

ENHANCING COMMUNITY-BASED SMES THROUGH DATA ANALYTICS: A CASE STUDY ON JAY SNACK PRODUCT INNOVATION

Lianna WIJAYA^{1*}, YUNIARTY², Stefanus RUMANGKIT³, Christopher Joshua LEKSANA⁴
^{1,2,3,4} *Bina Nusantara University, Jakarta, INDONESIA*
**lianna.wijaya@binus.ac.id*

ABSTRACT

Small and Medium-sized Enterprises (SMEs) are crucial for fostering economic growth, generating employment, and promoting innovation, especially in economies that are developing. Nonetheless, numerous SMEs continue to depend on conventional methods that hinder their potential to innovate and maintain competitiveness. This study explores the influence of data analytics on enhancing product innovation for Jay Snack, a community-oriented SME in Tangerang Selatan, Indonesia. The research employs a qualitative and interactive approach, incorporating workshops, mentorship, and international collaboration between BINUS Online Learning and La Trobe Business School. The findings underscore how data-driven tactics empower SMEs to transcend intuition by utilizing sales records, customer feedback, and predictive technologies to enhance production, reduce waste, and forecast consumer trends. The study shows how accessible digital tools and artificial intelligence can enable small and micro businesses to enhance decision-making, discover new market opportunities, and promote sustainable growth. The Jay Snack instance highlights the pivotal function of higher education and applied research in preparing SMEs with the digital readiness and creative mindset necessary for accomplishment in constantly competitive industries.

Keywords: Data Analytics, Digital Empowerment, Product Innovation, Small and Medium-sized Enterprises, International Community Development

1. INTRODUCTION

Small and Medium-sized Enterprises (SMEs) are recognized as essential drivers for economic growth, innovation, and employment, especially in developing economies. Small and Medium-sized Enterprises (SMEs) constitute the foundation of our economy, fostering growth and generating opportunity (Gherghina et al., 2020; Ndubisi et al., 2021). Nevertheless, numerous enterprises, like SMEs, continue to depend on conventional practices, which may restrict their capacity for innovation and sustainability. However, despite their significant contributions, SMEs frequently encounter significant obstacles, such as limited access to resources, technological knowledge, and skilled labour, which may hinder their competitiveness and sustainability (Meng et al., 2021). A major sector where this is particularly obvious is in product innovation (Del Giudice et al., 2021). To remain successful in a constantly competitive market, SMEs must constantly adapt and innovate to meet evolving needs of customers. The traditional approach of product development, typically based on emotion and limited market data, is insufficient (Adam & Alarifi, 2021; Bamidele Micheal Omowole et al., 2024).

In the age of digitization and Industry 4.0, data analytics has become a crucial tool for businesses of all sizes, enabling the transformation of raw data into useful knowledge for strategic decision-making and innovation (Wanasinghe et al., 2022; Zong & Guan, 2024). The implementation of data analytics by SMEs may provide a significant competitive edge through enhanced insights into customer behaviour, market trends, and operational efficiencies (Safiul Islam et al., 2023). Although large organizations have significantly utilized data analytics to improve their product creation processes, its implementation among SMEs, particularly in localized settings and specific sectors such as the snack food industry, remains inadequately researched (Charisma et al., 2025). SMEs face obstacles in implementing these technologies, including insufficient financial resources, technological inexperience, and a lack of awareness about the benefits (Fanelli, 2021; Wiid & Cant, 2021).

Recognizing these challenges, Management Department BINUS Online in collaboration with La Trobe Business School, Australia, organized an International Community Service Seminar led by Dr. Petrus A. Usmanij on 17 July 2025, held at the BINUS Syahdan Campus from 09:00–11:00, reflects a shared commitment to strengthening SME resilience through education, applied research, and digital empowerment. This collaboration introduces SMEs to data analytics techniques, enabling them to better understand consumer behaviour, detect operational risks, and apply innovative strategies for sustainable growth.

The seminar emphasizes not only the importance of data analysis, ranging from traditional methods to advanced applications of AI, but also the practical benefits for SMEs (Carayannis et al., 2025). These include identifying business patterns, predicting consumer demand, improving efficiency, and enhancing competitiveness in both local and global markets. By equipping SMEs with these skills, the program contributes to community development and empowers small business owners to transform challenges into opportunities. Through this international community

service initiative, participants are encouraged to adopt a mindset of innovation, digital readiness, and collaboration. The goal is to ensure that SMEs, such as local snack producers, can thrive in a post-pandemic world, compete effectively in their industries, and create long-term positive impact for their communities.

Among the participants was Jay Snack, an SME from Tangerang Selatan owned by Mrs. Purdiati. Jay Snack produces specialty snacks such as potato chips, potato mustofa, and cheese sticks, marketed at an affordable price range of Rp. 15,000–18,000 per pack. Mrs. Purdiati, who founded the business after losing her job during the COVID-19 pandemic, chose the name “Jay Snack” after her child, symbolizing resilience and hope. Her decision to travel from Tangerang Selatan to join the seminar reflects her strong commitment to continuous learning and innovation.

Jay Snack substantially supports economic development and community empowerment within Indonesia's growing SME sector. Small, and Medium Enterprises (SMEs) in Indonesia are acknowledged for their role in job creation and local revenue creation, as well as for preserving culinary heritage via creative variations of traditional cuisine (Pugra et al., 2025; Wijandari et al., 2023). This research aims to explore the potential of data analytics as a driver of product innovation at the SME Jay Snack within the framework of community development. The study will investigate how the use of data-driven tactics might improve Jay Snack's products offerings and foster economic empowerment and growth within its local community.



Figure 1. Jay Snack

Through active discussion and sharing practices, Mrs. Purdiati and other SME owners engaged with academic experts and fellow entrepreneurs, exchanging practical experiences on how to leverage digitalization, community development, and international collaboration to sustain and expand their businesses. The participation of Jay Snack in this seminar demonstrates how international partnerships can have a direct and meaningful impact on local enterprises, equipping them with tools and insights to remain competitive in a rapidly evolving market.

2. METHOD

This community service development project used a qualitative and participatory methodology to ensure its implementation aligned with the needs of the target community. The process was carried out across these steps:

1. Initial Evaluation

A necessary examination was carried out through direct observation and thorough talks with SME business owners, especially Jay Snack, to identify barriers in developing goods and digital adoption. This step ensured that the activity concept was based on actual community conditions.

2. Improving Skills by Training and Workshops

Academic specialists offered interactive workshops on data analytics concepts, market assessment, and developing products methods. Participants take part in discussion groups, sharing experiences and case-based learning to enhance understanding as well as practical skills.

This method ensured that the activity was not only knowledge-sharing but also action-oriented, empowering SMEs to adopt sustainable innovation practices and enhance competitiveness through community-driven implementation.

3. RESULTS AND DISCUSSION

The international community service collaboration between the Business Management Department of BINUS Online Learning and La Trobe Business School, Australia, represents a strategic initiative to foster and empower society through the application of data analytics. Dr. Petrus A. Usmanij introduces the critical role of data and business information analysis for organizational decision-making, particularly for small, and medium-sized enterprises (SMEs). Historically, business owners frequently relied on intuition and personal experience to guide strategic choices regarding pricing, marketing, and product development. Dr. Usmanij argues that while intuition may hold some value, it is no longer adequate in the current dynamic and competitive market where consumer behavior and digital landscapes are in constant flux.

To demonstrate this shift, he uses the example of a snack business. Instead of relying on a "gut feeling" to increase production, a data-driven approach involves analyzing six months of sales records, identifying top-performing flavors and packaging sizes, and examining customer feedback. This evidence-based methodology allows a business to discern whether demand is seasonal, linked to specific demographics, or influenced by promotions. Such insights enable more accurate production adjustments, leading to waste reduction and increased profitability.

Furthermore, Dr. Usmanij highlights how data analysis supports sustainability and long-term growth. For example, analyzing customer purchasing frequency can help businesses forecast demand and prevent overproduction, which in turn reduces costs and minimizes food waste. By examining market and competitor trends, SMEs can also identify future opportunities, such as product diversification or market expansion. Ultimately, data and information analysis provide a more transparent, evidence-based view of business performance, help anticipate future challenges, and enhance the competitiveness of business.



Figure 2. Dr. Petrus Usmanij from La Trobe Business School

Data analysis facilitates the identification of business patterns, providing a deeper understanding of customer behavior, sales cycles, and operational efficiencies. For example, an SME can analyze sales data to determine that demand for specific products peaks during certain seasons, while other products sell better at different times of the year. This insight allows businesses to optimize production, marketing, and inventory management in alignment with market demand.

Additionally, data analytics empowers SMEs with predictive capabilities. By leveraging predictive tools and analyzing historical data alongside current trends, businesses can anticipate shifts in consumer preferences and supply chain dynamics. For instance, analyzing sales and social media data can reveal an emerging interest in a new product category, enabling a business to innovate and gain a competitive advantage.

Data analysis also streamlines the generation of improvement strategies. Instead of relying on trial and error, SMEs can analyze performance metrics, such as customer satisfaction scores or marketing return on investment (ROI), to pinpoint areas for enhancement. For example, a business can investigate and redesign its online payment system if data indicates a high rate of abandoned carts at that stage. Furthermore, data-driven practices foster collaborative efforts for sustainable growth. When data is shared among stakeholders, decisions can be made based on evidence rather than assumptions. For instance, a producer can use consumer feedback data on packaging to collaborate with suppliers, thereby improving sustainability and aligning with broader community goals.

Dr. Usmanij introduced a tiered framework of analytical tools to aid SMEs in adopting data-driven practices. For foundational data visualization and trend analysis, he recommended accessible software such as Excel and Power BI. To facilitate more advanced statistical and machine learning applications, he suggested programming languages like Python (utilizing libraries such as Pandas and Scikit-learn) and R (with its tidyverse ecosystem). Additionally, for qualitative research, NVivo was presented as a suitable tool for analyzing interviews and textual data. He also highlighted Orange and RapidMiner as visual modeling platforms designed for users with minimal programming expertise. The framework further incorporated modern AI tools, including ChatGPT and Elicit, which can automate tasks such as literature reviews, insight summarization, survey design, and business trend forecasting. This comprehensive and scalable approach enables SMEs to select tools that align with their current digital capabilities and business objectives, supporting their progressive integration of data-driven innovation for sustained growth.



Figure 3. Mrs. Purdiati (grey color jacket) and Others SMEs from Tangerang

The seminar also discussed the role of artificial intelligence in supporting SMEs. Participants learned how AI can help in literature reviews, summarizing insights, predicting research directions, and even generating surveys. They were encouraged to try simple techniques such as regression (cause–effect analysis) and clustering (grouping) to conduct small-scale research that could later be expanded for broader business development.



Figure 4. Speaker and Participants of the Community Service Data Analytics

Reflecting on the session's insights, participants were encouraged to identify the specific data types within their own businesses that could be leveraged for analysis. They were then tasked with determining the most suitable analytical techniques, such as predictive modeling or clustering, to support their strategic growth initiatives. The overarching message emphasized that adopting data-driven practices and integrating AI tools is no longer a luxury but a fundamental necessity for SMEs to achieve resilience and maintain a competitive advantage in the contemporary business landscape.

4. CONCLUSION

Empowering Small, and Medium-sized Enterprises (SMEs) with data analytics significantly boosts their capacity for innovation, competitiveness, and sustainability. The case of Jay Snack exemplifies how a data-driven strategy allows small businesses to gain deeper insights into consumer behaviour, mitigate operational risks, and pinpoint new opportunities for product development. By integrating workshops, mentorship, and international partnerships, the program cultivated essential technical skills and a proactive mindset toward digital readiness and continuous improvement.

The research findings substantiate the significant advantages for community-based business when academic institutions supply applied knowledge and pragmatic tools to address practical business challenges. The incorporation of artificial intelligence and user-friendly analytical platforms creates novel avenues for growth for SMEs, even when financial and operational resources are limited. This community engagement activity demonstrates the indispensable function of higher education in bridging the divide between theoretical knowledge and practical application, thereby supporting local entrepreneurial efforts and advancing sustainable development. Subsequent initiatives should aim to broaden these partnerships across diverse sectors and geographical areas to achieve a more profound and enduring empowerment of local communities.

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