

[Open Peer Review on Qeios](#)

Unpacking Snowflake: How a Data Cloud Company is Ruling the Roost

Nola Yolanda Romana¹, Adhi Setyo Santoso¹

¹ President University

Funding: No specific funding was received for this work.

Potential competing interests: No potential competing interests to declare.

Abstract

This work presents a comprehensive overview of Snowflake, a leading data cloud company, by examining its business model, pricing strategy, competitive landscape, and growth opportunities and challenges. Key strategies that can contribute to Snowflake's success are emphasized, including differentiation, security measures, diversification of infrastructure providers, and staying ahead of emerging technologies. Additionally, the importance of exploring new pricing models, expanding into new markets, and developing a user-friendly data marketplace is discussed. The concept of Strategic Business Continuity Management is introduced as a framework for evaluating and enhancing Snowflake's business model resilience against contingencies. This analysis aims to provide insights into Snowflake's position in the data cloud market and recommend future growth opportunities to ensure its continued success.

Keywords: Snowflake, Data cloud, Business model resilience, Strategic business continuity management, Emerging technologies.

1. Introduction

Business Model Canvas for Snowflake

Customer Segments: Snowflake primarily serves large enterprises and mid-sized companies that require scalable and secure data warehousing solutions. Its customers come from a wide range of industries, including healthcare, manufacturing, telco, finance, retail, and technology.

Value Proposition: The **key value proposition** of Snowflake lies in its offering of a ready-to-use, comprehensive platform to its customers. This eliminates the need for customers to incur maintenance costs and allows them to seamlessly integrate data across their company using Snowflake's cloud infrastructure. The claimed core value that Snowflake offers to customers are: **data volume** (the ability to handle massive amounts of data across the organization), **performance, utility model** (customers only pay for the resources they consume), **Instant Elasticity** (the cloud

infrastructure's ability to automatically adapt to the required cloud resources quickly), and **Ease of Use**

Snowflake's data cloud platform provides customers with a scalable, secure, and cost-effective way to manage and analyze their data. Its platform allows customers to store, share, and analyze data across multiple cloud providers and geographic regions, making it easy to access and collaborate on data sets. Additionally, Snowflake's platform is designed to be easy to use, allowing customers to quickly set up and deploy data warehousing solutions without the need for specialized IT expertise.

Channels: Snowflake primarily sells its platform through a direct sales force and partnerships with cloud providers, such as AWS and Azure. Additionally, the company offers a self-service model through its data marketplace, allowing customers to purchase and access third-party data sets and applications.

Customer Relationships: Snowflake's business model is focused on building long-term relationships with its customers. The company offers a range of support services, including technical support, training, and consulting services, to help customers maximize the value of its platform.

Revenue Streams: Snowflake's revenue comes primarily from subscription fees based on usage of its data cloud platform. The company offers a range of pricing options, including pay-as-you-go and volume-based pricing, to meet the needs of different customers.

Key Activities: Snowflake's key activities include developing and maintaining its data cloud platform, building partnerships with cloud providers and other technology companies, and investing in research and development to stay ahead of emerging technologies.

The Data Cloud creates a network effect. Snowflake's platform allows customers to share data sets and applications with each other, creating a network effect where the value of the platform increases as more customers join and contribute. This sharing economy model can lead to increased collaboration and innovation among customers, which can ultimately benefit Snowflake's business

Key Resources: Snowflake's key resources include its proprietary data cloud platform, its partnerships with cloud providers and technology companies, and its team of highly skilled engineers and data scientists.

Key Partnerships: Snowflake has key partnerships with cloud providers, such as AWS, GCP and Azure, and technology companies, such as Databricks, Tableau, Informatica, and Looker. Additionally, the company has partnerships with data providers, such as Bloomberg, FactSet and SafeGraph, to offer a wide range of third-party data sets and applications through its data marketplace.

Cost Structure: Snowflake's cost structure includes expenses related to research and development, sales and marketing, and customer support. Additionally, the company incurs costs related to cloud infrastructure and data center operations.

Overall, Snowflake's business model is centered around providing a powerful and scalable data cloud platform for managing and analyzing data. Its value proposition is focused on ease of use, security, and cost-effectiveness, and its key

partnerships with cloud providers and technology companies enable it to offer a wide range of services to its customers.

2. Analysis of Uncertainties

Snowflake, like any company, faces a range of threats to its business model. Here is a comprehensive analysis of the threats that Snowflake may face:

1. **Increased competition:** One of the biggest threats to Snowflake's business model is increased competition from major players like Amazon, Google, and Microsoft. These companies are investing heavily in their own cloud-based data warehousing solutions, which could erode Snowflake's market share. Snowflake will need to continue to differentiate itself from its competitors by offering unique and innovative solutions that meet the evolving needs of its customers.
2. **Data privacy and security concerns:** As data breaches and cyber attacks continue to make headlines, customers may become more cautious about entrusting their data to third-party providers like Snowflake. Any security breach or data privacy violation could have serious consequences for the company, including reputational damage, legal liabilities, and financial losses. Snowflake will need to continue to invest in robust security measures and protocols to ensure that its customers' data is protected.
3. **Dependence on Cloud Infrastructure Providers:** Snowflake's business model is heavily reliant on cloud infrastructure providers (Benoit et al., 2016). To ensure business continuity and resilience, Snowflake needs to diversify its cloud infrastructure partnerships and explore alternative solutions to reduce its dependence on any single cloud provider.
4. **Economic downturns:** A significant economic downturn could lead to reduced demand for Snowflake's services, as businesses cut back on expenses and reduce their investments in data warehousing and analytics. Snowflake will need to continue to demonstrate the value of its services and explore ways to make its solutions more accessible and cost-effective for businesses of all sizes.
5. **Emerging technology:** While Snowflake has incorporated edge computing into its solutions to stay ahead of the curve, emerging technology could still pose a threat to its business model. New technologies, such as quantum computing or advanced machine learning algorithms, could potentially disrupt Snowflake's offerings by providing more powerful and efficient data management solutions. Additionally, the fast pace of technological advancement means that Snowflake must constantly invest in research and development to stay competitive. Design thinking can play a significant role in innovation management for Snowflake (Lakhani & Lifshitz-Assaf, 2021). By fostering a culture of innovation and incorporating design thinking principles into its solutions, Snowflake can maintain its position as a leader in the data management industry.
6. **The utility-based or pay-as-you-go pricing model:** could potentially become a threat to Snowflake's business model, which is currently based on a subscription model. In a utility-based model, customers only pay for the resources they use, rather than a fixed subscription fee. This can be more cost-effective for customers with fluctuating or unpredictable usage patterns. It also reduces the barrier to entry for smaller businesses that may not be able to afford

a fixed subscription fee.

If competitors, such as Amazon, Google, Databricks and Microsoft, offer a utility-based pricing model for their data warehousing services, this could put pressure on Snowflake to adjust its pricing model to remain competitive. Snowflake may need to offer more flexible pricing options or risk losing customers to competitors with more attractive pricing.

Overall, Snowflake's evolution into a data cloud platform will enable it to leverage emerging technologies to enhance its offerings and remain competitive in a rapidly-evolving market. By continuing to innovate and adapt to changing customer needs, Snowflake can continue to grow its business and help organizations unlock the full potential of their data.

4. Analysis of Impact from the Uncertainties

Here is an analysis of the potential impact of the uncertainties discussed earlier on each component of Snowflake's business model:

1. **Business Model:** Increased competition from major players like Amazon, Google, and Microsoft could erode Snowflake's market share. This could impact Snowflake's revenue growth and profitability, as well as its ability to attract new customers. However, Snowflake's focus on innovation and differentiation, such as its data cloud platform and data marketplace, could help it maintain a competitive edge.
2. **Value Proposition:** Data privacy and security concerns could impact Snowflake's value proposition, as customers may become more hesitant to entrust their data to third-party providers. Any security breach or data privacy violation could damage Snowflake's reputation and lead to customer churn. Snowflake's strong partnerships with cloud infrastructure providers, its compliance certifications, and its commitment to security and privacy could help mitigate this risk.
3. **Revenue Streams:** Any disruption or outage in the cloud infrastructure providers that Snowflake relies on could impact its ability to provide reliable service to its customers. This could impact Snowflake's subscription-based revenue streams and lead to customer churn. Snowflake's strong partnerships with cloud infrastructure providers, as well as its focus on customer success and support, could help mitigate this risk.
Additionally, a utility-based pricing model could impact Snowflake's revenue growth and predictability. With a subscription model, Snowflake can forecast its revenue more accurately and plan for future investments. In contrast, a utility-based pricing model could lead to more unpredictable revenue streams, which could impact Snowflake's ability to invest in future growth initiatives.
4. **Key Activities:** The pace of technological change and emerging technologies like edge computing, machine learning, and artificial intelligence could impact Snowflake's key activities and require it to adapt and innovate quickly. Patent performance is an important aspect of innovation management for high-tech firms like Snowflake (Chen & Chen, 2019). To ensure business continuity, Snowflake needs to continue to invest in technological capabilities and partner with technology providers and startups. Snowflake's focus on innovation and differentiation, as well as its partnerships and integrations with emerging technology providers, could help it stay ahead of the curve and provide value to its

customers.

5. **Customer Segments:** A significant economic downturn could lead to reduced demand for Snowflake's services, as businesses cut back on expenses and reduce their investments in data warehousing and analytics. This could impact Snowflake's enterprise and mid-market customer segments, as well as its revenue growth and profitability. Snowflake's focus on providing value and cost savings to its customers, as well as its diversified customer base, could help mitigate this risk.

5. Design of the Changes

Considering the potential impacts identified earlier, it is crucial to integrate considerations for business model resilience:

Analysis of the Business Continuity of Snowflake's Business Model

	Snowflake's original BM (before deregulation)	BigQuery's BM (example of a competitor's BM)	Impact on Snowflake's original BM	Snowflake's new BM
Customer Value Proposition	Snowflake offers a cloud-based data platform that enables organizations to store, manage, and analyze their data in a flexible and scalable manner, thereby accelerating business insights and decision-making. Snowflake's platform is designed to be easy to use, highly performant, and cost-effective, making it an attractive option for companies of all sizes.	Google BigQuery is a cloud-based enterprise data warehouse that allows users to quickly and easily analyze large and complex datasets. Its value proposition includes providing a scalable and cost-effective solution that allows users to store and analyze data in a fully managed and secure environment. Additionally, it offers powerful tools for data exploration, analysis, and visualization.	Both platforms offer high-performance, scalable, and secure cloud-based data warehousing solutions. Snowflake emphasizes its "data sharing" feature, which allows users to easily and securely share data with others, while BigQuery focuses on its integration with the Google Cloud ecosystem.	Snowflake will continue to provide a highly scalable, secure, and reliable data cloud platform with advanced features for data warehousing, data engineering, data lake, and data science. In addition, Snowflake will focus on delivering exceptional customer service, personalized solutions, and an innovative data marketplace to meet diverse customer needs.
Resources	Snowflake's primary resources are its cloud-based data platform, its team of engineers and developers, and its partnerships with cloud infrastructure providers such as	Google BigQuery relies on a variety of resources, including Google's cloud infrastructure and its team of engineers and data analysts. It also provides extensive documentation and support for its users, as well as a large community of developers who create and share tools	Both platforms rely on cloud-based infrastructure to provide their services. Snowflake uses a multi-cloud approach, allowing customers to choose from multiple public cloud providers, while BigQuery is	Snowflake will leverage its existing resources, including a highly skilled workforce, strong R&D capabilities, cutting-edge technology stack, and strategic partnerships with leading cloud

	Amazon Web Services, Microsoft Azure, and Google Cloud Platform.	and integrations for the platform.	offered exclusively on Google Cloud. Snowflake's multi-cloud approach and unique architecture may continue to differentiate it from BigQuery and other competitors	providers and technology vendors to enhance its data cloud offering.
Channels	Snowflake's data platform is primarily distributed through cloud infrastructure providers such as Amazon Web Services, Microsoft Azure, and Google Cloud Platform. Snowflake also has a direct sales team that works with enterprise customers to provide customized solutions.	Google BigQuery is primarily marketed and sold through Google Cloud's website and sales team. It also has a presence on various social media platforms and industry events. The platform can be accessed through a web-based interface, as well as through integrations with various third-party tools.	Both platforms offer their services through a self-service model, with online documentation, tutorials, and support forums. Snowflake has a larger direct sales force than BigQuery, which may appeal to larger enterprises with complex data needs.	Snowflake will expand its channels by increasing its presence in various markets and industries through strategic partnerships with system integrators, value-added resellers, and technology consulting firms. Additionally, Snowflake will strengthen its online presence through various digital marketing initiatives, such as webinars, blogs, and social media campaigns, to reach a wider audience.
Technical design	Snowflake's platform is built on a distributed architecture that separates storage and computing resources, allowing users to scale each independently. This design enables Snowflake to provide high performance and scalability while minimizing costs.	Google BigQuery is designed to be highly scalable, leveraging Google's cloud infrastructure to provide a fully managed and distributed data warehouse. It utilizes columnar storage and a custom query engine that allows for fast and efficient processing of large datasets. Additionally, it integrates with various other Google Cloud services, including Google Cloud Storage and Google Cloud Dataflow.	Snowflake and BigQuery use different underlying architectures and technologies to process and store data. Snowflake uses a unique architecture based on the separation of storage and computing, while BigQuery uses a shared architecture that combines storage and computing. Snowflake may need to continue to invest in research and development to stay ahead of emerging technologies and trends, as well as explore new pricing models and expand into new markets to remain competitive.	Snowflake will continue to enhance its technical design by leveraging the latest technologies, such as artificial intelligence, and machine learning, and leveraging edge computing, to develop new features and functionalities for its data cloud platform. Additionally, Snowflake will continue to focus on ensuring the highest levels of data security, compliance, and governance.
		Google BigQuery's pricing model is	Snowflake charges customers based on	

Payment method	Snowflake offers a consumption-based pricing model, where customers are charged based on the amount of data stored and processed. This model allows customers to pay only for what they use, and to scale their usage up or down as needed.	based on usage, with customers paying only for the amount of data processed and the time it takes to execute queries. It offers a variety of pricing options, including flat-rate and on-demand pricing, and provides discounts for long-term commitments.	usage, with pricing tiers based on storage, computing, and data transfer. BigQuery charges customers based on usage as well, with pricing based on queries and storage	Snowflake will introduce a new payment model based on usage and customer needs, allowing customers to pay only for the resources they use. Snowflake will also provide flexible pricing options, such as long-term contracts, programmable payment plans and customized packages, to meet the varying needs of its customer
Cost	Snowflake's cost structure is primarily driven by the cost of cloud infrastructure, which it passes on to customers through its consumption-based pricing model. Snowflake also incurs costs related to research and development, sales and marketing, and general and administrative expenses.	Google BigQuery's costs are based on usage and can vary depending on the amount of data processed, the frequency of queries, and the chosen pricing plan. However, the platform is generally considered to be cost-effective, particularly for organizations that require a scalable and fully managed data warehousing solution.	Snowflake's unique architecture can result in more efficient use of resources and gives the customer capability to control their cost. BigQuery's pricing is generally more cost-effective for smaller workloads, but may become more expensive at scale. Google BigQuery's lower pricing and strong integration with the Google Cloud ecosystem may pose a challenge to Snowflake's market position.	Snowflake will focus on optimizing its cost structure by leveraging the latest technologies to automate various processes and reduce operational costs. Additionally, Snowflake will leverage its partnerships with technology and cloud providers to provide cost-effective and comprehensive solutions to its customers.
Revenue	Snowflake generates revenue by charging customers for the amount of data stored and processed on its platform. Snowflake's revenue primarily comes from enterprise customers in industries such as financial services, healthcare, and retail.	Google BigQuery generates revenue primarily through usage-based fees. The platform has been successful in attracting a diverse range of customers, including large enterprises and startups, which has contributed to its growth and revenue generation.	Both platforms generate revenue through a combination of usage-based fees and enterprise contracts.	Snowflake will focus on increasing its revenue by expanding its customer base, increasing customer retention, and diversifying its revenue streams. In addition, Snowflake will explore new markets and industries, such as Startup, digital native, healthcare, finance, telco, manufacturing, and retail, to further grow its revenue.

Here is a detailed explanation of Snowflake's new business model to ensure business continuity:

- 1. Increased differentiation:** Innovation management is crucial for Snowflake's business model resilience (Gershenson & Berman, 2014). The company needs to invest in research and development to stay ahead of emerging technologies and constantly differentiate itself from competitors (Teece, 2018). This will enable Snowflake to offer unique and

cutting-edge services to its customers, making it more difficult for competitors to replicate its offerings. Snowflake can invest in research and development to create unique features or capabilities that are not offered by other cloud data warehousing providers. To make it user-friendly, Snowflake can create a friendly environment for developers and users to create and consume data apps. Snowflake can provide easy-to-use developer tools, APIs, and SDKs to encourage third-party developers to build applications on the platform. To execute this strategy, Snowflake needs to allocate resources toward research and development and also focus on creating partnerships with third-party developers to build applications on the platform.

2. **Identify emerging technologies and trends:** Staying ahead of emerging technologies and trends is critical to Snowflake's long-term success. This involves identifying key technologies and trends that are likely to shape the data platform market and evaluating their potential impact on Snowflake's business model. Snowflake needs to continue to invest in research and development to stay ahead of emerging technologies like edge computing, machine learning, and artificial intelligence. By doing so, Snowflake can position itself as a leader in the data cloud space. To execute this strategy, Snowflake needs to allocate resources toward research and development and also form partnerships with technology companies to gain insights into emerging technologies.
3. **Develop a technology and innovation roadmap:** Based on the assessment of Snowflake's current capabilities and emerging technologies and trends, a technology and innovation roadmap should be developed. This roadmap should outline a clear plan for investing in technology and innovation, including specific projects and initiatives, timelines, and resource requirements.
4. **Strengthen security and data privacy measures:** Snowflake must continue to invest in and enhance its security measures to protect against potential cyber threats and data breaches. Snowflake can do this by adopting the latest cybersecurity protocols, conducting regular security audits, and training employees on cybersecurity best practices.
5. **Diversify cloud infrastructure providers:** Snowflake can mitigate the risk of infrastructure failure or downtime by diversifying its infrastructure providers. Snowflake can consider diversifying its current infrastructures across multiple cloud providers to reduce the risk of service disruption due to outages or other issues with a current provider. To execute this strategy, Snowflake needs to form partnerships with other cloud providers to expand its infrastructure capabilities.
6. **Explore new pricing models:** Snowflake needs to explore alternative pricing models to make its services more accessible and affordable to customers. Snowflake can offer more flexible pricing plans with monthly or quarterly payment plans. This could help Snowflake attract a broader customer base, including startups and small businesses, who may have more limited resources and budgets. To execute this strategy, Snowflake needs to conduct market research and customer feedback surveys to understand the pricing preferences of its target audience.
7. **Expand into new markets:** Snowflake can consider expanding into new markets to reduce its reliance on a single market or region. Snowflake needs to target industries or regions where it has not yet established a significant presence, or explore partnerships with other companies to expand its reach. To execute this strategy, Snowflake needs to conduct market research and understand the regulatory environment and industry trends in the new market.
8. **Develop a user-friendly data marketplace:** Snowflake can establish a data marketplace that contains high-quality data sets from reputable sources. They can provide tools for data discovery, evaluation, and integration to make it

easier for users to find and use data sets. Snowflake can also foster a community of developers by providing resources, training, and support to encourage them to build data apps on the platform and offer incentives, such as revenue sharing, to attract more developers. To execute this strategy, Snowflake needs to form partnerships with reputable data providers and third-party developers and allocate resources toward developing a user-friendly data marketplace.

9. **Address potential challenges related to pay-as-you-go pricing:** Snowflake can develop new value-added services that justify the cost of pay-as-you-go pricing. This will help address potential challenges related to pay-as-you-go pricing. To execute this strategy, Snowflake needs to conduct market research and understand the needs of its target audience to develop value-added services that align with their needs.

In general, Snowflake should continue to monitor the market and evolving technologies, while proactively adapting its business model and strategies to ensure its continued success in the data cloud space.

6. Project of Change Execution Plan

Here is the plan to execute the strategies for change mentioned in the previous section:

1. Expand the Snowflake data marketplace by onboarding more data providers and increasing the diversity of data sets available.
 - Develop partnerships with companies in different industries to provide specialized data sets.
 - Leverage network effect benefits by incentivizing data providers to invite other providers to join the marketplace.
2. Enhance Snowflake's position as a data platform by launching a set of data applications that cater to specific industries and use cases.
 - Conduct market research to identify unique features or capabilities that are not offered by other cloud data warehousing providers.
 - Allocate resources to research and development to create new data apps and features that will differentiate Snowflake from its competitors.
 - Develop user-friendly developer tools, APIs, and SDKs to encourage third-party developers to build applications on the platform.
 - Invest in R&D to create custom data applications that solve specific business problems for customers.
 - Leverage network effect benefits by offering incentives for customers to invite other users to the platform.
3. Strengthen its security measures
 - Regularly conducts security audits and assessments to identify potential vulnerabilities and address any security gaps and ensure its platform remains secure and compliant with industry standards.
 - Implement multi-factor authentication and enhance data encryption to protect customer data.

- Establish rigorous standards for data privacy, security, and compliance.
 - Provide tools to help data providers meet these standards.
 - Partnership with a cybersecurity firm to enhance its security capabilities. This partnership allowed Snowflake to provide its customers with additional security features such as threat detection, incident response, compliance monitoring, etc.
4. Pursue targeted acquisitions to enhance Snowflake's capabilities and offerings.
- Identify potential acquisition targets that align with Snowflake's strategic goals.
 - Evaluate acquisition targets for their ability to enhance Snowflake's position as a data platform and provide network effect benefits.
5. Diversify cloud infrastructure providers:
- Assess multiple cloud providers to identify the most suitable partners.
 - Develop a strategy for the deployment of workloads across multiple cloud providers to reduce the risk of service disruption due to outages or other issues with current cloud providers.
6. Build a community around Snowflake by creating a forum for users to share best practices, tips, and solutions.
- Create an online community for users to share their experiences and insights.
 - Leverage network effect benefits by offering incentives for users to invite others to join the community.
7. Explore new pricing models:
- Analyze pricing models offered by competitors to identify areas where Snowflake's pricing is less competitive.
 - Develop new pricing models that are more flexible and affordable, such as a pay-as-you-go model or subscription-based model with varying levels of service.
 - Develop new value-added services that justify the cost of pay-as-you-go pricing.
8. Expand into new markets:
- Analyze potential markets where Snowflake has not yet established a significant presence.
 - Develop a strategy to enter these markets and establish a foothold.
 - Explore partnerships with other companies to expand its reach in new markets.

By executing this plan, Snowflake can continue to grow and increase profitability by leveraging the network effect benefits of its data marketplace, data applications, and community, as well as through targeted acquisitions that enhance its capabilities and offerings.

7. Conclusion

In conclusion, business continuity is a critical aspect of any industry or sector, and the technology sector is no exception. As companies move towards cloud-based solutions, ensuring continuity and adapting to uncertainties is more important than ever. The shift from a cloud-based data warehousing solution to a data cloud, as seen in Snowflake's business model, offers several benefits for companies, including scalability, agility, and flexibility.

However, the uncertainty surrounding the technology industry, such as changes in regulations and market conditions, can affect a company's business model and result in disruptions. It is essential for companies to develop strategies of change to mitigate these uncertainties and ensure continuity.

In the case of Snowflake, the strategies of change outlined earlier, including expanding their offerings to become a data cloud and acquiring other companies, are key to maintaining a sustainable business model. Additionally, leveraging network effects to create a data marketplace and partnering with other companies can further strengthen their position in the market.

Generally, the shift towards a data cloud and the strategies of change discussed provide a framework for companies to maintain business continuity in the technology industry. By remaining adaptable and continuously improving their offerings, companies can stay ahead of the curve and ensure a prosperous future.

Acknowledgement

This work is a part of Erasmus+ CBHE Building Universities in Leading Disaster Resilience (BUiLD) project activities from Work Package 2.3. Enhancing Disaster Management Curricula during 2019 – 2023.

References

- Benoit Dageville, T. Marcin Zukowski, Vadim Antonov, Artin Avanes, Jon Bock, Jonathan Claybaugh, Daniel Engovatov, Martin Hentschel, Jiansheng Huang, Allison W. Lee, Ashish Motivala, Abdul Q. Munir, Steven Pelley, Peter Povinec, Greg Rahn, Spyridon Triantafyllis, and Philipp Unterbrunner (2016). "The Snowflake Elastic Data Warehouse." In Proceedings of the 2016 International Conference on Management of Data (SIGMOD '16), 215–226. Association for Computing Machinery, New York, NY, USA. doi:10.1145/2882903.2903741
- Chen, J., & Chen, Y. (2019). "Innovation management and patent performance of high-tech firms." *Technological Forecasting and Social Change*, 141, 285-295. doi:10.1016/j.techfore.2018.11.006
- Fagerberg, J., Mowery, D. C., & Nelson, R. R. (Eds.) (2016). *The Oxford Handbook of Innovation Management*. Oxford University Press.
- Gershenson, J. K., & Berman, S. L. (2014). "Innovation management in the high-tech industry: A content analysis of innovation managers' job descriptions." *IEEE Transactions on Engineering Management*, 61(3), 404-412. doi:10.1109/TEM.2014.2311089
- Lakhani, K. R., & Lifshitz-Assaf, H. (2021). "Design thinking and innovation management." *Journal of Product*

Innovation Management, 38(3), 319-322. doi:10.1111/jpim.12534

- Teece, D. J. (2018). "Profiting from innovation in the digital economy: Enabling technologies, standards, and licensing models in the wireless world." Research Policy, 47(8), 1367-1387. doi:10.1016/j.respol.2018.04.005