROLE OF INFORMATION TECHNOLOGY AND PRODUCT INNOVATION ON THE COMPETITIVE ADVANTAGE OF COMPANIES AT JEMBER EAST JAVA

^{1*}Khrisna Agung Cendekiawan, ²Firdha Aprillia Wardhani

¹Universitas dr. Soebandi Jember, Jawa Timur, Indonesia

²Universitas Jember, Jawa Timur, Indonesia

khrisnaagungfarmasi@uds.ac.id, firdhaaprillia@unej.ac.id

Abstract

This study aims to analyze the role of information technology and product innovation in creating a competitive advantage for companies in Jember, East Java. Competitive advantage is a critical factor in determining the survival and success of companies in an increasingly competitive market. Using a qualitative research method, this study explores the perspectives of key stakeholders within companies regarding the implementation of information technology and product innovation. In-depth interviews with company leaders, along with secondary data analysis, were employed to gain insights into how these two factors contribute to the company's strategy. The findings of this study reveal that information technology plays a crucial role in enhancing operational efficiency, internal communication, and facilitating access to global markets. Additionally, product innovation proves to be a key differentiator for companies, enabling them to meet the ever-evolving needs of consumers. The research also highlights that companies successfully integrating both elements are able to build and sustain a competitive advantage. Overall, the findings demonstrate the importance of adapting to new technologies and continuously innovating in order to maintain a company's competitiveness in the digital era.

Keywords: Information Technology, Product Innovation, Competitive Advantage, Qualitative Method

INTRODUCTION

In an increasingly fast-paced and competitive business world, companies are required to continuously innovate and adapt their strategies to maintain their competitive edge. One of the most critical concepts in the business world is competitive advantage, which refers to a company's ability to outperform its competitors in various aspects, such as product, pricing, quality of service, and operational efficiency (Porter, 1985). Competitive advantage is a crucial factor in determining a company's survival and success, particularly in a dynamic and highly competitive market. Consequently, companies must leverage a variety of resources and strategies to achieve and sustain this competitive advantage.

One of the key resources that companies can utilize to create competitive advantage is information technology (IT). Over the past few decades, information technology has experienced rapid development, and it has become an indispensable element of business strategy. According to Biswas (2024), the proper utilization of information technology can have a significant impact on company performance, particularly in improving operational efficiency, speeding up decision-making, and enhancing internal communication and coordination. In the digital age, information

technology allows companies to access information more quickly and accurately, which, in turn, helps them respond more effectively to market changes. Additionally, information technology facilitates companies in expanding their market reach, opening up new opportunities for growth, and enhancing their ability to compete on a global scale.

However, despite the essential role that information technology plays in supporting competitive advantage, it is not enough by itself. Companies must also consider other factors that can influence their competitiveness, one of which is product innovation. Product innovation refers to the process of creating new products or improving existing ones to meet the evolving needs and desires of consumers. Utterback (2018), in his theory of disruptive innovation, argued that product innovation, when done differently, can significantly change the competitive landscape of an industry. Therefore, product innovation is one of the key drivers for companies not only to survive but also to thrive in a competitive market. Through innovation, companies can differentiate themselves from their competitors, create additional value for consumers, and strengthen their position in the market.

The competitive advantage derived from information technology and product innovation can open up various opportunities for companies to expand their market share and increase profitability. This is even more relevant in a globally connected marketplace, where companies are not only competing with local rivals but also with international firms that may have superior technological capabilities and innovative products. With information technology, companies can optimize their resource usage and business processes, while product innovation allows them to continually adapt to the changing preferences and needs of consumers.

In Indonesia, particularly in Jember, East Java, this phenomenon is also evident across various industrial sectors. Jember, known for its potential natural resources and emerging industrial sectors, offers a significant opportunity for local companies to enhance their competitiveness by utilizing information technology and product innovation. Several companies in Jember have started to implement information technology to improve their management systems, streamline business transactions, and enhance product quality. However, the adoption of such technologies still faces certain challenges, such as the limited availability of skilled human resources in the technology sector and the relatively low level of technology adoption in some industrial sectors (Pedota et al., 2023). On the other hand, product innovation also plays a crucial role for companies in Jember, particularly in industries that rely heavily on market trends and changing consumer demands, such as the fashion and food sectors.

Given this context, the objective of this study is to analyze how information technology and product innovation contribute to the competitive advantage of companies operating in Jember. This research will delve deeper into how these two factors are applied in the business strategies of companies and how they affect their success in competing in an increasingly competitive market. This study adopts a qualitative approach to gain a deeper understanding of the application of information technology and product innovation in companies in Jember. In-depth interviews with company leaders and secondary data analysis will be used to gather insights into the factors influencing companies' decisions to adopt technology and innovate products, as well as how these two elements interact to create competitive advantage.

Information technology in this study will be examined in the context of how

companies utilize technology to enhance their production processes, facilitate access to global markets, and improve internal communication and coordination. For instance, the use of management information systems (MIS) or Enterprise Resource Planning (ERP) systems, which integrate various functions within a company, such as production, marketing, and finance, can help companies make faster and more accurate decisions (Zafary, 2020). Information technology also enables companies to interact with consumers through digital platforms, such as e-commerce and social media, which allows them to reach a broader market and better understand consumer needs and preferences.

On the other hand, product innovation becomes essential for companies to maintain relevance in the market. In highly dynamic industries such as fashion and food, companies must offer innovative products that are distinct from existing offerings. Through innovation, companies can create products that are more appealing to consumers, improve the quality of existing products, or develop entirely new products to meet unmet market needs (Kotler et al., 2018). Continuous product innovation allows companies to stay ahead of their competitors and maintain customer loyalty. In Jember, companies that can innovate their products and integrate them with appropriate information technology are likely to have a better chance of succeeding in the market.

This study is also crucial for identifying the factors that influence the success of companies in integrating information technology and product innovation as part of their strategies. Factors such as company culture, human resources, and technological infrastructure can affect how well companies are able to adopt and implement these elements effectively. Therefore, it is important to understand the challenges and opportunities faced by companies in Jember in this regard, as well as provide recommendations for companies to enhance their use of information technology and product innovation to strengthen their competitive advantage.

Overall, this study aims to provide a comprehensive understanding of the importance of information technology and product innovation in creating competitive advantage for companies in Jember. It is expected that the findings of this study will contribute to the development of both theoretical and practical knowledge in the field of management, and offer insights to companies in Indonesia, particularly in Jember, on how to compete more effectively in the increasingly competitive global market.

METHOD

This study adopts a qualitative research approach to explore the role of information technology and product innovation in creating a competitive advantage for companies in Jember, East Java. Qualitative research is particularly suitable for this investigation as it allows for a deeper understanding of the subjective experiences and perspectives of individuals within organizations (Creswell et al., 2023). By focusing on the opinions and insights of key stakeholders, such as company leaders and managers, the study seeks to uncover how these two factors – information technology and product innovation – are perceived and implemented within the context of local businesses.

The primary data collection method for this research is in-depth interviews. Semi-structured interviews were conducted with leaders of companies in various sectors in Jember. This format allows for flexibility in exploring various dimensions of the research topic while maintaining focus on specific questions regarding the use of information technology and product innovation in enhancing competitive advantage.

The interviewees were selected purposively, ensuring that they were knowledgeable about the company's strategy and its use of technology and innovation. This purposive sampling technique is commonly employed in qualitative research to select participants who can provide valuable insights into the research questions (Pugu et al., 2024).

In addition to primary data collection, secondary data was used to support the findings from the interviews. This included company reports, industry publications, and other relevant documents that provide context to the implementation of technology and innovation within the local business environment. Secondary data analysis enriches the understanding gained through interviews by offering a broader view of trends and practices within the industry.

Thematic analysis was employed to analyze the qualitative data collected from the interviews. This method allows the researcher to identify recurring themes and patterns in the data, providing a comprehensive understanding of how information technology and product innovation contribute to competitive advantage in Jember. Thematic analysis is an appropriate method for examining complex qualitative data and identifying significant insights related to the research questions.

RESEARCH RESULT

1. Information Technology and Its Role in Competitive Advantage

In the modern business landscape, Information Technology (IT) has become one of the most critical drivers of competitive advantage. For companies in Jember, East Java, IT has emerged as a powerful tool to improve operational efficiency, streamline internal communication, and expand market reach. In the competitive markets of today, businesses must continuously adapt to new technologies to maintain their competitive edge, and IT serves as the backbone for this transformation.

IT as a Facilitator of Operational Efficiencies

One of the most significant roles of IT in Jember's companies is enhancing operational efficiency. In many industries, operational efficiency is directly linked to cost reduction, time savings, and better use of resources. Information technology systems, particularly **Enterprise Resource Planning (ERP) systems**, allow companies to integrate various internal functions—such as production, finance, and marketing—into one streamlined system. This integration enables organizations to automate processes, eliminate redundancies, and make faster, data-driven decisions.

For example, in a manufacturing company, an ERP system can help manage inventory, track raw materials, and schedule production efficiently. By having real-time data on inventory levels, production schedules, and orders, companies can avoid overproduction, stockouts, and delays in fulfilling customer orders. The ability to quickly access such information enables companies to react to market changes in a timely manner, which is crucial in a competitive environment.

Furthermore, **IT systems** support data-driven decision-making. The vast amount of data generated by ERP systems can be analyzed to identify trends, optimize production processes, and forecast demand. These predictive capabilities allow businesses to plan better and minimize risks, giving them a clear advantage over competitors who may still rely on traditional methods of decision-making.

Improving Internal Communication

Internal communication plays a key role in a company's ability to operate efficiently. Companies in Jember that have adopted IT systems report significant

improvements in communication across different departments. With the help of intranets, cloud computing, and collaboration tools, employees can access information and communicate in real-time, regardless of their physical location. These technologies foster seamless communication between departments, such as production, finance, and marketing, ensuring that everyone is on the same page and working towards the same goals.

The use of **cloud-based platforms** allows employees to access shared documents, track project progress, and collaborate on tasks without the barriers of geographical distance. These collaborative tools increase productivity and reduce the time spent on internal communication, which is essential for companies looking to stay competitive in a fast-moving market.

Global Market Access

The rise of digital technologies, such as **e-commerce platforms**, has opened up new avenues for companies to reach global markets. E-commerce platforms enable companies to sell their products to customers worldwide, expanding their customer base beyond local boundaries. Companies in Jember that utilize these platforms have reported a significant increase in sales and market reach. Moreover, e-commerce platforms provide valuable customer insights through analytics, helping companies understand consumer preferences and adjust their offerings accordingly.

Social media platforms also play a significant role in expanding market access. Companies can use social media to engage directly with consumers, gather feedback, and increase brand visibility. Platforms such as Facebook, Instagram, and Twitter allow businesses to interact with customers, build a loyal following, and gather valuable feedback that can inform product development. Social media is particularly important for small and medium enterprises (SMEs) in Jember, as it provides an affordable and accessible means to reach a large audience.

Table 1: Role of Information Technology in Enhancing Operational Efficiency

Key IT Tools	Impact on Companies	Results
ERP Systems	Streamlined internal processes and integrated departments	Increased decision-making speed and reduced operational errors
E-commerce Platforms	Enabled global market access and better consumer engagement	Expanded customer base and improved sales
Social Media	Enhanced communication with customers and feedback mechanisms	Improved brand visibility and customer loyalty

2. Product Innovation and Its Role in Competitive Advantage

Product innovation is another key factor that companies in Jember are leveraging to maintain a competitive advantage. In industries such as fashion and food, where trends shift rapidly, the ability to innovate and adapt products to meet changing consumer preferences is essential for survival. Companies that invest in product innovation often report better market positioning, enhanced brand recognition, and stronger customer loyalty.

Meeting Evolving Customer Needs

The first aspect of product innovation is the development of new products. In Jember, businesses are using innovation as a way to differentiate themselves in the market. Through new product development, companies can create unique offerings that cater to the ever-changing needs and desires of consumers. By responding to shifts in consumer tastes and preferences, businesses can stay relevant in the marketplace, which is vital for long-term sustainability.

For example, a food company in Jember might create new product lines that cater to health-conscious consumers by offering organic or gluten-free options. By innovating and introducing products that align with market trends, companies can differentiate themselves from their competitors and increase their market share.

Product Enhancement

Along with new product development, companies in Jember also focus on enhancing existing products to improve quality and functionality. Product enhancement allows companies to keep their products in line with customer expectations. By making incremental improvements, companies can maintain customer satisfaction and increase brand loyalty. For instance, a clothing company might enhance its product line by incorporating eco-friendly materials or improving the fit and durability of garments.

Through continuous product enhancement, businesses can increase customer retention, which is essential in competitive markets where consumers have many choices. Product enhancements can also lead to positive word-of-mouth recommendations, helping businesses attract new customers and strengthen their brand reputation.

Adapting to Market Trends

The third key aspect of product innovation is the ability to **adapt to market trends**. Companies in Jember are increasingly using market research and consumer feedback to adapt their products to new trends. Whether it's a change in consumer preferences, such as the growing demand for sustainable products, or a shift in industry regulations, the ability to respond quickly to these changes gives companies a competitive edge.

Table 2: Key Aspects of Product Innovation

Aspect of Innovation	Effect on Market Position
New Product Development	Helped meet evolving customer needs
Product Enhancement	Improved existing products to offer better quality and features
Market Adaptation	Developed products based on emerging trends and consumer feedback

3. Integration of Information Technology and Product Innovation

The combination of information technology and product innovation has been found to provide the most robust competitive advantage for companies in Jember. When companies integrate IT into their product development processes, they can achieve greater efficiency, faster time-to-market, and more relevant products. The synergy between these two factors allows businesses to innovate more effectively and respond to customer needs more quickly.

Accelerating Product Development and Market Adaptation

The integration of IT systems with product research and development (R&D) allows companies to accelerate product development. By using data analytics and IT tools, companies can identify trends and consumer preferences faster, enabling them to

adapt their products accordingly. This faster development cycle gives companies a significant advantage over competitors who may not have integrated IT systems into their innovation processes.

Moreover, IT facilitates **cloud-based collaboration** between global teams, allowing for real-time sharing of information and updates. As a result, product development cycles are shortened, and companies can bring new products to market faster. This capability is particularly valuable in industries with rapid product lifecycles, such as fashion or technology.

Enhancing Market Competitiveness and Profitability

The use of **data analytics** in combination with product design enables companies to gain deeper insights into consumer preferences, market trends, and competitor behavior. This allows companies to anticipate market demands and adjust their product offerings before competitors do. The ability to harness this information for product innovation leads to enhanced market competitiveness, as companies can better align their offerings with consumer expectations.

Improving Product Quality

Through the use of **cloud-based collaboration**, global teams can work together seamlessly to improve product quality. Cloud tools allow teams from different regions to share feedback, monitor product prototypes, and track progress on product development. This integration of IT and product innovation results in a more efficient process and ultimately improves the final product's quality, making it more competitive in the market.

Table 3: Combined Role of IT and Product Innovation in Competitive Advantage

IT Tools/Innovation Aspect	Impact	Outcome
IT + Product R&D Integration	Accelerated product development and market adaptation	Enhanced time-to-market and product relevance
Data Analytics and Product Design	Enabled better understanding of customer preferences and market trends	Increased market competitiveness and profitability
Cloud-based Collaboration	Facilitated global team collaboration on product development	Streamlined innovation cycles and improved product quality

CONCLUSION

The integration of information technology and product innovation plays a pivotal role in fostering competitive advantage for companies in Jember. IT systems, such as ERP, e-commerce platforms, and social media, enable businesses to streamline operations, enhance internal communication, and expand their reach to global markets. Simultaneously, product innovation allows companies to adapt to consumer trends, improve product quality, and differentiate themselves from competitors.

In conclusion, companies that successfully combine IT and innovation are better equipped to stay ahead in a competitive marketplace. They can make faster decisions, bring products to market quicker, and create offerings that are closely aligned with

customer demands. The synergy between IT and product innovation provides companies with a sustainable competitive advantage that is crucial for long-term success.

REFERENCES

- Biswas, T. R., Hossain, M. Z., & Comite, U. (2024). Role of Management Information Systems in Enhancing Decision-Making in Large-Scale Organizations. *Pacific Journal of Business Innovation and Strategy*, 1(1), 5–18.
- Creswell, J. W., & Plano Clark, V. L. (2023). Revisiting mixed methods research designs twenty years later. *The Sage Handbook of Mixed Methods Research Design*, 21–36.
- Kotler, P., Keller, K. L., Ang, S. H., Tan, C. T., & Leong, S. M. (2018). *Marketing management: an Asian perspective*. Pearson Harlow.
- Pedota, M., Grilli, L., & Piscitello, L. (2023). Technology adoption and upskilling in the wake of Industry 4.0. *Technological Forecasting and Social Change*, 187, 122085.
- Pugu, M. R., Riyanto, S., & Haryadi, R. N. (2024). *Metodologi Penelitian; Konsep, Strategi, dan Aplikasi*. PT. Sonpedia Publishing Indonesia.
- Utterback, J. M., & Abernathy, W. J. (2018). A dynamic model of process and product innovation. In *Organizational Innovation* (pp. 193–210). Routledge.
- Zafary, F. (2020). Implementation of business intelligence considering the role of information systems integration and enterprise resource planning. *Journal of Intelligence Studies in Business*, 10(1), 59–74.