



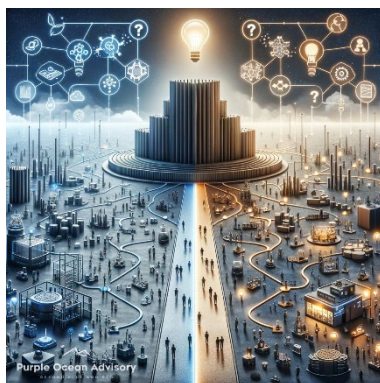
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Centralized vs. Decentralized Digital Innovation in Biopharmaceuticals: Navigating the Dilemma

Visual Abstract



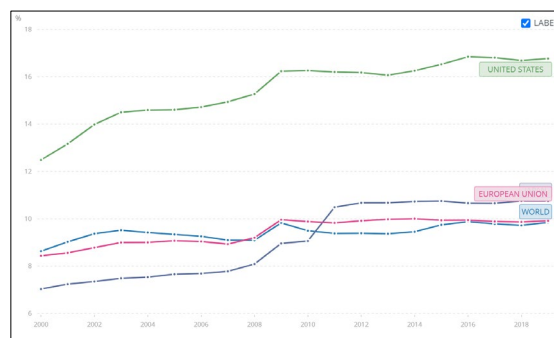
Introduction

The fusion of healthcare and digital technology is unlocking unparalleled opportunities for enhancing patient care, improving outcomes, and streamlining processes. AI is being utilized to boost R&D efficiency. Between 2000 and 2015, approximately 86% of all drug candidates failed to achieve their target endpoints, highlighting the significance of addressing the costs associated with unsuccessful ventures.¹ Notably, the emergence of the first AI-designed molecules progressing to clinics by AI-centric organizations like Exscientia and Insilico Medicine marks a pivotal moment. This analysis delves into the structural dynamics of patient-centric digital innovation strategies: centralized versus decentralized, their relevant accounting and their impact on the success of healthcare organizations. It incorporates practical insights from the industry to evaluate the implications of each model.

Macro Perspective of Global Healthcare

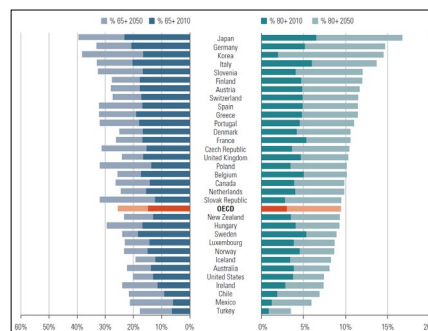
The significant allocation of GDP towards healthcare underscores its critical role in promoting societal well-being and economic prosperity. Innovations in healthcare delivery and management are vital for addressing challenges posed by demographic shifts and rising costs. Digital

incorporation and enablement will improve efficiency and drive better resource allocation.²



Global Trends and Challenges

Amidst ageing populations and the aftermath of the COVID-19 pandemic, digital innovation emerges as a strategic response to enhance the sustainability and scalability of healthcare systems.³



¹ https://vial.com/blog/articles/what-ai-designed-drugs-have-been-fda-approved/?https://vial.com/blog/articles/what-ai-designed-drugs-have-been-fda-approved/?utm_source=organic

² <https://data.worldbank.org/indicator/SH.XPD.CHEX.GD.ZS?end=2019&locations=1W-US-JP-EU&start=2000&type=shaded&view=chart>

³ European Observatory on health systems and policies; Ageing and health, the politics of better health



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The Emergence of Digital Innovation in the Biopharma Sector

The adoption of digital technologies in healthcare has led to breakthroughs such as telemedicine, AI in discovery and diagnostics and digital health platforms; all pivotal in transitioning the sector towards more preventive and personalized care models.

Centralized vs. Decentralized Approaches to Digital Innovation

One question that often arises is how to foster digital innovation for a globally positioned organization, where local intimate patient insight and ecosystems are important to the design of relevant solutions. These local niche solutions need to also be put in the context of the broader organization in order to scale and capture value and embrace cross-market synergies. The tidal wave of innovative opportunities needs to be viewed at both a local and global level to minimize value leakage within your organization's means and strategic intent. This dilemma is dependent upon where your organization sits on the centralized vs decentralized spectrum, each of which have their merits as the organization matures (Appendix A comparison table for centralised vs decentralised).

Centralized Digital Innovation model

Pros:

- Ensures alignment with overarching organizational strategies and optimizes resource allocation.
- Boosts operational efficiency and scalability by reducing redundant efforts.
- Fosters a cohesive digital culture and vision across the organization.

Cons:

- May restrict local innovation and adaptability to specific market needs.
- Centralized decision-making could introduce delays.
- Decisions might not always meet the unique needs of various units or regions.

Decentralized Digital Innovation model

Pros:

- Promotes rapid adaptation to local market trends and consumer preferences.

- Encourages local-level innovation and experimentation.
- Yields a diverse range of ideas and solutions from varied insights.

Cons:

- Could lead to uncoordinated efforts and inefficiencies.
- Initiatives may stray from broader organizational strategy.
- Increased risk of duplicating resources on similar projects across different units.

Navigating Organizational Challenges

One significant challenge for customer-focused digital innovation is where it should reside within a profit or investment centre in an organization.

Purple Ocean Advisory has observed the formation of the digital P&L within a business unit, however, the delayed returns from innovation necessitate a reconsideration of traditional performance metrics like Return on Investment (ROI), favouring Residual Income (RI) for a more aligned assessment of innovation investments (Appendix B ROI vs RI).

Residual Income (RI) and Return on Investment (ROI) are two distinct methods used to evaluate the performance of investment centres in businesses. Each has its approach to calculating and assessing financial success. Here's a comparison of how each is calculated and the implications of these calculations:

Return on Investment (ROI)

$$ROI = \left(\frac{\text{Net Operating Income}}{\text{Total Assets}} \right) \times 100$$

- **Net Operating Income:** The profit derived from the day-to-day operations of the business, excluding any income from investments or expenses from debts.
- **Total Assets:** The total amount of assets owned by the division or investment centre, which may include cash, inventories, equipment and buildings.

Implications:

ROI is expressed as a percentage, which allows for easy comparison across different business units or investment opportunities, regardless of scale.

ROI can motivate managers to focus on short-term gains to boost the ROI figure, potentially at the expense of long-term growth if such decisions lead to underinvestment in areas that have lower



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immediate returns but are valuable for future stability and growth.

High ROI is usually desirable, but it can discourage investment in new assets that may initially have a lower ROI but are otherwise beneficial for the company.

Residual Income (RI)

$$RI = \text{Net Operating Income} - (\text{Cost of Capital} \times \text{Total Assets})$$

- **Net Operating Income:** As in the ROI calculation, this refers to the earnings from primary business activities.
- **Cost of Capital:** The company's hurdle rate, which could be the cost of equity, debt, or a weighted average depending on how the division is financed.
- **Total Assets:** Same as in ROI, representing the investment base.

Implications:

RI provides a euro value that represents the absolute amount of economic profit generated over and above the minimum required return (cost of capital).

This method encourages managers to make investments that surpass the cost of capital, thus potentially promoting more investments and growth for the company, as it looks at profit in excess of the capital costs.

RI aligns more closely with value creation for shareholders, as it considers the cost of capital which is a key element in most valuation models.

Key Differences

Focus: ROI focuses on **efficiency** by measuring the return as a percentage of the assets used. RI focuses on **effectiveness** by measuring how much profit exceeds the cost of the capital employed.

Incentive Structure: ROI can potentially lead to **underinvestment** because managers might avoid projects that, while profitable, could lower the division's average ROI. RI encourages any project that is expected to earn more than the cost of capital, this is conducive to strategic growth initiatives.

Measurement of Performance: ROI measures performance relative to the size of the investment, which can favour smaller, less capital-intensive projects. RI measures **absolute profit** contribution after accounting for the cost of the funds used,

which can favour larger projects if they generate sufficient income over the cost hurdle.

In summary, whilst ROI is beneficial for quick comparisons and assessing efficiency, RI provides a deeper insight into the actual economic benefit of investment decisions by accounting for the cost of capital, this encourages broader investment and strategic decision-making aimed at long-term growth.

Key Performance Indicators: ROI vs. RI

Purple Ocean Advisory advocates for RI over ROI for several reasons:

Incentivizing Investment: RI avoids discouraging managers from pursuing new investments that, while beneficial, might lower a centre's average ROI.

Conceptual Soundness: Unlike ROI, RI motivates managers to undertake all projects surpassing the cost of capital thus promoting efficient capital use.

Reflecting Economic Profit: RI accurately measures an investment centre's economic contribution by considering the cost of capital.

Flexibility and Accuracy: RI allows the application of different capital charges to various assets, reflecting their risk and financing costs, thus offering a fair performance assessment.

Addressing Organizational Friction

Transitioning from a decentralized to a centralized digital innovation model necessitates overcoming internal resistance and ensuring a unified digital vision that aligns with long-term organizational goals. Key strategies include:

- Cultivating a sense of community and belonging.
- Communicating effectively to build alliances and a compelling organizational narrative.
- Highlighting the qualitative impacts on indirect P&L, such as attracting key professionals and future-proofing through innovation.
- Protecting innovation budgets, revising financial KPIs and considering RI and reward structures to support organizations integrating digital innovation.

This harmonized approach underscores the significance of aligning digital innovation with strategic organizational goals to foster growth, enhance patient care, and navigate the complexities of the global healthcare landscape effectively.



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Conclusion

Opting between centralized and decentralized digital innovation in healthcare is a strategic decision that must be customized to the organization's unique context, objectives, and capabilities. Often, a hybrid approach that

capitalizes on the strengths of both models proves to be the most effective strategy. This enables organizations to maintain agility and foster innovation while ensuring strategic cohesion and operational efficacy.

About the Purple Ocean Advisory

Purple Ocean Advisory is a boutique advisory organization which brings a wealth of experience from engaging with a variety of organizations, offering a unique perspective on the challenges and intricacies of strategic planning and execution. Whether transitioning from decentralized to centralized models or implementing hybrid approaches, we stand ready to assist you in navigating the digital landscape. Our expertise in strategic planning and digital execution makes us an ideal partner to help your organization harness the potential of digital advancements for improved outcomes and operational efficacy. Start your journey towards digital excellence with us today at info@purpleocean-advisory.com.

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Appendix A: Centralised vs Decentralised model

<i>Model</i>	<i>Pros</i>	<i>Cons</i>
<i>Centralized Digital Innovation</i>	<ul style="list-style-type: none">• Ensures alignment with overarching organizational strategies and optimizes resource distribution.• Enhances operational efficiency and scalability by minimizing redundant efforts.• Promotes a unified digital culture and vision across the enterprise.	<ul style="list-style-type: none">• May inhibit local innovation and adaptability to specific market demands.• Centralized structures could introduce delays in decision-making.• The risk of decisions not aligning with the specific needs of diverse units or regions.
<i>Decentralized Digital Innovation</i>	<ul style="list-style-type: none">• Enables swift adaptation to local market trends and consumer preferences.• Fosters innovation and experimentation at the local level.• Generates a broader spectrum of ideas and solutions from diverse insights.	<ul style="list-style-type: none">• Potential for disjointed efforts and inefficiencies due to a lack of coordination.• Initiatives might diverge from the broader organizational objectives.• Heightened risk of squandering resources on similar projects across various units.



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Appendix B: ROI vs RI

Criteria	Return on Investment (ROI)	Residual Income (RI)
Definition	$ROI = (\text{Net Operating Income} / \text{Total Assets}) \times 100$	$RI = \text{Net Operating Income} - (\text{Cost of Capital} \times \text{Total Assets})$
Focus	Efficiency; measures the return as a percentage of the assets used.	Effectiveness; measures how much profit exceeds the cost of the capital employed.
Calculation Base	Based on the total assets of the division or investment centre.	Based on net operating income and a charge for the use of capital at the cost of capital.
Performance Measurement	Relative to the size of the investment; favours smaller, less capital-intensive projects.	Absolute profit contribution after the cost of capital; can favor larger projects.
Implications for Managers	May focus on short-term gains; might avoid projects that lower the average ROI.	Encourages investments that surpass the cost of capital, promoting long-term growth.
Investment Incentives	Can discourage investments in new assets with initially lower ROI.	Supports any project that is expected to earn more than the cost of capital.
Shareholder Value	High ROI is desirable but can overlook long-term growth needs.	Aligns closely with value creation by considering the cost of capital.
Application	Suitable for quick comparisons and assessing operational efficiency.	Better for strategic decision-making and evaluating long-term economic profit.