

HEALTHCARE (SERVICE PROVIDERS)

Maintain POSITIVE

KEY INVESTMENT HIGHLIGHTS

- Fundamentals for healthcare service provider subsector remain sanguine; buoyed by medical tourism and aging population growth
- Current key catalyst is AI-based medical technology, in tandem with AI Roadmap 2021-2025
- Challenges remain on data security, cost, system compatibility and labour skills, which are possible to mitigate through government initiatives, public-private collaborations and continuous improvement in technology
- Maintain **POSITIVE** on Healthcare sector

SECTOR SUMMARY

Fundamentals remain intact for hospitals. The prospects of our healthcare service providers remain sanguine as medical tourism and demand for NCD treatments are on an uptrend, in tandem with the growing aging population projected at a 5-Y CAGR of +7.8%. The outlook for hospitals globally is promising, as demand continue to increase due to population growth, rising chronic diseases, and advancements in healthcare technologies. Meanwhile, in our local front, the healthcare services market is projected to grow with a revenue estimate of RM39.5b in CY24 and up to RM52.7b by CY29. The expansion and modernisation of hospitals since the culmination of the Covid-19 pandemic, coupled with the increasing demand for world-class facilities and services at competitive prices, are testaments to this optimistic outlook.

Focus on improving healthcare quality. Budget 2024 had highlighted the importance of the healthcare sector, by placing the Ministry of Health (MoH) with the largest increase in allocation at RM41.2b in total spending. Out of the Budget 2024 allocation, RM20m was set to establish the country’s first artificial intelligence (AI) faculty at the University of Technology Malaysia (UTM). This initiative is part of a broader effort to boost the exploration of interdisciplinary AI fields, including medical technology. Additionally, the allocation is believed to assist in fostering innovation and enhance research in the near- to mid-term. We anticipate that this initiative will encourage the government to adopt a more comprehensive environment to improve healthcare services through public-private partnerships, as well as to uplift the role of hospitals as the main hub for AI medical tech. Overall, this allocation is a step towards modernizing Malaysia’s healthcare system and aligning it with global advancements in medical technology. We believe that AI is a worthy investment to the future of our local healthcare sector, promising better health outcomes for the population.

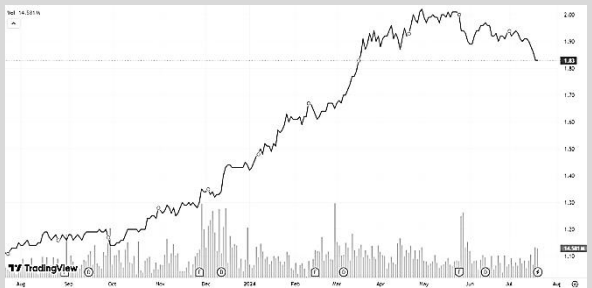
COMPANY IN FOCUS

KPJ Healthcare Bhd

Maintain **BUY** | Target Price: RM2.54
Price @ 19th July 2024: RM1.83

- 1Q24 earnings +56%yoy
- High medical tourism revenue with 77% from health travellers from ASEAN
- Localised hospitals bring focus to services with lesser volatility from factors abroad
- Boosted hospitality value with Marriot Int

SHARE PRICE CHART



IHH Healthcare Bhd

Maintain **BUY** | Target Price: RM7.35
Price @ 19th July 2024: RM6.33

- 1Q24 earnings +22%yoy
- Robust balance sheet with cash balance of RM2.2b
- Wide-range screening and lab services
- Large international footprint with high reliability for M&A
- Leverages on extensive network for case-mix

SHARE PRICE CHART



KEY CATALYST

AI technology uptrends in sector. Large technology companies are investing heavily in AI, with a forecast of USD189b in CY24, where four tech giants – Google (NASDAQ: GOOGL), Meta (NASDAQ: META), Microsoft (NASDAQ: MSFT) and Apple (NASDAQ: AAPL) – would account for approximately 21% of the total capex in AI. In the healthcare sector, AI is extensively utilised to create new drug compounds, enhance diagnostic devices, and develop AI-integrated surgical robots for complex procedures. Additionally, AI is being used in data analytics to improve patient outcomes and develop more efficient healthcare data management systems, subsequently facilitating faster, easier, and more cost-effective diagnoses. Currently, many AI companies are focused on expanding AI infrastructure, including: (i) upgrading and building new data centres, (ii) developing and procuring GPUs and specialized chips for AI models, and (iii) laying transoceanic cables.

AI-based medical tech on high demand. The capex for AI-based medical devices has seen significant growth over the years. In CY23, the global market size for AI in medical devices was valued at USD15.4b (approximately) and is projected to grow to USD22.3b in CY24. This expansion in medical technology is attributed to: (i) the higher demand for patient-centric care, (ii) the advancing of timely and precise clinical support systems, (iii) the emergence and improvement of wearable medical devices, and (iv) the increasing development of regulatory frameworks for AI-based technology. As of May CY24, the US Healthcare industry alone had authorised as many as 882 AI-enabled medical devices. This suggests a growing recognition of the importance of AI in enhancing medical device functionality and patient care. Following this uptrend, it is estimated that over USD97b of capex is expected globally for AI-tech by CY28. With this capex growth, we believe the investment in AI medical technology is poised to drive innovation and efficiency, benefiting both healthcare providers and patients in the long term.

Technological risks still a major concern. While AI-based technology promised better diagnoses and higher treatment precision, the risks to the technology system itself posed concern to the implication of implementing AI in medical devices in the long run. This would further challenge the expansion of such technology across all healthcare levels and disrupt financial growth strategies for hospitals. By addressing these challenges through strategic planning, robust security measures, clinical validation, financial support, ethical oversight, and effective change management, hospitals can successfully implement AI-based medical technologies to enhance patient care and operational efficiency.

The following highlights the potential risks to AI-based technology and possible solutions to overcome these risks:

TABLE 1: AI-Based Technology Risks and Proposed Solutions

Risks	Possible Solutions	Example
<p>Data Privacy and Security: The security and privacy of patient data when using AI systems are vulnerable to cyberattacks and breaches</p>	<ul style="list-style-type: none"> Implement comprehensive cybersecurity measures, including encryption, firewalls, and regular security audits Adhere to regulations such as HIPAA (Health Insurance Portability and Accountability Act) in the U.S. and GDPR (General Data Protection Regulation) in Europe to ensure data protection Conduct ongoing training for staff on data security best practices to prevent breaches 	<p>In CY17, the WannaCry ransomware attack affected numerous healthcare institutions worldwide, including the UK's National Health Service (NHS), highlighting vulnerabilities in data security. This event underscored the critical need for robust cybersecurity measures in healthcare, where patient data and essential services must be protected against such threats. It led to increased awareness and investment in cybersecurity infrastructure, policies, and training to prevent similar attacks in the future.</p>
<p>Integration with Existing Systems: Integrating AI technologies with existing hospital IT systems can be complex and resource intensive</p>	<ul style="list-style-type: none"> Utilize standards such as HL7 and FHIR (Fast Healthcare Interoperability Resources) to ensure seamless integration Implement AI solutions in phases, starting with pilot programs to identify and address integration challenges before full-scale deployment Work closely with technology vendors to customize solutions for compatibility with existing systems 	<p>Integrating IBM Watson with electronic health records (EHRs) in hospitals has sometimes faced challenges due to compatibility issues and the need for significant customization. However, when utilised post-customisation, IBM Watson technology enhanced patient-centred care delivery. In the case of University Hospitals Coventry and Warwickshire (UHCW), the implementation served over 700 patients weekly and reduced -6% of missed patient appointments.</p>

Risks	Possible Solutions	Example
<p>Clinical Validation and Acceptance: Gaining clinical validation and acceptance from healthcare providers who may be skeptical about AI's reliability and effectiveness</p>	<ul style="list-style-type: none"> • Conduct comprehensive clinical trials to validate AI systems and ensure they meet medical standards • Obtain necessary regulatory approvals to build trust in the technology's safety and efficacy • Provide education and training for healthcare providers to familiarize them with AI tools and their benefits 	<p>The AI diagnostic tool IDx-DR, designed to detect diabetic retinopathy, faced initial scepticism largely due to the novelty of using AI in a diagnostic capacity, which raised questions about accuracy and reliability. To address these concerns, IDx-DR underwent extensive clinical trials to validate its efficacy and safety. The successful results from these trials led to its approval by the Food and Drug Administration (FDA) in CY18, making it the first autonomous AI diagnostic system authorized for commercial use in the US.</p>
<p>Cost and Resource Allocation: The high costs associated with implementing AI technologies can be a barrier, especially for smaller hospitals with limited budgets.</p>	<ul style="list-style-type: none"> • Develop a clear financial plan that includes cost-benefit analyses to justify the investment. • Seek government grants and funding opportunities to support the implementation of AI technologies. • Form partnerships with technology companies and research institutions to share costs and resources. 	<p>Implementing advanced AI systems like IBM Watson for Oncology involves significant investment in technology and training, which can be prohibitive for some institutions, as the system require secure and robust IT infrastructure, software licensing, training and support, and data management. Overcoming these factors through proper funding and talent upskill could further motivate the use of AI systems within smaller clinics and healthcare institutions.</p>
<p>Ethical and Bias Concerns: AI systems can perpetuate biases present in the data they are trained on, leading to ethical concerns and unequal treatment</p>	<ul style="list-style-type: none"> • Implement strategies to detect and mitigate biases in AI algorithms, such as using diverse training datasets and regularly auditing AI systems for bias • Ensure transparency in AI decision-making processes to build trust and accountability • Establish ethical guidelines and oversight committees to review and address potential biases and ethical issues 	<p>A study published in CY19 found that an AI algorithm used to allocate health care in the US was less likely to refer black patients than white patients for high-risk care management programmes. This instance of racial bias in the AI system underscored the importance of ensuring that AI algorithms are fair and unbiased and emphasising on the need for data standardisation, transparency, accountability, and equity in AI systems.</p>
<p>Change Management and Workforce Training: Resistance to change among staff and the need for extensive training to effectively use AI technologies</p>	<ul style="list-style-type: none"> • Engage healthcare providers early in the implementation process and communicate the benefits of AI technologies • Develop and implement comprehensive training programs to ensure staff are proficient in using AI tools • Foster a culture of innovation with support from hospital leadership to encourage the adoption of new technologies 	<p>The implementation of AI in radiology at Massachusetts General Hospital required significant efforts in change management to ensure radiologists adopted the new technology. This includes education and training, workflow integration, value demonstration and leadership support.</p>

Source: HFMA, FDA, WHO, MIDFR

CASE STUDY

Two case studies from other regions and institutions are examined to illustrate successful utilisation of AI-based technology in healthcare services, offering insights into best practices, lessons learned, and potential strategies:

Case Study 1: AI-Powered Diagnostic Imaging at AIMI

Stanford University, under its Stanford Centre for Artificial Intelligence in Medicine and Imaging (AIMI), had implemented an AI-powered diagnostic imaging system to assist radiologists in identifying and diagnosing medical conditions from imaging scans, such as X-rays and CT scans. The AI system was developed in collaboration with researchers and engineers, by utilising deep learning algorithms to analyse medical images. Consequently, the AI model was trained on a large dataset of labelled medical images to recognize patterns and anomalies that indicate various conditions, such as pneumonia, fractures, and tumours.

The implementation of AI in diagnostic imaging had shown significant successes in: (i) demonstrating a diagnostic accuracy comparable to that of experienced radiologists, (ii) reducing the time needed to analyse scans, subsequently allowing radiologists to focus on more complex cases, and (iii) processing large volumes of images quickly, making it suitable in high patient turnover situations.

The technology is anticipated to improve patient outcomes by providing faster and more accurate diagnoses and enabling timely treatment. With the integration of the AI technology introduced through AIMI, the radiology department also saw a reduction in workload among the radiologists. To overcome the common challenges, AIMI continued to improve in AI integration to existing radiology workflows and conduct extensive validation studies to ensure minimal disruption and higher reliability. AIMI is actively working to address these challenges through interdisciplinary collaboration, rigorous research, and policy advocacy to ensure that AI technologies benefit patients and healthcare providers alike.

Case Study 2: Da Vinci Surgical System

The Da Vinci Surgical System, developed by Intuitive Surgical, is a state-of-the-art robotic platform designed to enable surgeons to perform minimally invasive surgeries with precision and control. It has been successfully used in numerous hospitals worldwide for various complex procedures. The system includes a 3D high-definition vision system and tiny wristed instruments that bend and rotate far greater than the human hand. The system is used for various surgeries, including prostatectomies, hysterectomies, cardiac valve repair, and bariatric surgeries. The technology, when integrated with AI, allowed for greater precision, smaller incisions, and enhanced dexterity, leading to better surgical outcomes and reduced complication risks. Patients also experienced less pain, minimal scarring, and quicker recovery times compared to traditional open surgery.

Nevertheless, the challenges persisted in terms of high initial investment and maintenance costs of the system, as well as the proficiency to master the system. While most advanced technological devices in the healthcare sector are costly, AI-based and robotic technology however are still fundamentally new and the maintenance cost for such systems could outweigh its benefits. The Da Vinci system can be procured through grants and partnerships, and extensive training including simulations and supervised procedures could minimise the risks and maximise the demand for such technology in hospitals.

What would this mean for our local front?

AI-based medical technology offers substantial benefits to Malaysian hospitals, including improved diagnostic accuracy, operational efficiency, and personalized patient care. However, the successful implementation of these technologies requires addressing challenges related to data privacy, system integration, cost, clinical validation, ethical concerns, and infrastructure. By adopting strategic solutions and fostering collaboration among stakeholders, Malaysian hospitals can harness the full potential of AI to enhance healthcare delivery. While robotics and advanced medical technology are not new to our local front, integrating such technologies to AI require a few governmental interventions and regulations to ensure that the AI is developed and implemented ethically and safely, while fostering talent development to navigate the future economy of AI.

In tandem with the demand for AI-based medical technology, Malaysia has established roadmaps and blueprints for the development of AI, which includes the healthcare sector. Among the key initiatives are:

Artificial Intelligence Roadmap 2021-2025 (AIR2025): The Malaysian Science and Technology Information Centre (MASTIC) has published an AI Roadmap for 2021-2025, which outlines the strategic direction for AI development in Malaysia. This roadmap aims to spearhead the development of the country's AI ecosystem by focusing efforts on national AI use cases in priority areas, including the healthcare sector, as well as to emphasise responsible AI practices across various domains.

4IR and MyDigital Blueprint: Under the Fourth Industrial Revolution (4IR) and MyDigital blueprint, the Malaysian government aims to boost productivity with AI as a critical enabler, which includes advancements in AI medical technology.

Maintain POSITIVE

Overall, we maintain POSITIVE on the trajectory of the healthcare service providers subsector. One of the key catalysts that we anticipate is the growing demand for AI to enhance efficiency in patient treatment and surgical procedures. The potential of AI was prominently echoed by the Association of Private Hospitals of Malaysia (APHM), with emphasis in AI collaborations among private hospitals and medical technology providers to advance healthcare delivery and improve operational efficiency, precision, and accuracy. With ongoing innovations in robotics and advanced medical technology in the private healthcare market, we believe that the highlighted challenges of AI integration can be mitigated.

Besides AI technology, other key catalysts for the healthcare sector in the near term include: (i) increasing demand for medical tourism, (ii) increasing aging population which led to subsequent higher demand for NCD and specialised treatments, and (iii) expected robust government spending under Budget 2024. Our **TOP PICKS** for the healthcare services subsector are:

KPJ Healthcare Berhad (BUY, TP: RM3.54). KPJ has been making significant improvements in integrating robotics and AI-based technology into its medical services. These initiatives demonstrate KPJ Healthcare's dedication to leveraging cutting-edge technologies to set new standards in healthcare and provide exceptional care to patients. Among the technologies that the group had been implementing are:

- **Robotic-Assisted Knee Surgery:** KPJ Kuching Specialist Hospital has completed its 206th knee surgery using robotic-assisted technology. The use of robotic technology has led to a +28.7% increase in successful Total Knee Arthroplasty (TKA) operations since its implementation in August CY23.
- **5G-enabled VSI Holomedicine:** Malaysia's first 5G-enabled VSI Holomedicine was introduced at Damansara Specialist Hospital 2 (DSH2). This technology utilizes medical mixed reality for surgical planning, patient education, and medical training.

IHH Healthcare Berhad (BUY, TP: RM7.35). Similarly, IHH has been actively incorporating robotics and AI-based technology across its network of hospitals. These initiatives reflect IHH Healthcare's commitment to leveraging cutting-edge technologies to improve its healthcare service operations. The integration of digital imaging, automation, and robotics has been a significant focus for IHH, leading to more efficient healthcare solutions. Among the group's initiatives in AI technology are:

- **Investments in Health-Tech and AI:** IHH has invested in health-tech companies like Doctor Anywhere and Us2.ai through its Innovation Fund. These investments are part of IHH's strategy to integrate emerging technologies and AI to enhance diagnostics and personalized treatment.
- **In-House Developed AI Tools:** IHH has developed several AI-driven data products such as FeeAdvisor.ai, Package Value Optimiser, Robo Claims, and Social Media Text Analysis under the #IHHMade initiative. These tools are designed to optimize healthcare services and operations within IHH.

In addition to the AI-based technology initiatives, we also like both companies based on: (i) the increasing demand for services in line with the expansion of hospitals, (ii) the rising aging population in Malaysia by +4.5% 10-year CAGR, translating to higher inpatient visits and surgeries, and (iii) medical tourism expected to exceed RM2b of revenue in CY24.



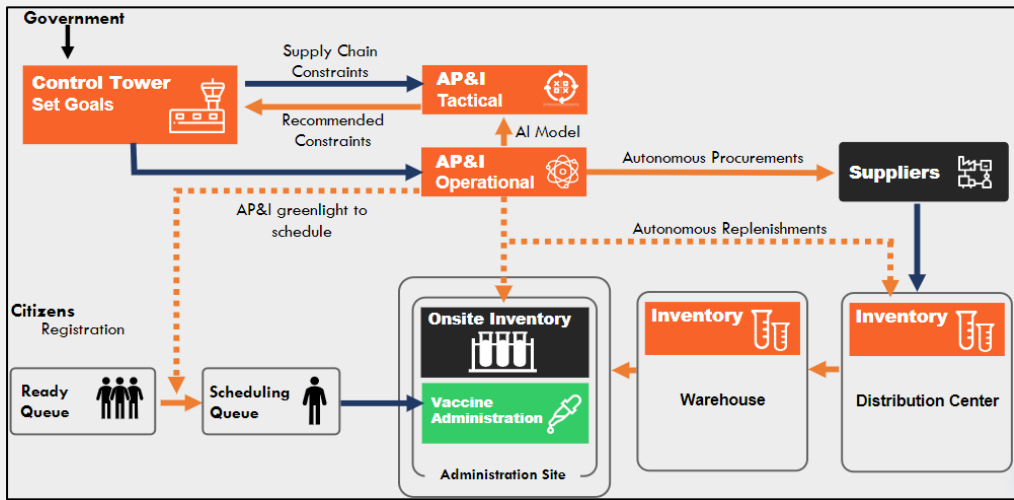
APPENDIX

TABLE 2: Healthcare Industry Megatrends 2024

Industry Mega Trends	Description
Big Technology M&A	Big Tech companies are in continuous focus to contribute to the healthcare space. Companies like Amazon, Apple, and Microsoft are aligning their technology and data with patient care service offerings. This trend is expected to reduce costs and support financial performance.
Vertical Clinical Integration	Payers and retail corporations are investing in primary care and other vertically aligned services. This trend is influencing consumer behaviours. Hence, the healthcare systems are expected to respond by launching consumer-focused initiatives and expanding primary service access.
Labour and Financial Health	The healthcare industry is recovering from labour shortages and financial strains following the onset of the Covid-19 pandemic. Transformation efforts and revenue diversification are expected to continue, with technology adoption playing a key role in growth, especially in patient engagement and clinical decision support systems.
Specialty Pharmacy Growth	Pharmacy services, particularly specialty pharmacy, are anticipated to continue experiencing rapid growth. This trend is driven by the increasing need for specialized medication management and personalized patient care, in tandem with the growing aging population and higher demand in medical tourism.
Innovation and Sustainability	The sector is poised for profound changes shaped by innovation, sustainability, social care integration, cost management, and workforce adaptation. These changes are expected to lead to more efficient and effective healthcare delivery systems, alongside the improvement in AI-based medical technology.

Source: HFMA, WHO, MIDFR

TABLE 3: AI Healthcare Projects under AIR2025

Project	Description
Project 6: Autonomous Vaccine Distribution and Management System	<p>This project is expected to boost the operational efficiency of vaccine distribution by using AI to reduce supply spend by -20% and logistic cost by -40%. This includes overlaying AI on top of current workflow and systems to ensure vaccine doses scheduling can be administered autonomously and effectively at scale.</p> 
Project 7: Personalised Proactive Healthcare	This project enables a nationwide implementation of the Proactive Healthcare Strategy for cardiovascular disease and reduces healthcare costs.
Project 8: Autonomous A-eye System	This project is set to assist in preventing blindness using AI-powered image analysis.
Project 9: AI-Nasoalveolar (AI-Na) System	This project is to develop an AI-assisted predictive model CIAPAI Series of 3D printed presurgical nasoalveolar mold (PNAM) with AI prediction on changes of cleft separation after the application of PNAM.

Source: MASTIC, MIDFR

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MIDF AMANAH INVESTMENT BANK : GUIDE TO RECOMMENDATIONS

STOCK RECOMMENDATIONS

BUY	Total return is expected to be >10% over the next 12 months.
TRADING BUY	Stock price is expected to <i>rise</i> by >10% within 3-months after a Trading Buy rating has been assigned due to positive newsflow.
NEUTRAL	Total return is expected to be between -10% and +10% over the next 12 months.
SELL	Total return is expected to be <-10% over the next 12 months.
TRADING SELL	Stock price is expected to <i>fall</i> by >10% within 3-months after a Trading Sell rating has been assigned due to negative newsflow.

SECTOR RECOMMENDATIONS

POSITIVE	The sector is expected to outperform the overall market over the next 12 months.
NEUTRAL	The sector is to perform in line with the overall market over the next 12 months.
NEGATIVE	The sector is expected to underperform the overall market over the next 12 months.

ESG RECOMMENDATIONS* - source Bursa Malaysia and FTSE Russell

☆☆☆☆	Top 25% by ESG Ratings amongst PLCs in FBM EMAS that have been assessed by FTSE Russell
☆☆☆	Top 26-50% by ESG Ratings amongst PLCs in FBM EMAS that have been assessed by FTSE Russell
☆☆	Top 51%- 75% by ESG Ratings amongst PLCs in FBM EMAS that have been assessed by FTSE Russell
☆	Bottom 25% by ESG Ratings amongst PLCs in FBM EMAS that have been assessed by FTSE Russell

* ESG Ratings of PLCs in FBM EMAS that have been assessed by FTSE Russell in accordance with FTSE Russell ESG Ratings Methodology