Undergraduate Digital Business Education Program Development In Indonesia: A Brief Status And Perspective

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Abstract. In recent years, Indonesia's Ministry of Higher Education, Science, and Technology (Mendikti Sainstek) has observed significant growth in dynamic undergraduate digital business education (DBE) initiatives, mirroring a broader trend of digital transformation within the higher education sector. In this context, this paper provides a summary of findings from a comprehensive study on Indonesian DBE programs. This study presents a novel topic modeling analysis of 298 metaverse-related DBE programs in Indonesia. The results uncover substantial and accelerating growth in the metaverse of DBE program, marking a significant development in this field. The analysis highlights common trends, variations, and best practices, as well as the current landscape of these programs and offers insights into prospective future developments.

Keywords: digital business, higher education, undergraduate program, Indonesia.

Introduction

The rise of digital business education programs in Indonesian universities reflects the broader growth and adoption of digital technology across the nation. Indonesia, as Southeast Asia's largest digital economy, has seen rapid advancements in internet penetration, e-commerce growth, and the integration of digital platforms in everyday life (Dudhat & Agarwal, 2023; Faj'ri et al., 2024). With these technological shifts, higher education institutions have recognized the urgent need to produce graduates who are adept at navigating and driving digital transformation (Aditya Arie & Muhammad Fikry, 2021). The Indonesian government has invested heavily in expanding internet infrastructure (Gayatri et al., 2023), especially to reach remote and rural areas (Amruddin et al., 2024). This commitment is part of the "Making Indonesia 4.0" initiative, which aims to support sectors like manufacturing, digital services, and education through improved digital access (Alfarizi et al., 2024). Enhanced connectivity allows universities to offer robust online resources and courses in digital business and technology, equipping students with the skills to meet the demands of a digital-first economy.

Industry 4.0 initiatives in Indonesia emphasize automation, data exchange, and the Internet of Things (IoT) in manufacturing and services. Indonesian universities are integrating these technologies into their digital business programs, allowing students to gain exposure to real-world applications of digital automation and data-driven decision-making. Courses in AI, blockchain, and IoT are not only theoretical but are also reinforced through workshops, collaborations, and internships with companies at the forefront of digital technology (Wirtz, 2021). Through these developments, Indonesian higher education is not only responding to technological shifts but actively shaping a digital-savvy workforce ready for the challenges of a digitally integrated economy (Syarif et al., 2023). The comprehensive digital business education now offered by numerous Indonesian universities positions graduates to drive Indonesia's digital economy forward and reinforces the country's aspirations in the Industry 4.0 and the shift towards Industry 5.0 era.

To assess the current state and development of undergraduate digital business education programs in Indonesia, identifying key trends, challenges, and opportunities. A key focus of this research paper is to examine the structure of DBE programs, including their levels (e.g., bachelor's degrees, diplomas), accreditation status and the brief history of DBE program establishment. Moreover, the research delves into the geographic spread of DBE programs in Indonesia, exploring the range of elective courses available to students. This paper will help to understand the alignment of DBE programs with industry needs and technological advancements. Additionally, this research explores potential collaborations and interdisciplinary connections within the field of digital business research in Indonesia. This includes identifying existing or potential partnerships between universities, research institutions, and industry partners, as well as analyzing the integration of digital business concepts with other disciplines.

By leveraging basic statistical techniques, topic modeling, and text analysis, this work uncovered significant trends and research themes within the field of DBE programs in Indonesia. This research, therefore, aims to explore innovative approaches to undergraduate business digital program development in Indonesia and its implications of emerging digital business technologies in education. Based on the stated objectives, this research proposed two research questions:

1. How is the structure of Digital Business Education (DBE) programs in Indonesia defined in terms of program levels and how do these elements align with the stated vision and mission of each program?
2. What are the existing and potential collaborative frameworks and interdisciplinary connections within digital business education and research in Indonesia, and how do these align with national consortia?

Methods

This research employed online observation as the primary data collection method. Online observation is a research technique that involves collecting and analyzing data from online sources. This can be particularly useful for studying public behavior, trends, and opinions related to a specific topic (Bonina & Eaton, 2020; Papageorgiou et al., 2023). Specifically, it focused on Open Government Data (OGD) initiatives provided by the Indonesian Ministry of Education (https://pemutu.kemendikbud.go.id). This platform served as the primary dataset for Digital Business Education (DBE) programs. While OGD initiatives offer a valuable source of data, potential limitations regarding data quality, system quality, and service quality exist. These limitations could potentially influence public trust in OGD (Purwanto et al., 2020).

Topic modeling analysis is a statistical technique used to uncover hidden themes or topics within a large collection of text documents (Blei, 2012). It's particularly useful for analyzing large datasets of unstructured text, such as research papers, news articles, or social media posts (Rejeb et al., 2023; Takizawa, 2023). By applying topic modeling to a corpus of text data extracted from DBE programs in Indonesia, this study aims to identify the dominant themes and trends within this field.

Data Collection

The primary data source was the Open Government Data (OGD) portal of the Indonesian Ministry of Education (https://pemutu.kemendikbud.go.id). This platform provides comprehensive information on various educational programs offered in the country. Data was collected between September and October 2024, focusing on Digital Business Education (DBE) programs. The search term "digital business" was used to filter relevant programs from the dataset.

A total of 298 DBE programs were identified. For each program, data on the university name, location, accreditation status, university status (public or private), and the specific faculty or department offering the program were extracted. Additionally, complementary data was collected from online news articles published within the past two years (2022-2024) to gain insights into recent developments, industry partnerships, and student experiences related to DBE programs. The collected data was meticulously organized and structured for further analysis. The OGD data was compiled into a structured format, while

the online news articles were reviewed and relevant information was extracted. This multi-phase approach ensured a comprehensive data collection process (Taherdoost, 2021), allowing for a thorough exploration of DBE programs in Indonesia.

Data Analysis

Quantitative and statistical methods were employed to analyze the results. Scores were summed for each category and averaged across portals. This approach allowed for a comprehensive exploration and discussion of both research objectives, supported by robust statistical evidence. To achieve the research objectives, a quantitative analysis approach was employed. The primary dataset, sourced from the Indonesian Ministry of Education's Open Government Data (OGD) portal, provided comprehensive information on various educational programs, including Digital Business Education (DBE).

Initially, a descriptive analysis was conducted to understand the overall landscape of DBE programs. This involved examining the distribution of programs across different university types (public/private), analyzing the frequency of specific courses and elective options, and calculating the average credit requirements for DBE programs. Geographic distribution of the DBE program was visualized using Google Locker Studio[1] to better understand the spatial distribution of these programs across Indonesia. This visualization allowed for a deeper analysis of regional variations and the concentration of DBE programs in specific geographic areas. To identify potential collaborations and interdisciplinary connections, a co-occurrence analysis was performed (Steyvers & Griffiths, 2007). By analyzing the frequency with which specific faculties or departments offering DBE programs co-occurred within the same universities, potential internal collaborations were identified.

Additionally, the co-occurrence of keywords related to different disciplines, such as computer science, marketing, and engineering, within DBE program descriptions was examined to uncover potential interdisciplinary connections. The complementary data from online news articles (qualitative) can be used to supplement the quantitative findings. By using topic modeling techniques, the news articles can be analyzed to identify emerging trends and themes related to DBE programs. A topic modeling approach was utilized to uncover latent themes within the corpus of news articles. This enabled the identification of key areas, including industry partnerships, collaborations, and technological integration, which are shaping the evolution of DBE in Indonesia (Septiani et al., 2022). The results of the analysis of this study are presented in the following section.

Result and Discussion

Although a more detailed discussion of the results will follow, it is useful to summarize some key aspects of the study's corpus here. The quantitative data analysis uncovered important insights into the distribution and characteristics of Digital Business Education (DBE) programs across Indonesia. The scope and variety of definitions and approaches within the field underscore the relevance and timeliness of our contribution. Table 1 provides an overview of the general statistical trends related to DBE programs in Indonesia. Notably, our analysis reveals that only 31 out of the 298 DBE programs are offered by public universities, with 107 of these programs concentrated in three major provinces on Java Island (see Figure 1).

Tabel 1: General Statistical Trends of DBE in Indoensia

University Status	**Degree Offered**		**Accreditation Body**	
	Bachelor	Diploma	LAMEMBA	BANPT
Public University	20	11	29	2
Private University	223	44	256	11
Grand Total	**243**	**55**	**285**	**13**

The distribution of Digital Business Education programs across Indonesian universities, shown in the chart, reveals a significant difference between public and private institutions. Private universities are the

[1] https://lookerstudio.google.com/

predominant providers of these programs, offering a vast majority of both bachelor's and diploma degrees. Specifically, 91.8% of the programs are available at private universities, while only 8.2% are at public universities. This suggests that private institutions are leading the initiative in expanding digital business education to meet the increasing demand in Indonesia's digital economy. The table accompanying the chart indicates that private universities offer 223 bachelor's degrees and 44 diploma programs, compared to public universities with 20 bachelor's degrees and 11 diploma programs. This distribution highlights the central role of private institutions in developing a digitally skilled workforce in Indonesia.

The Growing Attention

The exponential growth of Digital Business Education (DBE) programs across Indonesia represents a strategic response to the rapidly advancing digital economy and its diverse requirements. These programs, characterized by curricula aligned with industry standards and an emphasis on practical skill development, are designed to equip graduates with the competencies required to thrive in an ever-evolving technological landscape (Gayatri et al., 2023; Gupta et al., 2015). Institutions across Indonesia are responding by introducing new DBE programs, expanding current offerings, and engaging in international collaborations to elevate the quality and relevance of these educational pathways.

The demand for digital business skills has driven various institutions, including Universitas Negeri Makassar (UNM), Universitas Bunda Mulia (UBM), Universitas Asahan (UNA), Institut Teknologi Sepuluh Nopember (ITS), and Universitas Diponegoro (Undip), to launch programs dedicated to developing expertise in digital transformation, e-commerce, and data analytics. Each institution aims to prepare students with technical, analytical, and strategic capabilities essential for navigating the digital economy. For example, ITS collaborates with renowned technology companies like Gojek and Tokopedia, providing students with hands-on learning experiences through internships and mentorships. This exposure to industry leaders allows students to gain practical insights into the digital platforms that power Indonesia's economy (Haqqi, 2023; Kurniawati et al., 2021).

DBE programs in Indonesia reflect an interdisciplinary approach that integrates business, technology, and design elements, thus preparing students to manage the complexities of the digital era. The creation of the Association of Digital Business Professionals[2] (APBISDI) in 2022 has further supported this field, advocating for professional growth through continuing education, certification, and networking initiatives. APBISDI not only upholds values like nationalism, diversity, and ethics but also contributes to developing an inclusive digital economy through various programs designed to foster a community of skilled digital business professionals.

APBISDI plays a significant role in supporting Indonesia's digital transformation. The organization facilitates knowledge-sharing sessions, skill development initiatives, and networking opportunities, ensuring that digital business professionals remain informed about the latest trends and technologies. APBISDI's work strengthens the digital business sector by promoting a professional community that values collaboration and innovation. Additionally, the significance of association engagement in research and development to monitor emerging trends and challenges in digital business, collaborating with universities, government agencies, and private companies to implement progressive initiatives and encourage best practices (Berutu et al., 2024; Mattar et al., 2022). Hence, through active participation in Indonesia's digital ecosystem, APBISDI helps shape the future of digital business in the country, ultimately fostering economic growth and development.

As DBE programs evolve, they are positioned to shape Indonesia's digital future significantly. By fostering innovation, entrepreneurship, and digital literacy, these programs empower the next generation of business leaders to leverage technology to drive economic growth. By cultivating a range of specialized skills, Indonesian universities are responding to immediate industry needs while establishing long-term career pathways in areas such as data science, digital strategy, and entrepreneurship (Bist, 2023). Program graduates are expected to become essential contributors to digital transformation initiatives across multiple

[2] https://www.apbisdi.id

sectors, aligning with Indonesia's ambition to build a robust and competitive digital economy (Faj'ri et al., 2024; Trischler & Li-Ying, 2023).

DBE curricula at Indonesian universities cover a wide array of subjects, including e-commerce, digital marketing, data analytics, and cybersecurity, ensuring that graduates have a well-rounded foundation in digital business essentials. For instance, programs at UNA and ITS are structured to prepare students for Industry 5.0, offering specialized paths in digital business technology, data science, and innovation. Undip has tailored its programs to meet these demands, providing courses in digital marketing, business innovation, cybersecurity, and data analytics. Through these comprehensive offerings, universities aim to produce graduates who can lead digital transformation (Williamson, 2021), not only as employees but also as entrepreneurs and digital strategists capable of designing and implementing new business models and digital solutions (Lyytinen et al., 2021; Voogt & Roblin, 2012).

This focus on both technical and interpersonal skills within DBE programs is essential for producing adaptable graduates who can contribute effectively to Indonesia's digital economy. Institutions aim to cultivate digital strategists, data scientists, and technopreneurs, thus addressing the industry's demand for digital expertise and building a skilled, digitally literate workforce. DBE programs are developed to meet industry demands, covering areas such as e-commerce, digital marketing, data analysis, project management, and cybersecurity (Krause et al., 2024; Lyytinen et al., 2021; Williamson, 2016). Students gain critical insights into data-driven decision-making, online sales strategies, and digital security—all essential competencies for businesses undergoing digital transformation. UNM, for example, has implemented hands-on training in e-commerce to support small businesses in adopting digital tools and enhancing their services, contributing to the development of local digital ecosystems.

Practical training and industry collaboration are essential components of DBE programs. UNM's Digital Business program, for instance, partners with local businesses to deliver a training series focused on e-commerce website development, equipping small- and medium-sized enterprises (SMEs) with digital tools to improve service delivery through online platforms. These collaborations support the local digital ecosystem and demonstrate the vital role universities play in community digitalization efforts. Universities such as Universitas Muhammadiyah Riau (Umri) are also establishing digital business programs emphasizing digital marketing, data analytics, and e-commerce to prepare students for careers in Indonesia's expanding online marketplace. UBM's Studium Generale events represent a forward-looking approach to DBE, where international experts, such as Professor Niki Pantelli from Lancaster University, provide students with strategic knowledge on digital transformation and organizational adaptation. These events highlight the importance of agile leadership and structural innovation in digital business, enabling students to gain valuable insights into using emerging technologies, including AI, blockchain, and IoT, to achieve competitive advantages in a global market.

Recognizing the complexity and pace of technological change, universities are structuring their DBE programs with targeted specializations. For example, ITS's curriculum is built around four pillars: functional management, digital systems and technology, business fundamentals, and digital entrepreneurship. This interdisciplinary approach, based on the previous studies, equips students with a comprehensive understanding of both traditional business principles and digital competencies, including digital system management, data analytics, and product development (Crittenden & Crittenden, 2015; Seyi & Abiola, 2023; Voogt & Roblin, 2012). UNA's focus on big data analytics, cybersecurity, and digital marketing ensures that graduates are prepared for roles requiring hybrid skills across business and technology.

The Indonesian government has been instrumental in supporting DBE program expansion across the country. By investing in these programs, the government demonstrates its commitment to developing a skilled workforce capable of advancing Indonesia's digital economy. Government endorsement of digital business programs reinforces the value of education in achieving a resilient digital economy (Haqqi, 2023), facilitating skill development and preparing students to navigate complex challenges in digital business (Bruce et al., 2004; Gupta et al., 2015; Toutkoushian & Smart, 2001). Initiatives like UNA's establishment of its digital business department exemplify the government's commitment to fostering institutional capacity for high-quality, industry-relevant education.

Graduates of these programs enter a job market with high demand for skills in digital transformation, data science, fintech, and cybersecurity. These graduates are expected to find opportunities in various sectors, from finance and e-commerce to technology startups and consultancy (Williamson, 2021). By offering specializations in fields like digital business technology, digital retail, and digital marketing, universities such as UBM create career pathways leading to roles as data scientists, digital marketing strategists, and UI/UX designers. This initiative aligns with Indonesia's vision of becoming a regional digital hub, attracting foreign investment, and contributing to GDP growth through a skilled, innovative workforce.

Through comprehensive and interdisciplinary curricula, DBE programs in Indonesia are not only meeting the immediate demands of the digital economy but are also preparing students for leadership roles in digital transformation. With strong government backing and partnerships with industry leaders, Indonesian universities are fostering a skilled workforce equipped to compete in a global digital economy (Alenezi et al., 2023). As these programs continue to evolve, they are set to play an influential role in shaping a sustainable, robust digital economy in Indonesia, positioning the nation as a leader in digital innovation across Southeast Asia.

Geographic Concentration

The provided map illustrates the distribution of Digital Business Education (DBE) programs across Indonesia. A notable concentration of DBE programs is observed in the western and central regions of the country, particularly in the provinces of Java and Sulawesi. This pattern suggests a strong demand for DBE education in these areas, likely driven by factors such as economic development, technological advancements, and the growing importance of digital business skills in the job market. The top five provinces with the highest number of DBE programs are Jakarta, Jawa Barat, Jawa Tengah, Jawa Timur, and Sulawesi Selatan. These provinces collectively account for a significant portion of Indonesia's population and economic activity. The presence of numerous DBE programs in these regions indicates a strong emphasis on digital business education and a recognition of its potential to drive economic growth and innovation.

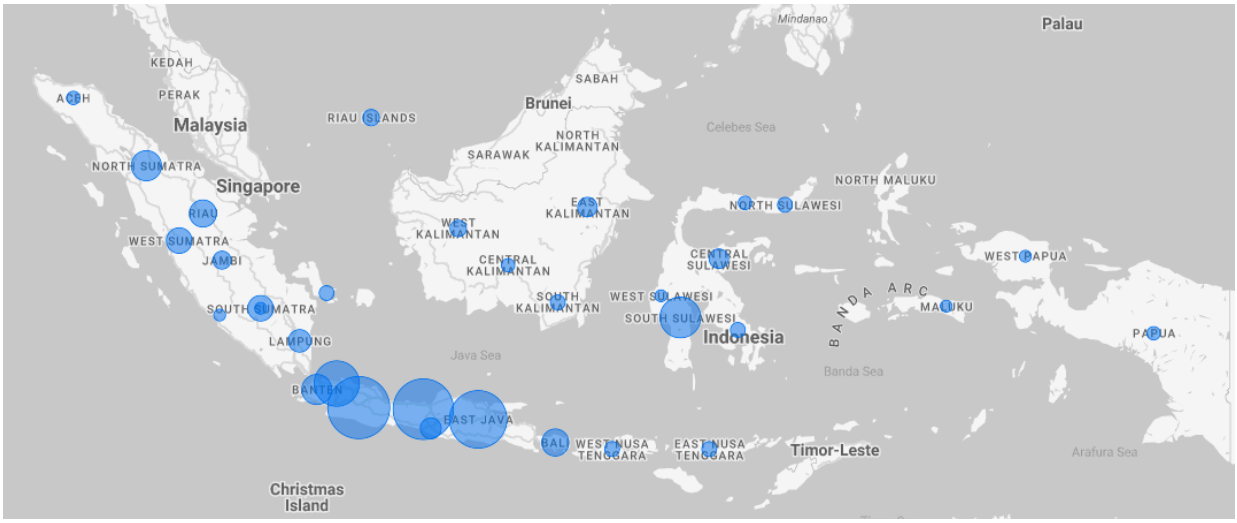

Figure 1. The Distribution of DBE Programs Across Indonesia

While the western and central regions of Indonesia exhibit a higher concentration of DBE programs, it is important to note that there is also a growing presence of these programs in other parts of the country. This suggests a gradual expansion of DBE education to regions beyond the traditional hubs (Amruddin et al., 2024), potentially driven by factors such as government initiatives, increased internet connectivity (Alfarizi et al., 2024; Haqqi, 2023), and the emergence of regional economic centers (Gayatri et al., 2023). The distribution of DBE programs across Indonesia reflects the country's diverse economic landscape and varying levels of development (Krause et al., 2024; Trischler & Li-Ying, 2023). While the concentration of programs in certain regions highlights the demand for digital business education, it is also important to consider the potential for expanding DBE offerings to underserved areas (Dec'caprio et al., 2024). By

promoting the development of DBE programs in regions with lower concentrations, Indonesia can foster a more inclusive and equitable digital economy.

Java Island emerges as the primary hub for DBE programs, accounting for approximately 37% of the total programs across three provinces: West Java, East Java, and Central Java. Specifically, West Java hosts 38 programs, East Java has 36, and Central Java follows with 33. This concentration aligns with Java's status as the most populous and industrialized region, where digital business skills are in high demand to support the rapidly growing digital economy. Outside Java, South Sulawesi (22 programs) and Jakarta (23 programs) exhibit a notable presence of DBE programs. Cities like Makassar (South Sulawesi) and Denpasar (Bali) show strong numbers, suggesting regional efforts to equip students with digital business skills that can support regional economic development and digital transformation. Major cities like Makassar, South Jakarta, Bandung, Denpasar, and Surabaya stand out as focal points, with Makassar alone hosting 11 programs (90.9% private and 9.1% public). This urban concentration reflects the importance of digital business skills in metropolitan areas, which often serve as business and technology hubs for surrounding regions.

Tabel 2: Top 5 Province and Top 10 City with DBE Program

Province	Total		City	Total	
	Public	Private		Public	Private
Jakarta	1	22	Bandung	1	7
West Java	2	36	Bogor	0	7
Central Java	4	29	Denpasar	0	7
East Java	5	31	Jakarta Selatan	0	9
South Sulawesi	1	21	Makasar	1	10
			Padang	2	5
			Pekanbaru	0	8
			Semarang	1	6
			Surabaya	3	5
			Tangerang	0	7

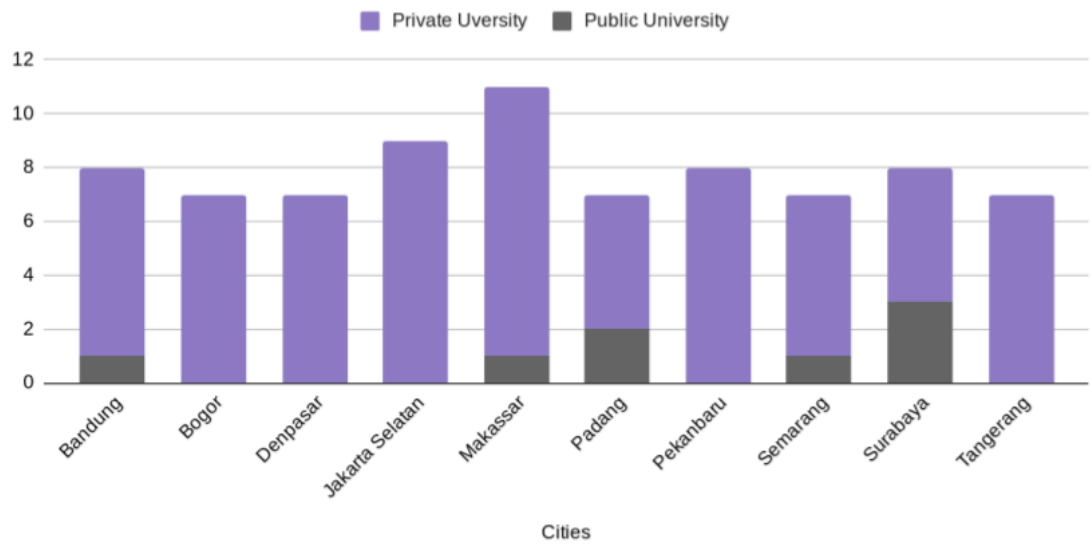

Figure 2. Distribution of DBE Program in the Top 10 Cities of Indonesia

Among cities, Makassar stands out with 11 DBE programs, 90.9% of which are offered by private universities. This concentration may indicate Makassar's strategic importance as a regional center for digital business education in eastern Indonesia. South Jakarta, with 9 private programs, and Bandung, Denpasar, and Surabaya each with around 7-8 programs, reflect a trend where cities with larger economic and business hubs host more DBE programs. This distribution suggests that universities are strategically placing DBE programs in cities where there is likely higher demand for digital business skills (Septiani et al., 2022; Wirtz, 2021) and where industry connections can facilitate practical learning opportunities for students (Dogucu & Çetinkaya-Rundel, 2021; Wiharto, 2024).

Diverse Range of Academic Units

Among the 298 DBE programs offered across Indonesia, a significant majority—91.8% (273 programs)—are provided by private universities, while only 8.2% (25 programs) are available in public universities. This highlights a strong trend of DBE programs being more commonly offered by private institutions compared to public ones. Specifically, for Bachelor's degrees, 92% (223 out of 243 programs) are hosted by private universities, with only 8% (20 programs) offered by public universities. This significant disparity highlights the inclination of private universities to invest in digital business education (Amruddin et al., 2024), potentially driven by demand from the private sector and their ability to adapt curricula quickly to align with industry trends (Bist, 2023). In contrast, Diploma programs are less prevalent, making up only 18.5% (55 programs) of total offerings, with 80% (44 programs) provided by private institutions and 20% (11 programs) by public universities (Table 1). This results confirms Kinnunen et al. (2018) which suggests that Bachelor's level education in digital business is more established and preferred, especially in private institutions.

Based on the additional graph provided, we can analyze the faculty or unit structure associated with Digital Business Education (DBE) programs in Indonesia (Figure 3), building on the prior results. The majority of DBE programs, representing 48.8% of specified faculty affiliations, are managed within the Faculty of Economy and Business. This is consistent with the nature of DBE programs, which align closely with economic and business disciplines, suggesting that universities are positioning these programs to leverage existing business education resources and faculty expertise. Other faculties such as the Faculty of Economy (4.7%), Faculty of Business (3.3%), and Faculty of Applied Science (3.3%) also contribute to DBE programs, though to a much lesser extent. This distribution indicates some interdisciplinary approaches, though they remain limited compared to the dominant Faculty of Economy and Business.

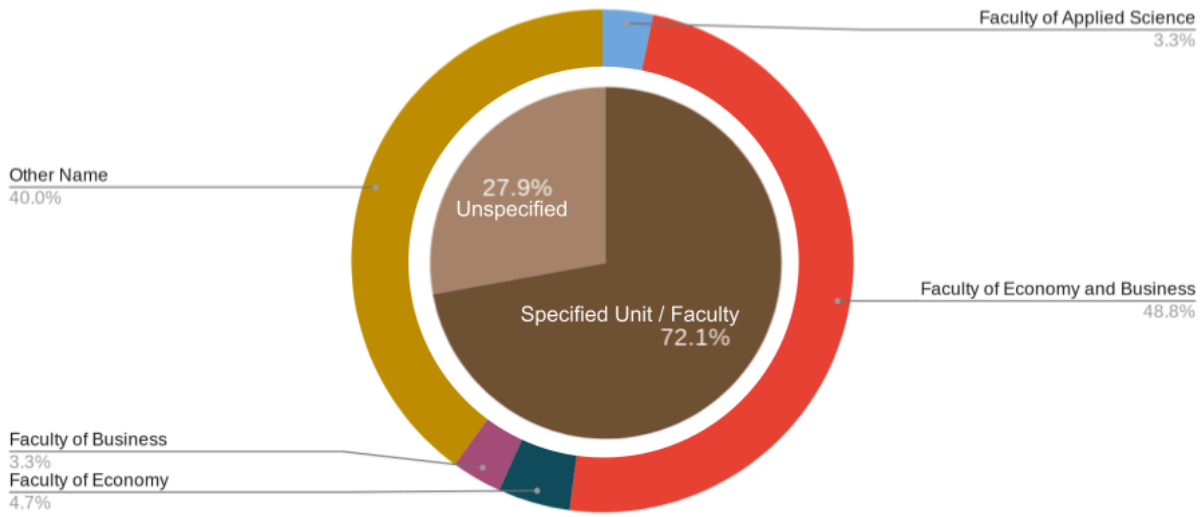

Figure 3. The Faculty or Unit Structure Associated with DBE

Notably, 27.9% of DBE programs do not specify a faculty affiliation. This lack of standardization may reflect the evolving nature of digital business education, where institutions may be experimenting with flexible structures or simply haven't formalized these programs under traditional faculties. Around 40% of programs fall under "Other Names," indicating either customized faculty titles or new, unique academic units formed to manage DBE programs. This diversity in naming may point to efforts by institutions to differentiate their digital business offerings or establish dedicated units that cater specifically to digital skills and technology integration (Syarif et al., 2023), outside of conventional business or economic faculties.

The dominance of the Faculty of Economy and Business as the primary host for DBE programs aligns with the broader trend of DBE programs being concentrated in urban and economically active regions (as seen in the prior analysis). These faculties, likely having established industry connections and a business-oriented curriculum, are well-positioned to adapt to the emerging needs of digital business (Lyytinen et al., 2021). Although a smaller share, faculties like Applied Science and various other academic units indicate that some institutions recognize the interdisciplinary potential of DBE programs. This could allow for more technical, scientific, or innovative perspectives to influence the curriculum and better meet the demands of the digital economy (Mattar et al., 2022; Syarif et al., 2023). With nearly a third of DBE programs under unspecified faculties and 40% with unique names, there may be a need for clearer organizational standards. As the field of digital business education matures, establishing a standardized faculty or unit structure could help improve program consistency and quality, especially in accreditation and industry recognition.

Among the DBE programs, 197 (66.1%) have a "Good" accreditation status, making it the most common rating. Private universities lead with 172 of these "Good" accreditations, while public universities have 25. This indicates a standard level of quality but also points to a need for enhancement to reach higher accreditation levels. Only two DBE programs have achieved "Excellent" accreditation, indicating a scarcity of top-tier DBE programs. This suggests a need for quality improvements across the sector, especially to meet global standards and the rapidly advancing requirements of digital business. A substantial number of programs, 88 (nearly 30%), remain unaccredited, with private institutions accounting for the majority. This could be attributed to newer programs that have yet to undergo accreditation or challenges in meeting accreditation standards. The high number of unaccredited programs highlights an area for policy intervention (Haqqi, 2023) to ensure consistent educational quality across all DBE offerings.

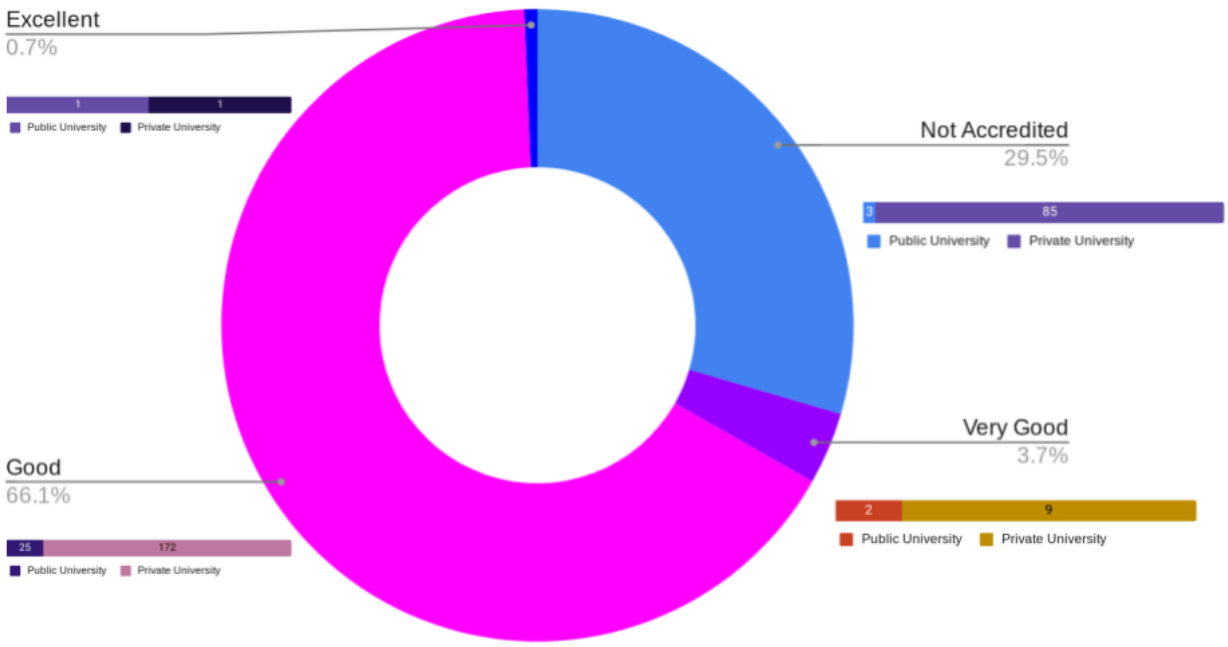

Figure 4. DBE Accreditation Status

The quality of Digital Business Education (DBE) programs in Indonesia is ensured through accreditation by two key bodies: the National Accreditation Board for Higher Education (BAN-PT) and the Institute of Accreditation for Economics, Management, Business, and Accounting Programs (LAMEMBA). While BAN-PT provides a broader national accreditation, LAMEMBA specializes in accrediting programs in specific fields, including economics, management, business, and accounting. The data indicates that 285

programs (95.6%) are accredited by LAMEMBA[3], while only 13 programs (4.4%) are accredited by BAN-PT[4]. The dominance of LAMEMBA in accrediting DBE programs underscores its influence in setting and maintaining educational standards within this field. This also suggests that LAMEMBA's criteria align closely with industry expectations for digital business education. With the majority of programs being assessed by a single accrediting body, there may be greater consistency in standards, but it also raises questions about the diversity of accreditation criteria and the potential need for competitive evaluation bodies to enhance program quality (Bist, 2023; Takizawa, 2023; Xiaoming & Lunt, 2006).

Combining these insights with the previous findings, we observe that DBE programs in Indonesia are mostly hosted in private institutions, often within faculties tied to business and economics, reflecting a strong business focus. However, the substantial portion of unspecified and uniquely named faculties highlights an area where standardization could enhance program clarity and comparability (Crittenden & Crittenden, 2015). This evolving structure reflects Indonesia's ongoing efforts to meet the demand for digital business education while adapting traditional academic structures to new fields and interdisciplinary approaches (Voogt & Roblin, 2012). The data suggests that while private universities are quickly adopting DBE programs, public universities and diverse faculties may still need time to adapt or establish frameworks that fully support this educational area's unique demands (Bruce et al., 2004; Macfadyen, 2020).

Conclusion

Although the DBE programs are growing rapidly across Indonesia, there is a need for both quality enhancement and broader geographic distribution to support equitable digital skills development across the nation. The landscape of Digital Business Education (DBE) programs in Indonesia reveals notable trends in distribution, quality, and structural organization across public and private institutions. Private universities dominate the field, offering 91.8% of all DBE programs, reflecting their active role in responding to the nation's growing digital economy. These programs are strategically developed to meet industry demands, focusing on practical skills that prepare graduates for roles in various sectors such as data science, fintech, and digital transformation.

A substantial concentration of DBE programs is observed in the western and central provinces, particularly Java and Sulawesi, which are economically active regions with a high demand for digital skills. The majority of these programs fall under the Faculty of Economy and Business, accounting for 48.8% of DBE offerings, highlighting an alignment with business education frameworks and resources. Regarding quality, 66.1% of DBE programs have received "Good" accreditation, predominantly in private universities. However, only two programs have achieved "Excellent" accreditation, suggesting room for improvement to meet higher standards and global benchmarks. Additionally, nearly 30% of programs remain unaccredited, which may reflect the newer status of some programs or accreditation challenges. The Indonesian government's endorsement and the support of organizations like APBISDI further strengthen the DBE sector, fostering an ecosystem for continued growth, innovation, and professional development. As DBE programs continue to evolve, they are positioned to play a critical role in shaping Indonesia's digital economy, preparing a skilled workforce equipped to drive the nation's economic progress in the digital age.

The emphasis on DBE programs in private universities and metropolitan areas highlights an attempt to rapidly produce a workforce skilled in digital business to meet the growing demands of Indonesia's digital economy. However, the limited number of highly accredited programs suggests that while quantity is high, there may be room for quality improvement to ensure graduates are well-prepared for complex industry challenges. The concentration of DBE programs in Java and other urban centers also aligns with Indonesia's broader digital transformation goals. By establishing these programs in economic hubs, universities are contributing to the national effort to build a digitally savvy workforce capable of supporting both public and private sector digitalization initiatives.

[3] https://lamemba.or.id/en/
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