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Analisis Industri Radiofarmaka FDG F 18 di Indonesia
Wirawan Rizkika, Prof. dr. Laksono Trisnantoro, MSc, PhD.; Dr.-Ing. Ir. Kusnanto
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ABSTRAK

Latar Belakang: Kanker merupakan penyebab kematian ketiga tertinggi di Indonesia setelah stroke dan jantung. Kasus kanker meningkat hampir 40% antara tahun 2008–2022. Pemerintah telah menetapkan kebijakan transformasi kesehatan, salah satunya melalui peningkatan deteksi dini dan akses diagnosis kanker melalui Industri radiofarmaka, khususnya *Fluorodeoxy Glucose* (FDG-F18) yang memiliki peran strategis dalam mendukung implementasi PET/CT scan. Namun, pengembangan industri radiofarmaka di Indonesia masih menghadapi tantangan berupa regulasi kompleks, keterbatasan infrastruktur, minimnya riset dan inovasi, serta ketergantungan pada impor bahan baku.

Metode: Penelitian ini menggunakan pendekatan kualitatif eksplanatori. Data diperoleh melalui studi literatur, observasi, dan wawancara dengan stakeholder terkait (rumah sakit, regulator, produsen, dan penyedia mesin siklotron). Analisis dilakukan dengan kerangka *Five Forces Porter* untuk memetakan kekuatan persaingan industri dan PEST untuk mengidentifikasi faktor eksternal yang mempengaruhi perkembangan industri.

Hasil: Kekuatan pemasok memiliki pengaruh dominan terhadap ketersediaan FDG F-18, mengingat tingginya ketergantungan pada impor bahan baku. Rivalitas antar rumah sakit relatif rendah karena hanya sedikit institusi yang memiliki fasilitas PET Scan, namun hal ini sekaligus membatasi akses pasien. Dari sisi PEST, faktor politik–regulasi dan teknologi menjadi penentu utama, sedangkan faktor ekonomi dan sosial menyoroti kebutuhan model pembiayaan berkelanjutan dan edukasi masyarakat.

Kesimpulan: Implementasi FDG F-18 di rumah sakit memerlukan strategi komprehensif: penguatan infrastruktur dan SDM, diversifikasi pemasok, peningkatan kolaborasi litbang, serta integrasi layanan onkologi. Dengan pendekatan manajerial yang tepat, rumah sakit dapat berperan lebih aktif dalam mendukung kebijakan nasional deteksi dini kanker. Industri radiofarmaka FDG-F18 di Indonesia memiliki potensi besar untuk mendukung transformasi layanan kanker nasional, namun masih terhambat keterbatasan infrastruktur, regulasi, dan SDM. Diperlukan strategi kolaboratif pemerintah–swasta, peningkatan investasi riset, serta percepatan pembangunan siklotron untuk memperkuat kemandirian industri radiofarmaka.

Kata kunci: Radiofarmaka, FDG-F18, Porter Five Forces, PEST

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ABSTRACT

Background: *Cancer is the third leading cause of death in Indonesia after stroke and heart disease. Cancer cases increased by nearly 40% between 2008 and 2022. The government has established a health transformation policy, one of which is through improving early detection and access to cancer diagnosis through the radiopharmaceutical industry, particularly Fluorodeoxy Glucose (FDG-F18), which plays a strategic role in supporting the implementation of PET/CT scans. However, the development of the radiopharmaceutical industry in Indonesia still faces challenges in the form of complex regulations, limited infrastructure, a lack of research and innovation, and dependence on imported raw materials.*

Method: *This study applied a qualitative explanatory approach. Data were obtained from literature review, observation, and interviews with stakeholders (hospitals, regulators, producers, and cyclotron providers). Porter's Five Forces framework was used to assess competitive dynamics, while PEST analysis identified external factors shaping the industry.*

Result and Discussion: *The findings reveal that supplier power is the most dominant factor influencing FDG F-18 availability, driven by dependence on imported materials. Rivalry among hospitals is relatively low due to the limited number of institutions operating PET Scan facilities, which in turn restricts patient access. From the PEST perspective, political–regulatory and technological factors play central roles, while economic and social aspects underscore the need for sustainable financing models and public education.*

Conclusion: *Implementing FDG F-18 in hospitals requires a comprehensive strategy: strengthening infrastructure and human resources, diversifying suppliers, increasing collaborative research and development (R&D), and integrating oncology services. With the right managerial approach, hospitals can play a more active role in supporting the national policy for early cancer detection. The FDG-F18 radiopharmaceutical industry in Indonesia has significant potential to support the transformation of national cancer services, but remains hampered by limited infrastructure, regulations, and human resources. A collaborative public-private strategy, increased research investment, and accelerated cyclotron development are needed to strengthen the independence of the radiopharmaceutical industry.*

Keywords: Radiopharmaceutical, FDG-F18, Porter Five Forces, PEST