
Netflix Recommender System: Algorithmic Personalization as the Core Organizational Resource

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ABSTRACT

This case study explores how Netflix, Inc. transformed from a DVD-by-mail business into a global, algorithm-driven entertainment platform. It argues that the Netflix Recommender System (NRS), the company's personalization algorithm, functions not merely as a technological feature but as a core organisational resource that drives growth, innovation, and sustained competitive advantage. Rather than serving only as a recommendation tool, the system has become central to subscriber retention, customer engagement, and strategic decision-making throughout the organisation. It also guides large-scale content investment decisions worth billions of dollars annually and creates a durable competitive moat built on nearly two decades of unique behavioural data that competitors cannot easily replicate. The case is analysed using The Digital Transformation Playbook Five-Domain Digital Transformation Framework, Dynamic Capabilities Theory, and the Business Model Innovation model developed by Alexander Osterwalder and Yves Pigneur (2010). Applied phase by phase, these frameworks explain how algorithmic personalisation evolved from a simple DVD-selection interface into the central mechanism shaping Netflix's value creation, customer relationships, operations, and revenue model. They further demonstrate how digital capabilities can be transformed into scalable strategic assets. The case also highlights an important theoretical tension. While the algorithm generates significant competitive and financial value, it simultaneously influences large-scale cultural consumption by shaping what audiences watch, discover, and prefer. This raises broader ethical concerns regarding transparency, accountability, consumer autonomy, and the growing power of firms whose primary strategic asset is a taste-making mechanism capable of directing consumer attention and cultural trends at scale.

KEYWORDS: Netflix Recommender System: Digital Transformation: Dynamic Capabilities: Business Model Innovation: Rogers Framework: Algorithmic Strategy: Competitive Moat

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1. Curtain Raiser

In 2006, Netflix issued a strange public announcement, one million dollars to any individual or team that was not part of the company that could enhance its film recommendation algorithm by only ten percent. There were more than 40 thousand teams representing 186 countries (Bennett and Lanning, 2007). Three years later, the champion team passed over the threshold. Netflix compensated them - and silently resolved not to implement their solution fully. It was not because they did not show their gratitude. It was strategy. The data had been transformed by streaming. It was a prize made in the shape of DVD rental ratings - intentional, explicit ratings. Streaming created more: implicit behavioural signals. How long did you watch? Where did you pause? Did you return? Did you finish? No one does what they cannot touch the algorithm (Pajkovic, 2022).

The whole Netflix story is summed up by that decision. This is a firm that has not been mixing the tool with the asset. The tool was the algorithm. What the algorithm learnt was the asset. All that came after it, the streaming service, the original content, the internationalization, was a derivative of that faith. The answer to the question that this case poses is not how Netflix became big. That is how a recommendation engine has turned out to be the most valuable thing that a media company has ever constructed.

2. Company Background

Reed Hastings and Marc Randolph founded Netflix in April 1997 in Scotts Valley, California. The business idea it was created on was the direct assault on the most lucrative of the Blockbuster business was the late fee. Blockbuster made more than 800 million a year in late fees (Keating, 2012); Netflix did not have it all, and it was getting rid of it, providing unlimited mail-based DVD subscriptions at a monthly subscription fee. It was a service innovation and not a technological innovation on business model.

It was followed three years later by the deeper strategic choice which is seen in retrospect. In 2000, Netflix implemented CineMatch - a crude recommendation system which paralleled subscriber ratings with film recommendations. Netflix had been making an investment in knowledge of behaviour at a time when the competitors were making investments in physical retail growth. This asymmetric bet, on technology, over inventory, would characterize the further as Hsiao (2024) records. Netflix shipped its billionth DVD within five years and within the same time, Netflix had a subscriber-preference database that no competitor had ever considered to create (Netflix Annual Report, 2006).

3. Theoretical Framework

According to Rogers (2016), the digital transformation does not mean the use of technology; it means the reconsideration of the strategy in five fields: customers, competition, data, innovation, and value. The most transformative domain, Rogers argues, is the data domain, when companies get to know how to harness behavioural data to make their decisions in real time, it starts to reorganize all other domains gradually. As this case shows, it is namely an NRS that serves as the means by which Netflix operationalised the data domain of Rogers in all of the five dimensions.

Teece, Pisano and Shuen (1997) identify the dynamic capabilities as the capacity of the firm to recognise the opportunities that are in the environment, exploit them by mobilising resources and redesigning its asset base to perpetuate its advantage. The three stage steps of Netflix are cross-docked to these micro-foundations: each of the stages demanded a new type of sensing input, an alternate type of seizing investment, and an alternate reconfiguration of the organisation - the NRS plays the thesander role throughout all three phases. Osterwalder and Pigneur (2010) determine that sustained business model innovation does not happen when any of the elements of the canvas is altered, but when a number of elements undergo reconfigurations in a mutually reinforcing manner.

This case contends that the NRS is not a canvas block in the existing business model operated by Netflix, but runs through every one of the nine canvases, which is why the ability of algorithms is the connective tissue of the whole model, but not a separate resource.

4. The Digital Pivot — From Discs to Data

The shift that Netflix had been preparing since 2007 was accelerated by the COVID-19 pandemic. However, the actual turning point had occurred long before that, in a boardroom scene that Keating (2012) shares rather ironically: in 2000, the executives of Blockbuster held a meeting with Netflix and turned down an offer to buy the company, offering it 50 million dollars. They saw a DVD-by-mail service. They did not observe the database in the background of it.

In 2007, Netflix introduced its streaming offering, which had originally been added to DVD rental, but quickly became the main offering. It necessitated massive organisational reconstitution which Teece et al. (1997) would identify as the reconfiguring micro-foundation of dynamic capabilities: distribution centres and DVD inventory were liabilities; the new operational backbone was Amazon Web Services cloud infrastructure. It has entered into an agreement with more than 1,500 device makers and Netflix can be seen on all television, game consoles, and smart phones in the market (Netflix Annual Report, 2012). More importantly, streaming did not simply alter the delivery mechanism, it altered the quality of data the algorithm has access to. The NRS did not just become better with streaming, it became a different type of system, qualitatively. The competition domain also started to be reconstructed due to the maturation of the data domain, as Rogers (2016) would have predicted. Blockbuster that could not replicate the streaming infrastructure, and decades of behavioural data that it had, had to declare bankruptcy in 2010 (Keating, 2012). Video rental was no longer the competitive boundary, but this time, it had become the screen time, and Netflix had made it first.

5. The Algorithms Take Over: Algorithms and the Recommendation to Commission.

House of Cards, the most mentioned example of data-based content commissioning in the management literature is currently misconceived, having been launched in 2013. Netflix has not been utilizing data to minimize creative risk in a traditional meaning. It relied on information to re-purpose creative risk. The conventional studio commissioning poses the question: 'Is it a good idea?' The algorithmic commissioning of Netflix posed the question: How many subscribers in what markets with what co-viewing history already have an audience size to this idea that could be quantified (Hsiao, 2024). The epistemological transformation is to a less subjective editorial opinion; to a less subjective audience conjecture.

The NRS had found an untapped client base of large and measurable size in subscribers who had viewed the first series of the House of Cards, the works of David Fincher, and the performances of Kevin Spacey. The show was free to be greenlit with analytical confidence never seen in television before. It received two nominations and became the first streaming series to be nominated at the Primetime Emmys, as well as gained three million US subscribers in one quarter (Netflix Annual Report, 2013). The international effects were made entirely evident in 2021. In its first 28 days, Squid Game, a Korean language drama and survival entertaining experience, had 1.65 billion viewing hours, and ranked in the top ten in 94 countries (Netflix Top 10, 2021). This was not anticipated or created by any conventional studio system. The NRS had also determined that cross-cultural global segment included subscribers watching Korean drama, content in the survival genre, and socially critical stories. The algorithm did not simply suggest Squid Game when it became popular but rather offered the viewers the insight that made this show a workable commission in the first place. The value proposition canvas block, which Osterwalder and Pigneur (2010) would

have said was personalised infinite entertainment at any place, was now plausible only because the NRS had turned it into a working reality in 190 countries and 50 languages (Netflix Annual Report, 2024).

As of 2024, Netflix is spending more than 17 billion a year on content (Netflix Q4 2024 Earnings Letter). There is no committee or executive whim in this budget. It is driven by NRS-based audience intelligence all over the markets, languages and genres. According to Gomez-Urbe and Hunt (2015), the NRS will stop subscriber churn worth about 1 billion each year - a figure that puts in perspective why the firm has invested in machine learning infrastructure and talent to the extent it has. The algorithm had become the most productive element in the balance sheet, in economic terms.

6. Emerging Conflicts

Structural conflict was with dominance. The former came as a result of the same studios whose material had resulted in the development of the Netflix catalogue. The rising numbers of subscribers to streaming services in the early 2010s made Disney, WarnerMedia, and NBCUniversal realise that, in effect, selling their libraries to Netflix was subsidizing an aspect of data gathering of an adversary. Between 2019 and 2022, both released a competing service, Disney+, HBO Max, and Peacock, and taken off their content in the process (Nelsa et al., 2025). In the terms of Business Model Innovation of Osterwalder and Pigneur (2010), this was a concurrent failure of the key partners and key resources blocks that compelled Netflix to increase its investment in original contents three to four times, with Netflix investing between 2 billion and 17 billion USD in 2012 and 2022, respectively. This crisis was not a catastrophe because of the commissioning intelligence capacity of the NRS in that it did not seek to assign budgets in an intuitive manner, instead using algorithms to do so.

The latter war was less obvious and more lasting. In a reverse-engineering analysis of the NRS operational logic, Pajkovic (2022) shows the algorithm to optimise with respect to engagement - and that optimisation to engage may itself bias favouring culturally challenging, artistically nontraditional, or commercially peripheral material in favour of familiar content. This leads to a contradiction that the domain of value offered by Rogers (2016) fails to address: as long as the value-creation mechanism produces financial gains to the firm and, possibly, reduces the range of cultural production, the issue of who determines what to consider as value becomes acute. This conflict was evident at the industry level in 2023 when the Writers Guild of America went on strike, making AI-based content choices one of its primary grievances, and an intellectual discovery became a functioning.

7. New Challenges

With Netflix in its fourth decade, some structural issues pose the persistence of the algorithm-as-asset thesis (Nelsa et al., 2025):

- A) **Content Cost and Return on Investment:** Content budget of 17 billion dollars annually has both creative and commercial risks, which its licensed counterparts lacked. Cancellations of high profile are examples of actual destruction of capital. The increasing attention that Wall Street is paying to content return on investment, as opposed to subscriber growth per se, imposes pressure, which the commissioning intelligence of the NRS must internalize.
- B) **Data Privacy Regulation:** The four functions of the NRS, which comprise retention, commissioning, moat and cultural infrastructure require constant access to granular behavioural data. The GDPR (EU), the DPDPA (India), and CCPA (California) establish limitations that when tightened further, weaken all four functions altogether. According to

the view of Teece et al. (1997), this is a direct menace to the primary sensing mechanism of the firm, the most basic among the three micro-foundations of dynamic capability.

- C) **Personalisation with Generative AI:** Generative AI is making the marginal cost of content creation close to zero. When a production of personalised content is cheap to achieve at scale, the commissioning intelligence advantage of the NRS, which is currently based on the uncommonness of decisions made using data, risk being destroyed. Much more urgently, they might enter the market and offer personalisation without the need to have the corpus of historical data that Netflix has collected over a couple of decades. The technology that shook the entertainment industry has the potential to be shaken by an unknown technology that the company has not been able to reckon with completely.
- D) **Increasing Competition and Market Saturation:** Disney +, Amazon Prime Video, Apple TV + and HBO Max have the same subscriber hours and are competing with more and more content libraries. Password-sharing controls implemented in 2022-2023 had temporary churn, followed by a recovery - shows that relationships between subscribers even in a market leader platform are more volatile than the retention indicators that the NRS might want to project (Nelsa et al., 2025).

8. Conclusion

The history of Netflix acquiring the ability to become a global leader in terms of content delivery can be traced, through Rogers (2016), to the gradual expansion of one of the fields of data, which gradually transformed all the others.

The history of Netflix acquiring the ability to become a global leader in terms of content delivery can be traced, through Rogers (2016), to the gradual expansion of one of the fields of data, which gradually transformed all the others. It can be explained by making use of Teece et al (1997) as the creation of a path-dependent dynamic capability which cannot be acquired, licensed, or synthesised: the NRS was trained on two decades of behavioural information of 300 million of subscribers in 190 countries. It is observable especially through Osterwalder and Pigneur (2010) as a business model where a single algorithmic core is run through all the canvas blocks and each year it makes the model appear more coherent, more defensible and more challenging to imitate.

Investing in AI is not the practical lesson that managers should take. It is to appreciate the fact that products, brands and content libraries are not the most sustainable competitive assets of data rich environments, but learning systems that build competitive advantage over time. Netflix was not victorious due to its ability to stream at a higher rate than the Blockbuster. It conquered due to the fact that it was learning quicker. Those organisations that will shape the next ten years are the ones who have already started constructing the equivalent of that learning, in their respective industries, using their data.

Exhibit 1 – Company Profile: Netflix Inc.

Field	Details
Founded	April 1997, Scotts Valley, California, USA
Co-Founders	Reed Hastings & Marc Randolph
Headquarters	Los Gatos, California, USA

Core Business	Subscription streaming + ad-supported tier + original content production + licensing
Paid Subscribers	301.6 million globally (Q4 2024)
Annual Content Spend	\$17 billion+ (2023–24)
Markets	190+ countries; originals in 50+ languages
Annual Revenue	\$38.9 billion (2024)
Stock Listing	NASDAQ: NFLX

Source: Netflix Inc. Q4 2024 Shareholder Earnings Letter; Netflix Annual Report (2024).

Exhibit 2 – Phase-Wise Transformation: Theory Applied

Phase & Period	Rogers (2016) — Dominant Domain	Teece et al. (1997) — Micro-Foundation
Phase 1: Physical Disruption (1997–2006)	Data: Early operationalisation of the data domain CineMatch transforms explicit ratings into personalised recommendations; the first operationalisation of the data domain.	Sensing: The real consumer issue, which the NRS recognizes is the content discovery, rather than the physical access to discs.
Phase 2: Platform Transformation (2007–2012)	Competition: Streaming is defining the new competitive line as between video rental and screen time; implicit behavioural data is defining explicit ratings.	Seize + Reconfigure: Netflix moves out of physical infrastructure, moves to AWS, implements NRS on more rich implicit streaming data.
Phase 3: Content Ecosystem (2013–Present)	Five Domains: NRS is reconfiguring its customers, competition, data, innovation and value all at the same time by making algorithmic commissioning the foundation of all creative investment.	Path-Dependent Moat: NRS is the meta-capability - 20 years of data through 300M+ subscribers in 190 countries is inimitable by anyone coming in with any amount of capital.

Source: Authors' synthesis applying Rogers (2016) and Teece et al. (1997) to Netflix Annual Reports (2006–2024) and Nelsa et al. (2025).

Exhibit 3 – The NRS as Asset: Four Strategic Functions

Function	Mechanism	Evidence
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Retention Capital	Constant personalised exploration gets rid of subscriber churn as each home page visit reveals useful content.	~\$1 billion annual churn reduction estimated (Gomez-Uribe & Hunt, 2015)
Commissioning Intelligence	This is because the NRS audience clusters find underserved segments and probabilistic audience estimates to greenlight content decisions.	House of Cards (2013): +3M US subscribers Q1 2013; Squid Game (2021): 1.65B hours in 28 days
Structural Competitive Moat	300M+ subscribers in 190 countries 20+ years of behavioural data is a path-dependent asset that none of the entrants can duplicate.	Disney+ launched with stronger content library in 2019; Netflix retained global market leadership in 2024
Cultural Infrastructure	NRS manages the homepage ordering, personalisation of the thumbnail and cross-cultural content surfacing in 190 countries.	Lupin (2021): top 10 in 76 countries in first week; Money Heist: most-watched non-English series at time of release

Source: Gomez-Uribe & Hunt (2015); Pajkovic (2022); Netflix Top 10 Global (2021); Netflix Q4 2024 Earnings Letter.

Exhibit 4 – Business Model Canvas: NRS as Connective Tissue (2024)

Canvas Element (Osterwalder & Pigneur, 2010)	How the NRS Threads Through It
Value Proposition	Endless personalised entertainment everywhere: the idea is plausible only since the NRS makes the homepage of any subscriber look like it is uniquely designed.
Customer Segments	NRS finds an invisible micro-segments (e.g., the Korean-drama audience who also consume crime thrillers) in the traditional demographic segmentation.
Channels	Content presentation is the feature that personalises thumbnails based on individuals subscribers across all 1,500 or more types of devices - the channel experience is personalised through an algorithm.

Revenue Streams	Retention, powered by NRS, is the basis of subscription revenue; by commissioning intelligence, one can make content licensing deals by finding globally scalable original titles.
Key Resources	The most valuable and unreplicable key resource on the canvas is the NRS itself, trained on 20+ years of data of 300M+ subscribers.
Key Activities	Activities dependent on NRS are content commissioning, A/B UI testing, creation of thumbnails variants, and training of a personalisation model.
Key Partners	AWS cloud technology allows the NRS to handle 250M+ data points each day; partnerships with device OEMs integrate NRS-controlled UX on every display.
Cost Structure	The content budget of between 17B and 17B is distributed with the help of NRS commissioning intelligence, which is more efficient in capital allocation compared to capital allocation based on intuition.
Customer Relations	The NRS also substitutes the transactional subscription management with a perpetual self-enhancing AI-mediated personalisation relationship

Source: Framework: Osterwalder & Pigneur (2010). NRS application: Pajkovic (2022); Gomez-Urbe & Hunt (2015); Netflix Annual Report (2024). Synthesis by authors.

Exhibit 5 – Subscriber and Revenue Growth (Selected Years)

Year	Paid Subscribers (millions)	Annual Revenue (USD billion)
2007	7.5	1.2
2012	33.3	3.6
2016	93.8	8.8
2020	203.7	25.0
2022	220.7	31.6
2024	301.6	38.9

Source: Netflix Inc. Annual Reports (2007, 2012, 2016, 2020, 2022); Netflix Q4 2024 Shareholder Earnings Letter.

Exhibit 6 – NRS Algorithmic Mechanisms

Mechanism	Description
Collaborative Filtering	Recommends content that is enjoyed by similar viewing history subscribers in an effort to identify their taste-cluster.
Content-Based Filtering	Perform matches metadata - genre, tone, cast, director - across titles to bring out thematically related information.

Implicit Behavioural Signals	The explicit star ratings were substituted by completion rates, frequency of pause/rewind, rewatch behaviour, time of day and device type as the key NRS input since 2012
Thumbnail Personalisation	Several variants of artworks are prepared in advance per title, the NRS chooses the image that most will result in a click based on the taste profile of that particular subscriber
Row and Order Logic	Ordering of homepage rows and order of content within each row is not an editorial choice but an algorithmic choice.
Data Volume	Processing more than 250 million unique viewer data in 190 countries each day.

Source: Pajkovic (2022); Gomez-Uribe & Hunt (2015), ACM Transactions on Management Information Systems, 6(4), 1–19.

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