Amazon: An Ambidextrous Organization

Table of Contents

Introduction

Ambidextrous organizations, as envisioned by Michael Tushman, navigate the delicate equilibrium between exploration and exploitation, acknowledging the inherent tension between seeking new opportunities and optimizing existing capabilities. In Tushman's framework, ambidexterity is more than a structural division; it is a dynamic capability requiring cognitive flexibility to manage the paradoxes arising from these dual activities.

In the organizational context, ambidextrous structures often segregate exploratory units from traditional ones, fostering distinct processes, structures, and cultures. Despite this separation, senior management ensures a tight integration, allowing exploratory units access to the resources of the core business. This integrated approach enables existing or exploitative units to concentrate on refining operations and enhancing customer service (O'Reilly, 2016).

The struggle for balance between exploitative and explorative units is widespread in many companies, hindering their adaptability to innovation. Exploitative units are responsible for innovating ways to better existing products and services. Exploratory units are responsible for identifying breakthrough innovations through experimenting with new ideas and technologies. This paper will explain how Amazon balances the exploratory and exploitative aspects successfully. The paper will also explain how Amazon is contextually ambidextrous.

Ambidextrous Organization

What is an Ambidextrous Organization?

Nowadays, in the fast-moving, changing world of business, companies face the challenge of balancing the need to exploit existing possibilities with the search for new opportunities. Charles A. O'Reilly III and Michael L. Tushman overcame the problem by introducing the concept of

ambidexterity organizations, emphasizing the separation of exploitative and explorative business operations within a firm in pursuit of innovation and long-term success. (O'Reilly, 2004)

The Exploratory unit in an ambidextrous organization finds new ways to improve business and increase productivity and profitability through experimenting with new ideas, technologies, and approaches. The Exploitative unit in an ambidextrous organization aims to improve existing products and services, with a focus on refining processes and enhancing efficiency. Companies need to balance exploitative and explorative units to explore innovation and improve products and services.

Key Characteristics of an Ambidextrous Organization

Ambidextrous organizations have several key characteristics that help balance the exploitative and exploratory units. One of their key characteristics is that they are tightly tied at the senior management level of the organization. This structure allows the ambidextrous organizations to separate the exploratory units from their traditional ones, allowing each to develop unique processes and structures. (O'Reilly, 2004) However, these units remain closely coordinated with existing organizations at the senior management level. (O'Reilly, 2004) Such top-level integration provides the newly created units instant access to cash, talent, and customer bases while shielding them from the inhibiting influence of standard operating practices. On the other hand, the current units should be solely involved in refining activities, enhancing product quality, and customer services with no disruptions caused by beginning new ventures.

Additionally, an ambidextrous organization requires a clear vision emphasized by senior management for simultaneous exploitation and exploration. This vision unites the organization towards a strategic goal that benefits all departments and projects.

In short, ambidextrous organizations understand that a distinct approach is required regarding their strategies, structures, processes, and culture regarding the two business components, exploitation and exploration (O'Reilly, 2016). Achieving uniformity within these elements is enabled by senior-team integration, a common vision, shared values, and a reward system. The ambidextrous organization's success depends on different alignments for exploitative business focusing on cost, profit, efficiency, incremental innovation, and exploratory business focused on innovation, growth, adaptability, and breakthrough innovation.

Brief History of Amazon

Amazon was founded in 1994 by Jeff Bezos. It is a multinational technology company based in the United States focusing on e-commerce, cloud computing, and digital streaming. It began as an online bookstore but has evolved into a wide range of product categories, giving it the moniker "The Everything Store." Amazon's headquarters are in Seattle, Washington, and the company is one of the most valuable brands in the world.

Jeff Bezos created Amazon to engage in the growing internet with his firm. He registered the firm in Washington state as Cadabra, Inc., but later renamed it Amazon.com, Inc.

Amazon's early days were spent in Bezos' garage on Northeast 28th Street in Bellevue, Washington. Bezos produced a list of 20 things that could be offered online after reading a forecast on the future of the Internet that anticipated yearly web commerce growth of 2,300%. He eventually decided that his new business would sell books online because of the high global demand for literature, the low unit price of books, and so on. (Wikipedia contributors, 2023)

Amazon owns several companies, such as Amazon Web Services, Kuiper Systems, Amazon Lab126, Ring, Twitch, IMDb, MGM Holdings, and Whole Foods Market. Amazon's success can

be attributed to its innovative business model, which prioritizes customer satisfaction and convenience. The company's use of data analytics and machine learning has enabled it to personalize the shopping experience for each customer, making it easier for them to find what they need.

Amazon's Key Characteristics

The status of Amazon as a structural ambidextrous organization can be evaluated based on specific characteristics within its operational structure and corporate culture that reflect the concepts of exploitation and exploration as described for an ambidextrous organization.

Distinct Units for Exploration and Exploitation

Amazon's organizational structure has distinct units that explore new business while others explore their capabilities. An excellent example of an exploratory unit is AWS, which entered cloud computing, an entirely different field from Amazon's core e-commerce business. Similarly, the recent product launches of Kindle and Alexa highlight Amazon's innovation-driven approach, focusing on new technologies and market spaces. On the contrary, its core e-commerce platform exemplifies its exploitative strategy of improving its operations, logistics, and client services to continue growing this market dominance (Cuofano, 2021).

Integration at the Senior Management Level

Although each independent unit maintains its autonomy at Amazon, there is a high degree of integration at the senior management level. The "S Team," an executive group that works under the CEO, as seen in Figure 1, contributes to this senior management level at Amazon. This team of executives, including those from AWS and Retail, exemplifies strategic collaboration. Initially developed as internal infrastructure support for Amazon's e-commerce, AWS has evolved into a

comprehensive cloud services platform. Integration of such units allows for a typical utilization of resources across exploratory and exploitative divisions. This process allows the entire organization's competencies and wisdom to be captured. Senior management ensures the departments work together to contribute to the organization's strategic goals (Staff, 2023).

Figure 1: *Amazon's Organizational Chart*
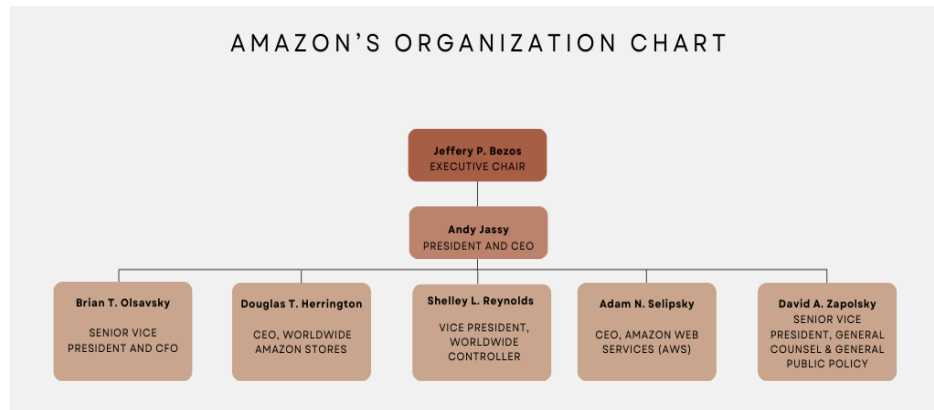
Focus on Both Existing Operations and New Ventures

Amazon's emphasis on its existing operations can be seen through the enhanced functioning of its evolving and efficient e-commerce system that caters to customers' needs and delivers satisfactory services and goods. It also makes substantial allocations for innovating technologies and new market ventures. For example, AWS has dedicated R&D units to enhance and innovate cloud computing services. These teams refine existing services and develop novel ones, primarily working independently. Collaboration with other Amazon divisions is possible based on project specifics. This showcases its robust inclinations to exploitation and exploration. (Devices and Services, 2023).

Cultural Emphasis on Innovation and Agility

Amazon's corporate culture emphasizes innovation and agility through its Leadership Principles. For instance, "Customer Obsession" led to the development of Amazon Prime,

demonstrating the company's dedication to customer satisfaction. Amazon's quick responsiveness to emerging trends is reflected in the "Bias for Action" principle, with new ideas such as Alexa and Amazon Go stores. Additionally, the "Embracing Failure" culture encourages risk-taking and continuous learning, which has contributed significantly to Amazon's ambidexterity. (Amazon, 2023).

Amazon's Practices

Apart from being structurally Ambidextrous, Amazon follows a few practices that make it contextually Ambidextrous (explained below). The practices followed by Amazon, which imbibe the characteristics of ambidexterity, are the Day 1 culture, Two-pizza teams, Single Thread Owner (STO), Organizational Network Analysis (ONA), Amazon's working backward process, and Hackathons. (Brozovich, 2019b)

A. Day 1 Culture

Start-up organizations usually grow exponentially because of their quick decision-making ability, commitment to a new product, creativity, and risk-taking ability. The Amazon manifesto consists of the 'Day 1' start-up-like culture. As per Jeff Bezos, an organization must operate on a Day 1 basis, not a Day 2 basis. A 'Day 1' company is customer-centric, eliminates proxies, early adaptation to new trends, and has high decision-making velocity. A 'Day 2' company is a mature company that makes good but slow decisions, adapts slowly to external trends, and focuses more on the outcome than the process. A 'Day 2' company will slowly but eventually cease to exist. (Quora, 2017)

The 'Day 1' company has the following characteristics:

1. Customer-Centric Approach

At Amazon, the leadership and the entire company are encouraged and expected to be customer-obsessed. In his 1997 letter to shareholders and employees, Jeff Bezos said everyone's role at Amazon was empathy and passion for the customer. (Denning, 2019) Amazon practices a data-driven, customer-centric approach. Jeff Wilke, the former CEO of Amazon's Worldwide Consumer business, said, "We let customers steer us. We try to invent something they would love. " Amazon, with the help of Artificial intelligence, can identify customer needs faster and more accurately. (Tucker, 2018) At Amazon, innovators ask themselves what the customer might want next based on the analysis done on the customer data collected.

Amazon works not only on bettering the customer experience concerning existing products and services they offer, but also on identifying potential customer needs through experimenting with new ideas, technologies, and approaches.

2. Fosters creativity and Risk-taking

Creative tension is encouraged as Jeff Bezos believes it would push his employees to think outside the box. Amazon also follows the concept of I disagree, but I commit. This means that although someone disagrees with a new idea or decision, they commit. Jeff Bezos says that this rule applies to everyone in the organization. (Quora, 2017) The "I disagree, but commit" ensures the idea progresses to the following stages of development.

3. Skeptical view of proxies

Often, in mature companies ("Day 2" culture), the existing process is given more importance than the outcome of the process. The company's focus is on the process's precision rather than the outcome's quality. Here, the process is the proxy. At Amazon, the process is

constantly improved to ensure that the outcome is of the desired quality and generates value for the company. (Quora, 2017) The term "process" at Amazon refers to the various stages of improving existing products and developing new ones.

4. High velocity of decision-making

One main characteristic of a start-up is its ability to make quick decisions. Jeff Bezos states that a decision must be made based on a few aspects. (1) The decision must be reversible and must have two-way doors. Thus reducing the impact of unfavorable circumstances. (2) A decision must be made when 70% of the information is gathered rather than waiting for 90% of the information; then, the decision is too slow. (3) A true misalignment must be recognized and escalated immediately. (Quora, 2017)

5. Flat and agile organizational structure

A recent survey by McKinsey & Company found that companies using agile teams are more likely to develop successful products and financially outperform their competitors. These companies achieve this by closely interacting with customers, quickly testing new ideas, gathering data, and improving their products. Agile organizations were 1.5 times more likely to outperform others financially and 1.7 times more likely to outperform their peers on nonfinancial measures. (Brozovich, 2019b)

Smaller teams are better at innovating and making quick decisions. This is because they have higher employee motivation and better coordination. As team size increases, employees feel less motivated and less responsible for the output. (Brozovich, 2019b) Amazon has adopted the "two-pizza team" structure with a "Single Thread Owner" responsible for managing one or more such teams. The "two-pizza team" structure with a "Single Thread Owner" will be explained below.

6. Eager adoption of external trends

Amazon practices move first, experiment constantly, and fail fast. For example, Amazon entered the electronic devices market without experience with its Kindle e-reader in 2007. It was discouraged by everyone. Amazon solved all the setbacks and shortcomings the product had. The company learned that if it challenged its assumptions, it could gain new skills and be successful. (Tucker, 2018)

Amazon values experiments. It constantly works on improving its website and runs tests on it. Amazon uses its hometown, Seattle, as a test market to gain consumer insights and feedback on new and improvised existing products. (Tucker, 2018) For example, Amazon Go, an automated convenience store using artificial intelligence, is in Seattle. (Tucker, 2018)

B. Two-pizza Teams

Two-pizza teams consist of teams comprising of 6 or fewer multidisciplinary employees. The teams must follow prescribed rules, guidelines, and requirements that ensure the expected outcome. Thus reducing the need for it to be managed and making the teams autonomous.

John Rossman, Former Director of Amazon.Com, says, "At Amazon, Two-Pizza Teams work like semi-independent entrepreneurial hothouses. Insulated from the greater organization's bureaucracy, the Two-Pizza Teams encourage ambitious leaders, provide opportunity, and instill a sense of ownership." (Denning, 2019)

Each two-pizza team is assigned a project that lasts at least two years. The employees are assigned to a team based on their strengths and weaknesses. The teams have access to the organization's resources. Each team has no dependency on another team. (Brozovich, 2019b)

In the words of John Rossman, Former Director of Amazon.Com, "Interaction with other teams is limited, and when it does occur, it is well documented, and interfaces are clearly defined. It owns and is responsible for every aspect of its systems. One of the primary goals is to lower the communications overhead in organizations, including the number of meetings, coordination points, planning, testing, or releases. Teams that are more independent move faster." (Denning, 2019)

Amazon has a separate base for its teams working on existing and new products. Amazon has a research and development facility called Lab126, responsible for experimenting with new ideas, technology, and approaches to create breakthrough innovations. (Denning, 2019) The teams working on improving current products are predominantly situated in the company's base office in Seattle. (Denning, 2019)

C. Single Thread Owner (STO)

STOs are responsible for managing one or more two-pizza teams. They ensure that the teams operate without any distractions. The STOs attend Amazon's annual strategic and operational planning process for teams, which explains the critical investments and goals for the upcoming year related to required resources. (Brozovich, 2019b) STOs ensure that the team's goal is aligned with the organization's goals. The STO also informs the organization of the teams' progress through the annual meeting. STO leaders also met across teams to ensure no ideas overlap and if the teams are working towards the same goal. STOs organize regular meetings (weekly or monthly) with the team to audit if the goals align with the organization's goals. The decisions are taken autonomously. (Brozovich, 2019b)

D. Organizational Network Analysis (ONA)

Amazon continuously evaluates its STOs and two-pizza teams through ONA. ONA audits the team structures and ensures they work per the Day 1 culture. Amazon uses ONA to improve decision-making speed and collaboration for innovation by identifying bottlenecks, dependencies, and untapped expertise. (Brozovich, 2019b)

A few sample ONA questions are:

a. List a maximum of 10 people within the (X Devices Organization) reporting to (Y Leader) that you most frequently contact for sign-off/reviews before making a decision necessary for execution. (Brozovich, 2019b)

b. Which of the following significantly impacts your team's ability to deliver results faster? Select all that apply: (1) too many approvals; (2) difficulty aligning on priorities; (3) documents (emails, PR/FAQs); (4) errors/re-work; (5) meetings. (Brozovich, 2019b)

Figure 2: *Network for Collaboration on Innovation Development*
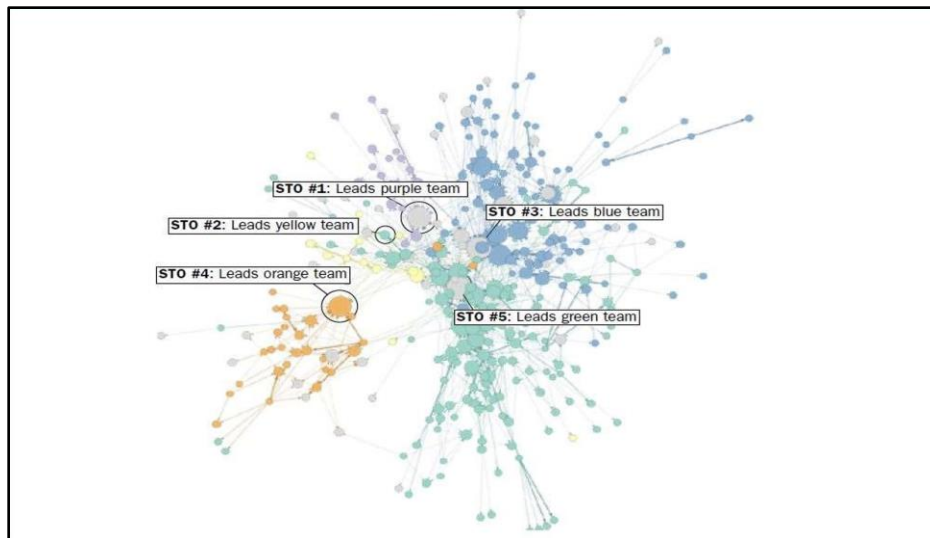
As per a recent ONA survey, it was found that the teams had no dependency on each other.

E. Working Backward Process

Amazon values ideas as its assets. Before making an investment decision, the senior managers read the six-page narrative about the new idea. The narrative is supported by a public relations (PR) report and frequently asked questions (FAQs). The narrative, PR, and FAQ are written in an imaginative futuristic manner as though the product has already been launched. This helps the teams understand customers' future needs better. Upon approval of the project by the senior leadership, it is funded and incorporated into Amazon's annual planning process. (Denning, 2019) Amazon's products and innovations, such as Prime, Alexa, and Kindle, began with press releases and FAQs. (Brozovich, 2019b)

F. Hackathons and Adaptive Summit

Amazon holds hackathons, which are day-long events where teams work together to find new solutions to enduring problems or innovative ways to use existing systems and data. (Brozovich, 2019b) At the end of the event, the participants vote for the best solution. Some successful ideas from these events include new ways to set up AWS services. (Brozovich, 2019b) Hackathons help in improvising existing products and services.

Amazon organizes an annual technology conference called the Adaptive Summit to generate innovative ideas. This two-and-a-half-day gathering brings technologists from various departments together to discuss various topics. At the end of the conference, participants vote to select the top three innovations, which are then developed into detailed proposals and presented to senior leadership. (Brozovich, 2019b) Adaptive Summit helps brainstorm new ideas that would be converted into an innovative product or service catering to customers' future needs upon experiment.

Contextual Ambidexterity at Amazon

Amazon is structurally ambidextrous for (1) its explorative units (AWS, Lab126) and its exploitative unit (Amazon). The units are autonomous and have their own structure and culture. (2) The units have access to core assets, for example, investment, marketing, etc. (3) The units have the same strategic ambition and are tied strongly at the senior management level. CEO Andy Jessy oversees both the units. Thus, Amazon is structurally ambidextrous.

By definition, a firm is sequentially ambidextrous when it evolves through punctuated changes in which firms adapt to environmental shifts by realigning their structures and processes, a sequential process. (O'Reilly III & Tushman, 2013) Brown and Eisenhardt (1997) proposed that firms use "semistructures" and "rhythmic switching" to oscillate back and forth between periods of exploitation and exploration. Nickerson and Zenger (2002) and Boumgarden, Nickerson, and Zenger (2012) refer to this process as "vacillation" and argue that firms can more easily switch between formal structures than they can change the culture and informal organization. A simulation study by Siggelkow and Levinthal (2003) also suggested that sequencing changes in organizational structure to promote temporary decentralization can be an effective way of exploring and exploiting. (O'Reilly III & Tushman, 2013)

Amazon has evolved through environmental shifts with regard to its structures. The two-pizza team structure was introduced by Jeff Bezos in 1990. Amazon is sequentially ambidextrous as it is temporarily decentralized until the completion of the projects under the two-pizza teams and centralized as an organization. Amazon's practices have all the characteristics of explorative and exploitative units. STOs tie the two-pizza teams together. All teams have the same goal as the organization. The teams share the organization's resources. The teams are not dependent on each other.

As per Charles A. O'Reilly III and Michael L. Tushman, contextual ambidexterity occurs when a firm is sequentially and structurally ambidextrous. Amazon first introduced sequential ambidexterity to the organization through its practices, such as two-pizza teams, STOs, ONA, and Day 1 Culture, through Amazon's first letter to shareholders in 1997. Upon the growth and introduction of new products and services, Amazon became structurally ambidextrous by splitting into explorative and exploitative units in the mid-2000s, with Lab126 in 2004 and AWS in 2006. (*High-performing Organization - the Amazon Two Pizza Team | AWS Executive Insights*, n.d.)

Both sequential and structural ambidexterity attempt to solve the exploration/exploitation tension through structural means. In 2004, Gibson and Birkinshaw proposed that this tension could be resolved at the individual level through what they termed contextual ambidexterity, which they defined as "the behavioral capacity to simultaneously demonstrate alignment and adaptability across an entire business unit (p. 209)." (O'Reilly III & Tushman, 2013) In their view, balancing exploration and exploitation rests on an "organizational context characterized by an interaction of stretch, discipline, and trust (p. 214)". It requires a "supportive organizational context" that "encourages individuals to make their judgments as to how to best divide their time between the conflicting demands for alignment and adaptability (p. 211)." They define "ambidextrous" as "aligned and efficient in their management of today's business demands, while also adaptive enough to changes in the environment that they will still be around tomorrow (p. 209)." (O'Reilly III & Tushman, 2013)

At Amazon, individuals demonstrate alignment and adaptability to balance exploration and exploitation by dividing their time efficiently. Employees make their judgments and adapt to changing environments.

Figure 3: *Contextual Ambidexterity*
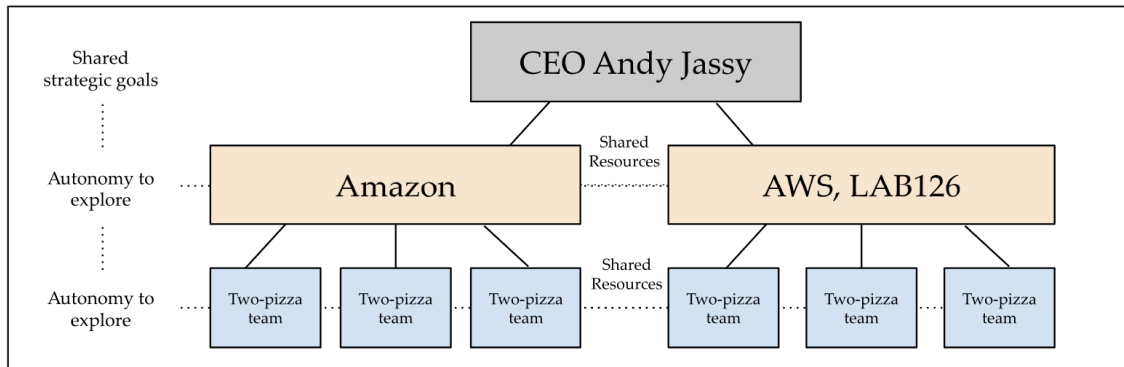
Products launched under Contextual Ambidexterity

Several products, including Amazon Kindle and Alexa, have successfully been launched through contextual ambidexterity. Amazon Kindle was developed in Lab126 (structural ambidexterity) under a two-pizza team following the Day 1 culture (sequential ambidexterity). The idea of Kindle was tested through the working backward processes of writing a press release and FAQs. Upon approval, investment was allocated, and a new two-pizza team was created with an STO in charge in Lab126. Amazon's Kindle had many changes before becoming successful. It is a breakthrough innovation. Similarly, Amazon Web Services has been constantly updated to ensure it meets customer expectations. Hackathons and adaptive summits help solve enduring problems and identify new ways to increase efficiency.

Conclusion

Amazon's success is attributed to its ability to explore and exploit simultaneously. This is achieved by creating distinct organizational units dedicated to each domain, which fosters unique processes, structures, and cultures.

Unlike many companies that struggle to balance exploitation and exploration, Amazon's commitment to breakthrough innovations is evident. The company goes beyond mere refinement, focusing on initiatives that enhance efficiency in current operations and elevate the overall value proposition of its products and services.

Amazon separates its exploitative and exploratory ventures but integrates them at the senior executive level to allow exploration units to access core business resources. This approach empowers exploitative units to refine operations and elevate customer service while maintaining the independence of exploratory initiatives.

Amazon's ambidexterity is complemented by its innovative culture, characterized by practices like the Day 1 culture, single-threaded owners, two-pizza teams, and ONA. These practices contribute to a dynamic and agile environment, ensuring alignment with the Day 1 culture.

Amazon's success in managing innovation can be attributed to its ability to combine structural and sequential ambidexterity, making it contextually ambidextrous. Amazon separates its exploratory and exploitative units, thus establishing a clear division of focus, allowing each unit to specialize in breakthrough innovation or operational refinement. Structural ambidexterity ensures that exploration units can freely pursue new opportunities without the constraints of existing processes. At the same time, senior executives foster a seamless flow of resources and knowledge between these units, creating a synergy that enhances the overall innovative capacity of the organization.

Amazon's sequential ambidexterity is evident in its continuous innovation cycle, marked by the Day 1 culture that encourages the perpetual exploration of new markets and the relentless pursuit of improvement. This dynamic combination of structural and sequential ambidexterity

makes Amazon a contextually ambidextrous organization that can navigate the complexities of

exploration and exploitation to sustain long-term success and innovation in a rapidly evolving

business landscape.

Citation

1. O'Reilly, C. A. III, & Tushman, M. L. (2004, April). The Ambidextrous Organization. Harvard Business Review. https://hbr.org/2004/04/the-ambidextrous-organization

2. Tushman, M.L. and O'Reilly, C.A. (2018). Ambidextrous Organizations: Managing Evolutionary and Revolutionary Change. California Management Review, 38(4), pp.8–29.

3. Change Logic. (2022, June 8). What is an ambidextrous organization? - Strategic Innovation Advisors - Change Logic. https://changelogic.com/what-is-ambidextrous-organization/#:~:text=An%20ambidextrous%20organization%20is%20one%20that%20pursues%20a,the%20overall%20enterprise%2C%20owned%20by%20the%20senior%20team

4. Cuofano, G. (2021). Amazon Organizational Structure In A Nutshell. FourWeekMBA. https://fourweekmba.com/amazon-organizational-structure/

5. Staff, F. (2023). Amazon's Corporate Structure: Exploring Hierarchy and Management Style. Functionly. https://www.functionly.com/orginometry/amazon-corprate-structure.

6. Amazon (2023). Who we are. Amazon. Available at: https://www.aboutamazon.com/about-us.

7. Brozovich, B. G. J. G. I. a. S. (2019b, October 3). Inside Day 1: How Amazon uses agile team structures and adaptive practices to innovate on behalf of customers. SHRM. https://www.shrm.org/executive/resources/people-strategy-journal/Spring2019/Pages/galetti-golden.aspx

8. Denning, S. (2019, June 2). How Amazon became agile. Forbes. https://www.forbes.com/sites/stevedenning/2019/06/02/how-amazon-became-agile/?sh=2874e9b631aa

9. Tucker, R. B. (2018, November 1). How does Amazon do it? Five critical factors that explain Amazon's incredible success. Forbes. https://www.forbes.com/sites/robertbtucker/2018/11/01/how-does-amazon-do-it-five-critical-factors-that-explain-amazons-incredible-success/?sh=18e53d8f41b9

10. Quora. (2017, April 21). What is Jeff Bezos's "Day 1" philosophy? Forbes. https://www.forbes.com/sites/quora/2017/04/21/what-is-jeff-bezos-day-1-philosophy/?sh=63d5ce241052

11. Vega, M. Á. G., Vega, M. Á. G., & Vega, M. Á. G. (2022, April 27). What is Lab126, Amazon's secretive research laboratory? EL PAÍS English. https://english.elpais.com/economy-and-business/2022-04-27/what-is-lab126-amazons-secretive-research-laboratory.html

12. O'Reilly III, A., & Tushman, L. (2013). Organizational Ambidexterity: Past, Present and Future. Harvard Business School.

13. Brown, Shona L. and Eisenhardt, Kathleen M. (1997). The art of continuous change: Linking complexity theory and time-based evolution in relentlessly shifting organizations. Administrative Science Quarterly, 42: 1-34.

14. Nickerson, Jack and Zenger, Todd (2002). Being efficiently fickle: A dynamic theory of organizational choice. Organization Science, 13: 547-566.

15. Siggelkow, Nicolaj and Levinthal, Daniel A. (2003). Temporarily divide to conquer: Centralized, decentralized, and reintegrated organizational approaches to exploration and adaptation. Organization Science, 14: 650-669.

16. High-performing organization - the Amazon Two Pizza Team | AWS Executive Insights. (n.d.). Amazon Web Services, Inc. https://aws.amazon.com/executive-insights/content/amazon-two-pizza-team/

17. Gibson, Cristina B. and Birkinshaw, Julian (2004). The antecedents, consequences, and mediating role of organizational ambidexterity. Academy of Management Journal, 47: 209-226.

18. Wikipedia contributors. (2023, December 11). History of Amazon. Wikipedia. https://en.wikipedia.org/wiki?curid=58634020