



**REPUBLIC OF TÜRKİYE
HALIÇ UNIVERSITY
INSTITUTE FOR GRADUATE STUDIES**

**AI-POWERED RECOMMENDATION SYSTEM:
EXPLORING THEIR IMPACT ON CUSTOMER-BUSINESS
INTERACTION**

**FATMA SBIAI
DEPARTMENT OF BUSINESS ADMINISTRATION**

MASTER'S THESIS

ADVISOR

Prof. Dr. Lecturer CENGİZ KARATAŞ

ISTANBUL 2025



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MA/MSc THESIS APPROVAL PAGE

Business Administration Study prepared by the Department MA/MSc Program Student FATMA SBIAI with the subject ‘Exploring the Impact of AI-Powered Recommendation Systems on Customer-Business Interactions in the Context of Streaming Devices’ is approved by our jury as MA/MSc Thesis.

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THESIS ETHICS STATEMENT

I declare that I completed this study titled “AI-Powered Recommendation Systems: Exploring Their Impact on Customer-Business Interactions” which I present as a Master’s Thesis in “Business Administration” from the beginning to the end under the responsibility of my advisor Prof. Dr. Lecturer CENGİZ KARATAŞ, that I collected all the data/ samples by myself, I did the experiments or analysis / I had the experiments or analysis done in the related laboratories, that I have fully indicated the information I have received from other resources in the text and bibliography, that I have acted in accordance with the scientific research and ethical rules during the study process, and that I accept any legal consequences if otherwise occurs.

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ÖZET

YAPAY ZEKA DESTEKLI ÖNERİ SİSTEMLERİ: MÜŞTERİ-İŞLETME ETKİLEŞİMLERİ ÜZERİNDEKİ ETKİLERİNİN ARAŞTIRILMASI

Haliç Üniversitesi
Lisansüstü Eğitim Enstitüsü
İşletme Yönetimi Anabilim Dalı, Yüksek Lisans Tezi
Danışman: Dr. Öğr. CENGİZ KARATAŞ
Ocak 2025, 58 sayfa

Günümüz dijital ortamında, işletmeler müşteri etkileşimini artırmak ve gelir büyümesini sağlamak için veri odaklı stratejilere giderek daha fazla güveniyor. Bu bağlamda, Yapay Zeka destekli öneri sistemleri, kullanıcı davranışlarını, tercihlerini ve etkileşimlerini analiz etmek için makine öğrenimi algoritmalarını kullanarak kritik bir teknoloji olarak ortaya çıkmıştır. Bu sistemler, ilgili ürün, hizmet veya içerik önererek deneyimleri kişiselleştirir ve işletmeler ile müşterileri arasında daha derin bir bağlantı kurar. Bu tez, Yapay Zeka destekli öneri sistemlerinin müşteri-işletme etkileşimleri üzerindeki çok yönlü etkisini araştırmaktadır. Bu araştırma, bu sistemlerin deneyimleri nasıl kişiselleştirdiğini, müşteri etkileşimini nasıl artırdığını, müşteri memnuniyetini nasıl iyileştirdiğini, sadakati nasıl teşvik ettiğini ve nihayetinde geliri nasıl artırdığını incelemektedir. Çalışma, e-ticaret, akış hizmetleri ve sosyal medya platformları dahil olmak üzere çeşitli sektörlerdeki gerçek dünya uygulamalarını araştırmaktadır. Ayrıca, tez, Yapay Zeka destekli öneri sistemlerinin uygulanmasıyla ilgili potansiyel zorluklar ve etik hususlara, örneğin gizlilik endişeleri, algoritmik önyargı ve filtre kabarcıkları oluşturma potansiyeline değinmektedir. Bu sistemlerin güçlü ve zayıf yönlerini analiz ederek, bu araştırma, müşteri etkileşimlerini optimize etmek ve sürdürülebilir, uzun vadeli ilişkiler kurmak için Yapay Zeka'dan yararlanmak isteyen işletmelere değerli bilgileri sağlamayı amaçlamaktadır.

Anahtar Kelimeler: AI, Recommendation Systems, Customer-Business, Privacy Concerns, Algorithmic Bias, Filter Bubbles, Cold Start.

ABSTRACT

AI-POWERED RECOMMENDATION SYSTEM: EXPLORING THEIR IMPACT ON CUSTOMER-BUSINESS INTERACTION

Haliç University
Graduate Education Institute
Department of Business Administration, Master's Thesis
Advisor: Prof. Dr. Lecturer CENGİZ KARATAŞ
January 2025, 58 pages

In the contemporary digital landscape, businesses are increasingly reliant on data-driven strategies to enhance customer engagement and drive revenue growth. AI-powered recommendation systems have emerged as a pivotal technology in this context, leveraging machine learning algorithms to analyze user behavior, preferences, and interactions. These systems personalize experiences by suggesting relevant products, services, or content, fostering a deeper connection between businesses and their customers. This thesis explores the multifaceted impact of AI-powered recommendation systems on customer-business interactions. It examines how these systems personalize experiences, enhance customer engagement, improve customer satisfaction, foster loyalty, and ultimately drive revenue. The study investigates real-world applications across various sectors, including e-commerce, streaming services, and social media platforms. Furthermore, the thesis delves into the potential challenges and ethical considerations associated with the implementation of AI-powered recommendation systems, such as privacy concerns, algorithmic bias, and the potential for creating filter bubbles. By analyzing the strengths and limitations of these systems, this research aims to provide valuable insights for businesses seeking to leverage AI to optimize customer interactions and build sustainable, long-term relationships.

Keywords: AI, Recommendation Systems, Customer-Business, Privacy Concerns, Algorithmic Bias, Filter Bubbles, Cold Start.

PREFACE

I would like to express my sincere gratitude to my advisor, Professor Prof. Dr. Lecturer CENGİZ KARATAŞ, for their invaluable guidance, encouragement, and unwavering support throughout this research journey. Their expertise, insightful feedback, and dedication have been instrumental in shaping this thesis.

I would also like to thank my parents, my brothers and my friends for their unwavering encouragement, support, and understanding throughout this challenging endeavor. Their belief in me has been a constant source of motivation.

January, 2025

Fatma SBIAI

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1. INTRODUCTION

In the current digital era, the way businesses function has changed significantly as a result of the technology advancements in the recent years. Businesses are increasingly communicating with their target customers using the Internet using different platforms and social media. Technology is developing quickly, that the workplaces, and businesses are becoming more and more digitalized.

As a result, AI recommendation systems and social networks have grown to be effective communication tools in addition to the traditional Internet. Sales offers are frequently sent to your mobile device these days, even if you don't know the service provider or have any specific links. Just by detecting your purchases patterns and product preferences, Digital marketing has become a fundamental mass phenomena for businesses; therefore a marketing plan isn't complete without digital strategy and expression, and in order to comprehend digital, we must look beyond the tool or channel and toward a value exchange and the economic system that is carefully sold as cash.

Online advertising, emailing, retargeting, AI (Artificial intelligence), TVOD (Transactional video on demand), social networks, social selling, content syndication, e-commerce, and other digital platforms have completely changed how businesses approach marketing and sales. Indeed, the development of the Internet has an impact on every industry. One of the two main features of this revolution is its rapidity, the speed at which people around the world reach the product, and the even faster rate at which internet connected systems are taking over as the main way that people use to purchase, contact and communicate, and people access web data, and, lastly, the rate at which new applications and behaviors are developing.

Virtual communities have been facilitated by the development of Web 2.0, which is a tool change the nature of the Web from distributed to participatory (Gwen Solomon, Lynne Schrum-2007), and the rise of social media. Businesses have then benefited from their availability to enhance their online communication and, most

importantly, encourage the adoption of their artificial intelligence systems, these new aspects included in today's marketing, improve sales, distribution, CRM (customer relationship management) and services, as with every the competition rise and become more and more intense, Every business must strategically and culturally work to stay ahead of the competition or, at the absolute least, avoid falling behind as this change takes place. However, because the "digital" world is always changing, businesses are prompted to suggest innovations, track their outcomes, and perhaps choose new paths.

1.1. Research Problem:

In this context, and where information is plentiful and individual's average attention span are short - around 47 seconds -, Marketers must find creative ways to cut through clutter and ensure their messages resonate with the target audience (brandshark-2024).

This work will attempts to predict the next disruption by examining a new technology, which is the Recommendation systems that powered by AI, to dive into the AI-powered recommendation systems world, and try to explores the transformative impact of this systems on the modern business landscape.

The AI-powered recommendation systems have emerged as a powerful tool, and a salvation for a numerous of businesses and customers at the same time, as it helps the businesses to reach the target customers without any limits or boundaries, and from the other hand the customer can be introduced to the item or the service without leaving the comfort of his couch, by using data science and machine learning to comprehend user preferences and provide tailored suggestions across several domains, from e-commerce and entertainment to social media and health services, where experts believe that if you want "to increase customer retention and purchases, you need to provide a personalized and engaging customer experience" (Chris Baldwin-2024).

We will explore the complex interactions of AI, consumer behavior, and business outcomes. Where we will investigates how AI algorithms analyze vast datasets to understand customer preferences, predict future behavior, and deliver personalized recommendations, to help business predict future purchases, making the

shopping experience more enjoyable and relevant, therefore to persuading customers on buying their product.

Additionally, we will provide valuable insights for companies looking to use AI to improve customer relationships, spur growth, and obtain a competitive advantage in the digital era. It also looks at how these suggestions affect customer engagement, satisfaction, and loyalty, which will ultimately affect business profitability.

We will explore how these intelligent systems are transforming customer-business relations and dives into their intriguing universe. Which in turn leads to an overwhelmed customers with the huge amount of options available to them, and that's lead the Businesses to use artificial intelligence - AI to offer customized recommendations in order to manage this complexity.

1.2. Research questions:

1. What effects do various recommendation algorithms (such content-based filtering, collaborative filtering, and hybrid techniques) have on user happiness, loyalty, engagement, and purchasing behavior?
2. How might recommendation systems driven by AI be designed to address the moral dilemmas and any prejudices they bring up, from the ethical part to the potential biases they raise?
3. How can the human-computer interface (HCI) design concepts be applied to enhance user experience and boost trust in AI-driven recommendations?
4. What are the primary factors that determine whether recommendation systems driven by AI are effective in establishing strong client-business relationships?

1.3. Literature Review

This study will combine quantitative and qualitative methods in a mixed-methods approach to gain a comprehensive understanding of AI-powered recommendation systems. The following research methods will be used:

1. Review of Literature:

A thorough analysis of the body of current literature will be carried out, including academic papers, corporate reports, conference proceedings, and pertinent trade journals. The review will concentrate on the development of recommendation systems driven by AI, as well as the various kinds of recommendation algorithms (such as collaborative filtering, content-based filtering, and hybrid techniques).

The effects of AI suggestions on user happiness, preferences, and behavior. Ethical issues, security and problems (such as bias, privacy, and filter bubbles) related to AI recommendations system, and the Industry trends and best practices for recommendation systems driven by AI.

2. Analysis of Data:

Analysis of Quantitative Data: Survey Data: A quantitative survey will be conducted to collect both quantitative and qualitative data in order to learn more about user attitudes, experiences, and impressions of AI-recommendation system suggestions. The survey will include both closed-ended and open-ended questions (like multiple-choice and Likert scale questions) in order to ensure that the results are widely applicable. A representative sample of users will respond to the survey.

We will apply a Data Analysis to find patterns, relationships, and noteworthy variations among user groups, the survey data will be examined using statistical tools, and the data will be analyzed using descriptive statistics.

3. Case Studies:

Comprehensive case studies of effective AI-powered recommendation system deployments across several platforms: (Netflix, Amazon) will be carried out. This Case studies will concentrate on the particular technology and algorithms employed, the effect of AI suggestions on revenue, customer satisfaction, and user engagement, among other key performance indicators (KPIs), the difficulties and achievements encountered while putting AI-powered recommendation systems into place and keeping them running.

All research endeavors will be carried out in compliance with ethical standards, guaranteeing the privacy and confidentiality of data, the aim of it is to collect qualitative information on consumers' experiences and opinions of AI-recommendations systems,

Thematic analysis will be used to examine the data from the survey, that at the start of the survey, each participant will be asked for their informed consent..

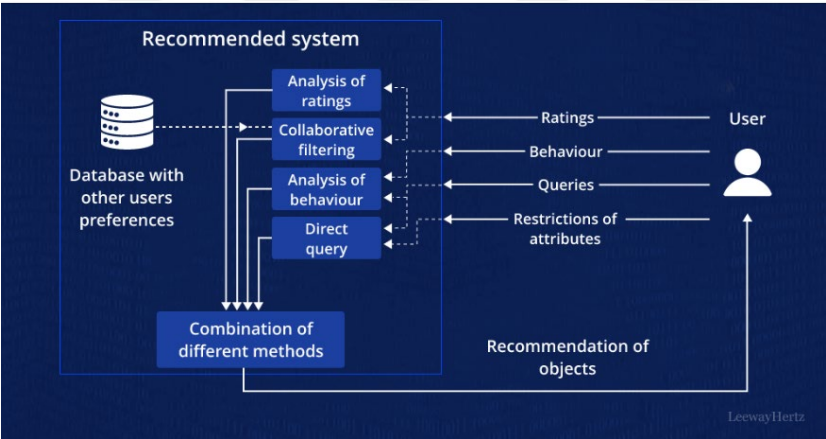
Anonymized data will be safely maintained to preserve participant privacy. Using both quantitative and qualitative data to meet the research objectives, this mixed-methods approach will offer a solid and thorough understanding of AI-powered recommendation systems.



2. OVERVIEW OF RECOMMENDATION SYSTEMS GENERATED BY AI

2.1. General context of recommendation systems generated by AI

AI-powered recommendation systems are a sophisticated algorithms that use artificial intelligence, especially machine learning, to propose pertinent goods, services, or content to users. Large volumes of data are analyzed by these systems to comprehend user interactions, preferences, and habits. Based on this knowledge, they subsequently offer tailored recommendations (nvidia).



2.1. AI-based recommendation system function

AI-recommendation system have an important traits in personalizing the recommendations according to each user's tastes and profile, and on the purchased pattern and behavior.

The most important feature in the AI - is that this system is proactive, by predicting the customer behavior through proactive (feedforward) as well as reactive (feedback) (Mohammad Jamshidi-2011), as it anticipate the user's needs, and making pertinent suggestions before the user specifically asks for them, the recommendation system is able to predict that a user will ever purchase a particular item before doing so (Joshua Eckroth-2018) as the customer might not be

aware of their need for a particular recommendation. This “intelligence” and prediction is due to the continuous learning system, and on developing of the costumer behavior and pattern, as additional information is gathered and examined, adjust and get better over time in tailoring a well customized recommendation for the customer in a diverse number of applications, from social networking, entertainment, and e-commerce, to health care and hospitalization.

2.2. The stages of implementing an AI- generated recommendation systems

In the age of information and the access for the internet is easy and diversity, businesses face the challenge of connecting with customers on a personal level and deliver relevant experiences and compelling messages, in the broader context of the company's ongoing transformation in accordance with technological advancements these computer algorithms based on “Artificial Intelligence which enables computers to mimic human behavior ” and predict what they want and what they might need, to provide as a result, solution by tailoring the experiences based on user preferences and behaviors.

By understanding individual preferences and tailoring experiences accordingly, these systems “promises to enhance operational efficiencies, elevate customer experiences, and drive revenue growth” (Talukder-2024) and enhance customer satisfaction and loyalty.

Recommendation systems driven by AI systems have the potential to greatly improve customer satisfaction and corporate success, but there are still issues and restrictions that need to be resolved, among the main concerns are:

A- Data security: and privacy issues have surfaced as a result of these systems' extensive collection, data sources, processing techniques and analysis of personal data could increase users' privacy concerns. To avoid disclosing sensitive information.

B- Filter Bubbles: AI – recommendation systems have the potential to produce filter bubbles, which would restrict users' access to a range of viewpoints and impede creativity. Wherein consumers are predominantly exposed to information that aligns with their existing preferences, limiting their exposure to novel items (Prick- 2024).

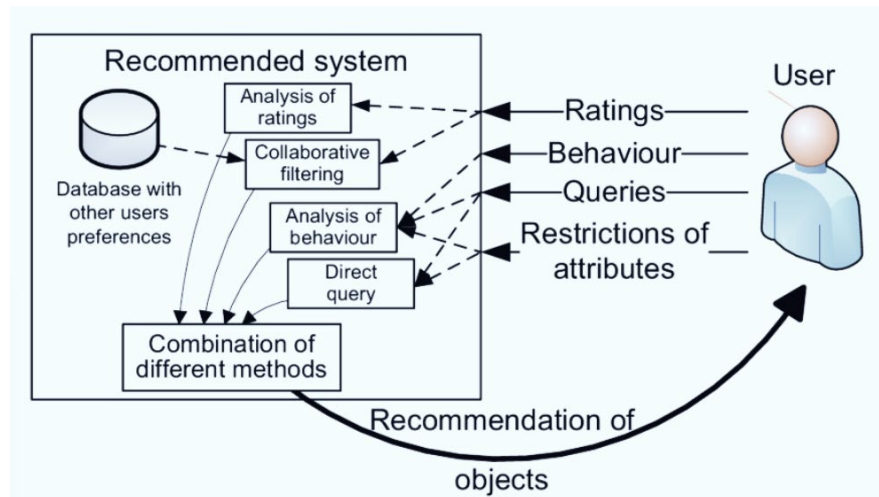
C- Algorithmic Bias: These systems have the potential to reinforce biases in the data if they are not properly built, which could result in unfair or discriminating suggestions.

D- Cold Start Issue: Recommendation systems may find it difficult to offer precise and pertinent recommendations when new users or goods are added. Recommender systems face a daunting challenge when entities (users or items), without any historical interactions, known as the "Completely Cold-Start Problem" (ieeexplore-2024).

A- Data security and privacy issues:

As recommender systems are incorporated into our daily lives more and more, worries regarding user privacy and data security have increased, especially in e-commerce and digital marketing. To provide tailored recommendations, these systems mostly rely on user information and purchase behavior, including browsing history, past purchases, and personal preferences. Although this personalization improves user experiences and propels commercial success, Organizations must balance openness and user privacy protection since it raises significant ethical and legal concerns around the gathering, storing, processing, and use of user data.

In order for recommendation systems to work well, a lot of data must be gathered, sensitive personal data (ico.org.uk), include financial information, behavioral tracking across platforms, and personal identifiers may fall under this category, despite of how much data is being collected about them, Users might not always be completely aware of how much AI applications are using their data, which raises questions around openness and permission.

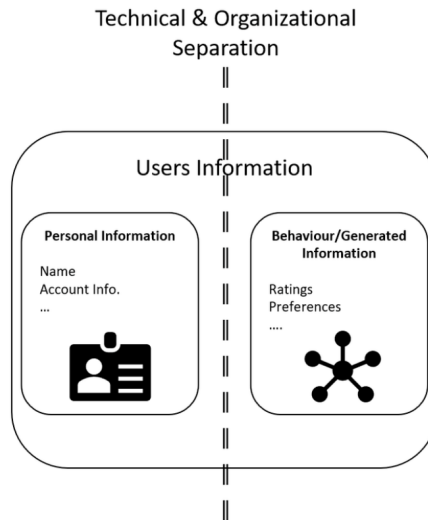


2.2. How recommendation system collecting personal data

One major worry is the possibility of data mis-use. Companies may purposefully or unintentionally use user data for objectives other than those for which it was initially designed or conveyed to users. Selling data to third parties or utilizing it to develop targeted advertising campaigns without user agreement are only two examples of how this mis-use might appear.

Because of this potential abuse or exploitation, this kind of data requires the highest level of security and privacy.

Building a boundary between personal information and data generated by the user's interactions with the system, including browsing history, search queries, product ratings, content consumption patterns, and other usage indicators, such as the behavioral / generated information category, is important for the company utilizing AI-recommendation systems. As this information can nevertheless be used to deduce user preferences, interests, and behaviors even though it might not explicitly expose personal identity.



2.3. The boundary between personal data and customer behavior

The possibility of data breaches and unauthorized access to personal data is greatly decreased by separating personal information, Improving Security by building different security measures in place for every type of data.

Encouraging Adherence: This division is in line with data privacy laws such as the CCPA (Chris Moschovitis-2021) and GDPR (Chris Moschovitis-2021), which mandate varying degrees of security for various types of personal information.

Users' trust is increased when a commitment to data privacy is shown by transparent separation and conscientious data processing procedures, as the company utilize Data reduction system, where they process and gathering just the information required for the intended use. Which is a methods that eliminate or conceal personally identifiable information include data anonymization and pseudonymization, *Data anonymization* is a process by which personal *data* is irreversibly altered. The *anonymized* output will denote some meaning but with the sensitives replaced by different *data*. (Valentina E. Balas-2021)

B- Filter Bubbles:

The way we consume information has drastically changed in the digital age. The emergence of customized algorithms that are intended to satisfy our unique tastes has given rise to a phenomenon called the "filter bubble", this term, which was first used by Eli Pariser, refers to the customized internet experience that creates an echo

chamber of like-minded opinions by excluding content that doesn't match a user's apparent interests. (Eli Pariser-2012)

Advanced algorithms are used by search engines, social networking sites, and news aggregators to forecast our interests based on our historical activity. The algorithm will give preference to content that supports a certain choice if we frequently click on link and search about it. The algorithms construct detailed preference profiles. These profiles become the basis for future content. Likewise, if we spend much of our time with friends and relatives who have similar views.

In a similar vein, our social media feeds will be dominated by viewpoints that align with our beliefs and choices, despite its apparent advantages, this customized experience has serious disadvantages. The filter bubble can limit exposure to different opportunities and services.

C- Algorithmic Bias:

The possibility of algorithmic bias is a serious problem in a time when artificial intelligence and machine learning are taking center stage. Systematic and reproducible mistakes in a computer system that produce unfair, erroneous, or biased results (justthink) are referred to as algorithmic bias.

Algorithmic bias arises as a result of biased Data, when algorithms are trained on large datasets, they will unavoidably reproduce and magnify prevailing societal biases if those biases are reflected in the datasets. For instance, algorithms for facial recognition that were largely trained on the faces of Caucasian people would find it difficult to recognize people with darker skin tones. (Larry Hardesty-2018)

Because algorithm developers are people, their conscious or unconscious biases may affect how the algorithms are developed and used, when biased algorithms generate choices that have a detrimental effect on some groups, these choices may serve to further solidify the underlying prejudices, resulting in a vicious cycle that worsens inequality.

To combat algorithmic prejudice, a multifaceted strategy is needed to fairness and to diversity of the data, in making sure that training datasets are reflective of the population they are meant to serve, reach and are diverse, the companies should detect and lessen biases, by adopting strategies including counterfactual analysis, bias detection algorithms, and fairness audits (Jayesh Rane-2024). Promoting ethical values such as accountability, openness, and user-centered design in the development and use of AI systems in order to provide clear ethical guidelines and regulations that regulate the development and use of AI systems while ensuring accountability and equity.

D- Cold Start Issue:

Our digital lives are now filled with recommender algorithms that help us navigate the vast array of possibilities available on sites like Netflix and Amazon. The cold start problem is a major obstacle for these systems, which mostly rely on user data to provide tailored recommendations. Cold start problem of recommendations can be divided into new user cold start and new content cold start... refers to how to build

a recommender system when a product is in the early stages of development and launch. (Lantao Hu-2024)

When there is little to no prior data available for a new user or new item, the recommender system is unable to ascertain the user's true interests, which makes new user cold starting challenging. Recommender systems find it difficult to make precise and pertinent recommendations in these situations. It makes a challenging to build an insightful recommendations when a new user joins a platform because the algorithm does not have any knowledge of their preferences. This may result in a bad first experience for users and maybe drive them away. Or it can show in the new item when the system is unable to propose a new product, film, or song to appropriate customers when it is first released because it does not have user ratings or feedback. This may make it more difficult for users to find new products and make it more difficult for the platform to display its whole inventory.

The company can fix this by following strategies like facilitated the access to examining the content of new items, such as the genre, keywords, and descriptions. Initial recommendations can be made for new users based on information they gave upon registration, such as age, hobbies, and location. Could combining collaborative filtering with content-based filtering, limited data can be used more efficiently. Even with few data points, collaborative filtering can find users who share similar interests, or share the same demographic information, and social media profiles, gender and age.

3. THE CONTRIBUTION OF AI-POWERED RECOMMENDATION SYSTEM ON DIGITAL MARKETING AND HOW IT'S IMPROVING COMMERCIAL PERFORMANCE

In the hyperconnected world of today, Businesses are constantly searching for innovative ways to engage with customers and boost revenue, No matter what kind of business you run, there's a good chance you're constantly searching for new methods of driving revenue opportunities towards your (Revenue Drivers-2023), The recommendation system driven by AI is one such potent instrument. These advanced algorithms are revolutionizing digital marketing by analyzing enormous amounts of data to forecast consumer preferences and provide tailored recommendations, as this AI-powered recommendation systems have demonstrated their immense value as tools for decision-making, enhancing user experience, and fostering corporate success (Sonia Carole-2024). Through comprehension and utilization of AI advice, companies can improve customer satisfaction, increase revenue, and obtain a competitive advantage, with the help of A collaborative filtering recommender engine collects and analyzes data on people's behavior, activities, and preferences, predicting what they'll like based on their actions' similarity to those of other users. (algolia)

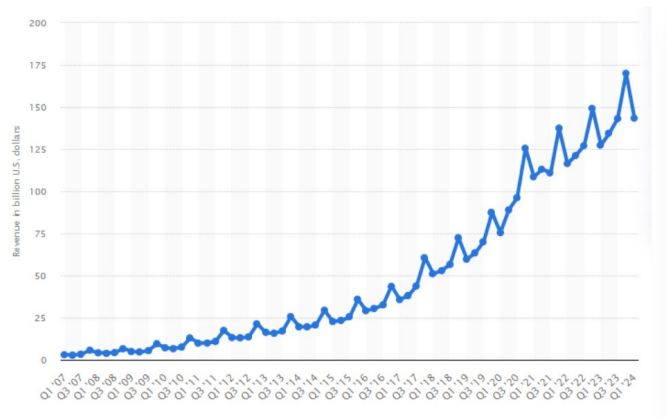
Personalization is a strength of AI-powered recommendation systems. As the AI-driven personalized shopping experiences improve customer retention and drive, on average, 44% of repeat purchases worldwide (useinsider-2024). Through the examination of user behavior, such as past browsing and purchase history, search queries, and even social media activity, these algorithms are able to determine personal preferences and adjust recommendations accordingly, these AI personalization system can creates unique customer experiences by leveraging data, enhancing engagement, and fostering loyalty.(nice.com)

This degree of customization explores individual preferences, requirements, and hobbies in addition to basic demographics. According to study if content is personalized, 51 percent of American consumers say they're more likely to buy something and 49 percent are more likely to be loyal customers (algolia-2024). For instance, a clothes store can propose particular looks to a customer based on their previous purchases, and a streaming service might offer films and television series that fit their favorite stars and genres. A more meaningful and interesting consumer experience is produced by this tailored strategy, strengthening the bond between the brand and the individual.

Increased consumer engagement is a result of personalized recommendations. Businesses may draw users in and promote discovery by making ideas that are both intriguing and pertinent. Users are more likely to stay on the platform longer, explore more, and eventually buy anything when they find content or things they truly like based on AI recommendations. As Customers are more likely to buy products they're genuinely interested in. Moreover, relevant recommended products are likely to enhance user experience. (2024) more page visits, longer dwell times, and improved brand awareness are all results of this enhanced interaction.

Recommendation systems driven by AI may have the biggest effects on profitability and sales growth. By enabling once-unimaginable personalized shopping experiences, this technology has proven to be a win-win: it's charmed the majority of shoppers by catering to their needs, (algolia-2024) these systems raise the possibility of purchasing by making recommendations for pertinent goods and services. For instance, Amazon's recommendation engine, which successfully directs consumers toward items they are likely to purchase, accounts for a sizeable amount of its revenue. Undoubtedly, a significant portion of this success can be attributed to Amazon's seamless integration of shopping recommendations at nearly every stage of the purchasing process. (Stratoflow-2024)

AI suggestions can also lead to opportunities for upselling and cross-selling. Businesses can raise the average order value and create new revenue streams by recommending premium versions of current items or adjacent products.



3.1. Amazon's sales

In addition to generating income, AI-powered suggestions are essential for fostering client loyalty. AI-powered loyalty programmes drive increased customer engagement, retention, and lifetime value by delivering targeted rewards and personalised experiences. (2024) Users grow to trust a company when they routinely receive suggestions that are both valuable and relevant. They believe that the company is more sensitive to their needs and wants, which strengthens their emotional bond. Positive word-of-mouth recommendations, higher client lifetime value, and recurring business are all results of this loyalty.

AI helps companies build stronger relationships with their customers by facilitating more meaningful interactions, such as personalized website content, email marketing campaigns, and product recommendations based on past purchase history. (2024), recommendation engines driven by AI are transforming digital marketing by boosting engagement, personalizing the consumer experience, and boosting sales. Businesses may improve client connections, increase brand loyalty, and obtain a competitive edge in the ever changing digital marketplace by utilizing AI's ability to comprehend and predict user wants. We may anticipate the emergence of ever more advanced and significant recommendation systems as AI technology develops, which will further alter the field of digital marketing and consumer interaction.

3.1. The performance of companies working with AI-powered recommendation systems: Netflix amazon as an example

In the data-driven world of today, the customer experience is paramount. Companies are better positioned to gain the loyalty and, eventually, the money of their clients when they are aware of their wants and preferences. By strategically using AI-powered recommendation systems, two business titans, Netflix and Amazon, have seen extraordinary success. Revenue, customer engagement, and brand loyalty have all increased significantly as a result of these clever algorithms' revolutionary impact on how consumers find items and content. (2024)

The capacity of AI recommendation systems to customize the client journey is at the core of this success. Through the examination of extensive user data, such as viewing preferences, past purchases, and search terms, these algorithms are able to forecast the kinds of material or goods that a user is most likely to find enjoyable. As these systems leverage user data and advanced algorithms to make personalized recommendations, ultimately increasing user engagement and satisfaction. (2024).

The one-size-fits-all marketing tactics of the past are in sharp contrast to this customized approach. For instance, Netflix claims that its recommendation algorithm finds more than 80% of the content that customers watch. (Case Study: Netflix) Users are kept interested and returning for more by this customized experience, which encourages a sense of fulfillment and discovery.

AI recommendation systems not only enhance user experience but also generate significant revenue for organizations. For example, Amazon claims that its recommendation engine generates 35% of its income (rejoiner-2021). By gently urging consumers toward things they may be interested in but haven't yet thought about, these systems serve as effective sales tools. This focused strategy can raise total sales and conversion rates considerably. (2024).

Furthermore, by fostering understanding and trust, AI recommendations foster client loyalty. Customers gain confidence in the platform's capacity to meet their demands when they routinely obtain recommendations that align with their preferences. Customers are encouraged to remain loyal to a platform that seems to

"get" them and provides a carefully chosen assortment that suits their preferences as a result of this confidence. (2024)

However, ethical use of AI recommendation systems is essential. Among the crucial considerations are algorithmic bias, data privacy concerns, and the possibility of echo chambers, when individuals are only exposed to information that supports their own opinions. Businesses must give consumers a say in their recommendations, put an emphasis on openness in the gathering and application of data, and endeavor to create varied and objective algorithms.

AI recommendation algorithms are revolutionizing industries like Netflix and Amazon. These technologies have proven to improve client satisfaction, loyalty, and eventually income by providing a tailored and interesting user experience. AI technology will undoubtedly play an even bigger part in influencing consumer interactions and propelling company expansion as it develops further.

To preserve user confidence and create enduring client connections, it is imperative to guarantee the responsible and moral creation and application of these technologies.

4. THE DIGITAL ERA AND ITS CONTRIBUTION TO THE BUSINESS-CUSTOMER RELATIONSHIP: SURVEY ANALYZING

4.1. Data analysis method

We focused on an internet survey with the sales representatives of the interaction of the potential customers with AI-Recommendation systems and their suggestion. Indeed, to carry out our work and meet our study objective, which is to determine the impact of digitalization on the commercial performance, we opted for a practical case, in this case by a survey using a questionnaire as a means of collecting information. The conduct of the questionnaire was intended for a sample of 25 people, but we only collected 15 participates, given the hard sharing the survey with people, and most of the them didn't want to practice in this study, part of them lack of time and the others lack of trust, which prevented us from carrying out our survey in better conditions, and taking more insight on how the AI-recommendation system effecting their daily life choices and purchase behavior.. Although we accompanied our research with a text which explains the academic nature of our research, we noted a certain resistance on the part of some people, because they hesitated to answer us and give us the questionnaires.

The general purpose of this survey is to evaluate the level of use of digital means by normal people and their impact on the choices that they take, Data processing tools The processing of the results was done using Google forms, which allows us to perform automated calculations and thus establish representative tables and graphs in order to interpret the information collected.

Quantitative survey was filled by 15 anonymous sample of people from different back ground and genders, in order to collect empirical data for this study, AI-Powered Recommendation Systems: Exploring Their Impact on Customer-Business Interactions, 29 questions covering briefly list important subjects, such as

"demographics, social media usage, purchase attitudes, and how much they rely on the internet in general and the recommendation systems in particular, The questions were constructed using a range of Likert scales, multiple-choice, and open-ended questions, and the relationship between consumer demographics, purchasing behavior, and AI recommendation systems was examined.

4.2. Survey

Dear Participant,

My name is Fatma Sbiai, an MBA student at Haliç University currently conducting research for my thesis. This study, titled "**AI-Powered Recommendation Systems: Exploring Their Impact on Customer-Business Interactions**," examines the emerging role and influence of AI-driven recommendation systems on customer behavior and business practices.

Purpose:

The goal of this survey is to collect insightful information from people who have dealt with companies that use recommendation systems driven by artificial intelligence. You will make a substantial contribution to our understanding of how these systems affect several facets of customer-business interaction, such as purchasing decisions, brand perception, and general satisfaction, by sharing your experiences.

Confidentiality:

Your involvement is completely anonymous and optional. Every response will be handled with the utmost confidentiality and used only for scholarly research. You are free to leave the survey at any moment without facing any repercussions.

Time Commitment:

The survey is estimated to take approximately 5 minutes to complete. However, feel free to take your time and provide thoughtful responses, as they are crucial for a comprehensive analysis.

I sincerely appreciate your time and valuable contribution to this academic research. Your participation will play a vital role in advancing our understanding of the complex interactions between AI-powered recommendation systems and consumer behavior in the evolving business landscape.

Sincerely,

Fatma Sbiai

MBA Candidate, Haliç University

4.3. Data analysis method

Survey: AI-Powered Recommendation Systems on Customer-Business Interactions (Fatma Sbiai-2024)

1. Demographic Information

1. Age range

- 18-24
- 25-34
- 35-44
- 45-54
- 55+
- Other: _____

2. Education:

- High School Diploma/GED
- Some College
- Associate's Degree
- Bachelor's Degree
- Master's Degree
- Ph.D. or Doctoral Degree
- Other: _____

3. Employment Status:

- Employed Full-time
- Employed Part-time
- Self-employed
- Unemployed
- Retired
- Student
- Other: _____

4. Marital Status:

- Married
- Single
- Other: _____

5. Overall Technology Usage “Tech Savvy”: On a scale of 1 (Minimal User) to 5 (Tech Expert), how comfortable are you with technology?

Not at All Slightly Somewhat Tech Savvy Very Tech Savvy

-1- -2- -3- -4- -5-

2. Lifestyle and Consumption Habits

6. Do you regularly use streaming services or devices?

Yes

No

7. If yes, what do you typically watch or listen to?

Movies - TV shows - Music

Other:

8. How much do you enjoy these activities? (Rate each on a scale of 1 (Strongly dislike) to 5 (Strongly enjoy))

	Strongly dislike	dislike	Neither enjoy nor dislike	enjoy	Strongly enjoy
Watching movies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Watching TV shows	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listening to music	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9. How often do you use streaming services to access entertainment content?

- Daily
- Several times a week
- Once a week
- Less than once a week
- Never

10. What aspects are most crucial to you when selecting a streaming service? (Select all that apply)

Price

Content library

Video quality

User interface

Recommendations

Other

3. **AI Recommendations**

11. Have you heard of AI-powered recommendations used by streaming platforms

Yes

No

12. If yes, how do you think they affect your viewing or listening choices?

They help me discover new things I might enjoy

They rarely influence my decisions

I prefer to choose on my own

I distrust AI recommendations and avoid them

13. How do you feel about personalized suggestions made by AI algorithms?

Positive

Neutral

Negative

14. Do you find these suggestions useful or intrusive?

Useful

Neutral

Intrusive

4. **Past Viewing Behavior**

15. Can you recall a time when an AI recommendation helped you find something you enjoyed?

Yes

No

16. Have you ever received an AI recommendation that you thought was inappropriate or irrelevant?

Yes

No

17. If yes, how did you react to that suggestion?

18. How often do you rely on AI recommendations when making decisions about your streaming content?

Always

Often

Sometimes

Rarely

Never

19. Do you prefer a smaller selection of curated content or a wider range of options, even if it includes less relevant recommendations?

Narrow curated selection

Wider range with some irrelevant recommendations

5. **Profiles of Consumers and the Impact of AI**

20. Who do you think benefits most from AI-powered recommendations on streaming devices? (Select all that apply)

Casual viewers

Genre enthusiasts

New users

Everyone

21. Do you think AI recommendations are tailored to a specific audience, or can they be useful for users with varied preferences?

Tailored to specific audiences

Adaptable to varied preferences

Both Tailored and Adaptable

Depends

22. How do you think AI recommendations affect the chances of discovering new content?

Positive

Negative

No impact

23. Do you believe AI recommendations can effectively capture the nuances of individual preferences and tastes?

Yes

No

Partially

6. **Attitudes of Consumers and AI Recommendations**

24. Have you ever worried about AI algorithms manipulating or influencing your viewing or listening habits?

Yes

No

25. Do you think AI recommendations can make you happier with streaming services in general?

Yes

No

Unsure

7. **Projections of future AI integration**

26. How do you imagine AI-powered recommendations on streaming devices will evolve in the future?

27. What additional features or functionality would you like to see incorporated into AI recommendation systems?

28. Do you anticipate any potential drawbacks or difficulties as AI becomes more integrated into streaming services?

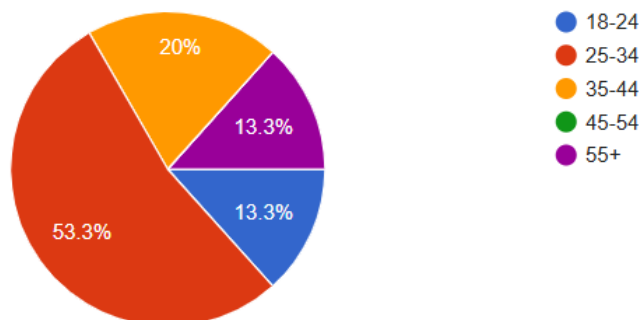
29. How do you think AI recommendations will change over time to better suit individual preferences and tastes?

4.4. Data Analyzing: AI - Recommendations for Streaming Services

This survey data provides valuable insights into consumer attitudes and experiences with AI-powered recommendations on streaming platforms. Here's a breakdown of the key findings:

Demographics:

- **Age:**

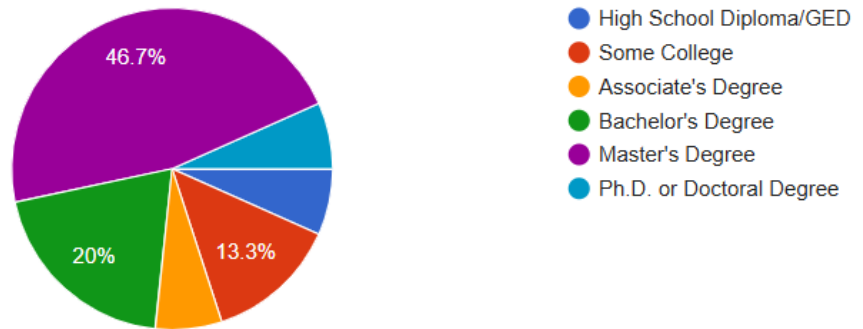


4.1. Pie chart for age

The majority of respondents (53.3%) fall within the 25-34 age group, followed by those aged 35-44 (20%).

This age distribution suggests a significant reliance on technology and recommendation systems among Millennials, a generation characterized by early exposure to technology and a lifelong familiarity with its rapid evolution.

- **Education:**

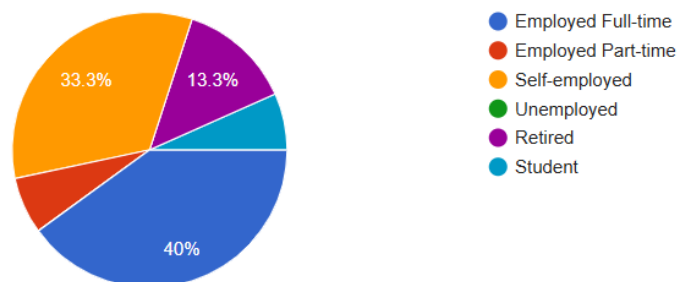


4.2. Pie chart Education

Showing a positive correlation with receptiveness to technological advancements, as the data reveals that 46.7% of respondents possess a postgraduate degree, while 20% hold a Bachelor's degree.

This suggests a higher likelihood of individuals with advanced education to embrace new technologies, exhibit openness to change, and actively seek out novel techniques and systems.

- **Employment:**

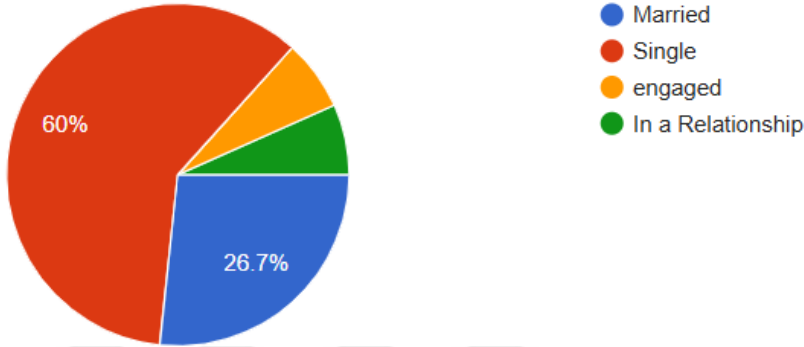


4.3. Pie chart Employment

Most respondents are either employed full-time (40%) or freelancer (33.3%). Which mean that (73.3%) are actively engaged in the workforce, either as full-time employees or freelancers. This indicate a focus on employment status within the

survey population. The high proportion of employed individuals suggests a relatively active and economically engaged population. This could have implications for consumer spending, economic growth, and the overall economic health of the region or industry being studied.

- Marital Status:**



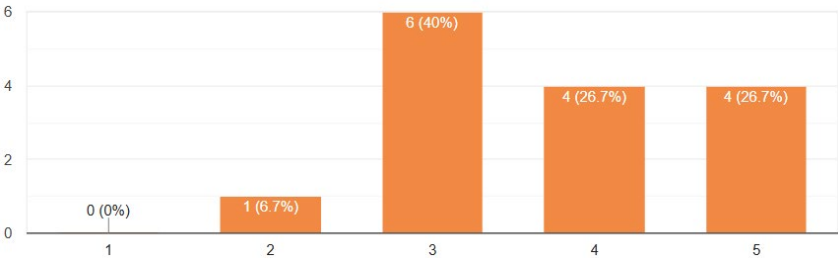
4.4. Pie chart Marital status

60% of respondents are married.

This demographic may face constraints on time for in-depth information searches, potentially leading to increased reliance on readily available information and a decreased inclination to critically evaluate its suitability for their individual needs and circumstances.

Technology Usage:

- Tech Savvy:**

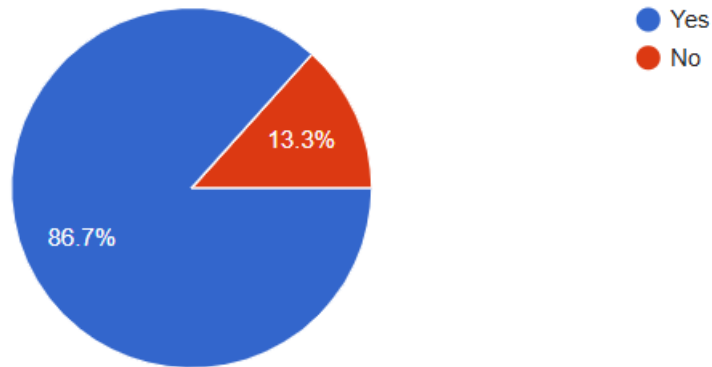


4.5. Line graph Tech savvy

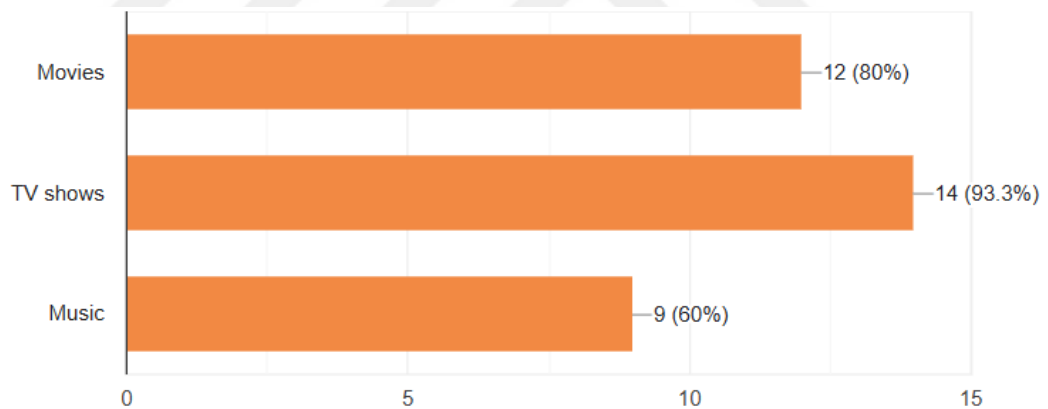
A significant majority (66.7%) of respondents rate themselves as either "Tech Enthusiast" (40%) or "Tech Expert" (26.7%). This indicates a generally high level of technological comfort and familiarity within the surveyed population.

The "Tech Enthusiast" category has the highest proportion (40%), suggesting a substantial segment of the population that is actively engaged with and interested in technology, and "Tech Experts" (26.7%) presence of a significant proportion of indicates a high level of technological proficiency and expertise within the population. This could have implications for the adoption and utilization of new technologies.

- **Streaming Habits:**

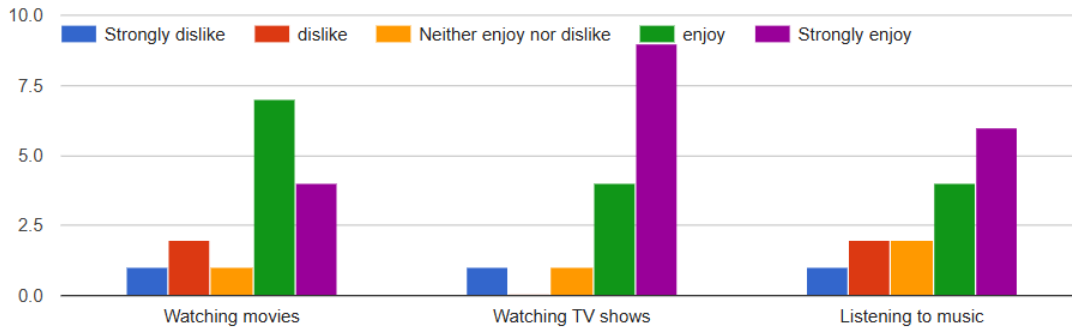


4.6. Pie chart Stream habits



4.7. Line graph Stream habits

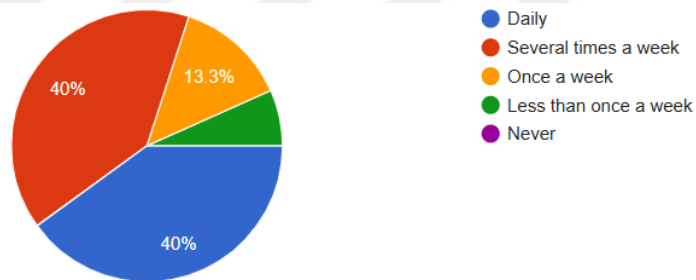
86.7% of respondents regularly use streaming services, primarily for watching TV shows (93.3%), 80% enjoy watching movies, and the other love listening to music (60%) on the AI-Powered Recommendation Systems devices. They enjoy these activities, with average ratings of "4" (enjoy) or higher.



4.8. Line graph Satisfaction

People surveyed generally enjoy watching TV shows and listening to music more than watching movies, suggesting a neutral sentiment. There is also a noticeable minority who dislike or strongly dislike watching movies. Possible Interpretations that TV shows and music might be perceived as more readily accessible and engaging than movies, which may require more time commitment and attention.

- **Streaming Frequency:**



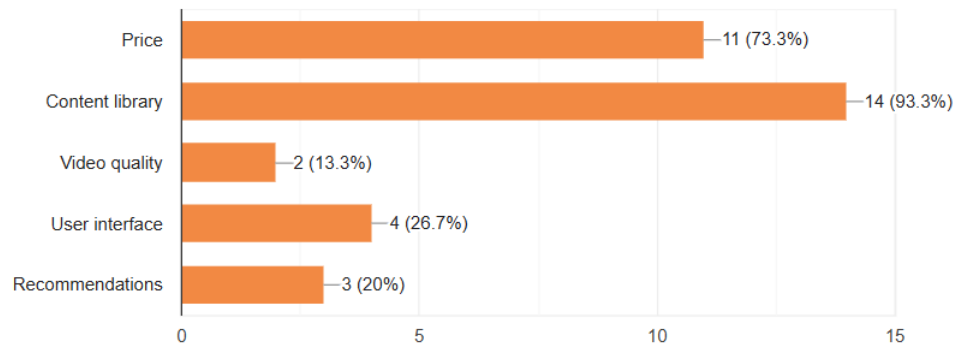
4.9. Pie chart Streaming frequency

- 40% of users access streaming services "several times a week." This indicates a consistent and potentially significant time commitment to these platforms.

Another 40% use streaming services "once a week." This suggests a regular habit, although perhaps with less intense usage than the first group.

The combined 80% across these two categories highlights the increasing role of streaming services in entertainment consumption habits, and may the wide variety of content available on streaming platforms caters to diverse interests and may encourage frequent use.

- **Service Selection:**



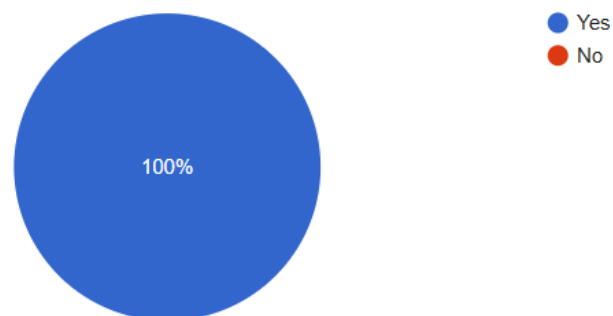
4.10. Line graph Service selection

The chart illustrates the importance of various factors when consumers choose a streaming service. "Content Library" 93.3% is the most critical factor, followed closely by "Price." 73.3% Factors like "Video Quality," "User Interface," and "Recommendations" are considered less important.

This indicating that the availability and diversity of movies, TV shows, and other content are paramount in their decision-making process, and price is the second most influential factor, as Consumers are conscious of the cost associated with streaming services and are likely to compare prices between different platforms, and more important than the clear picture and sound quality.

AI Recommendations:

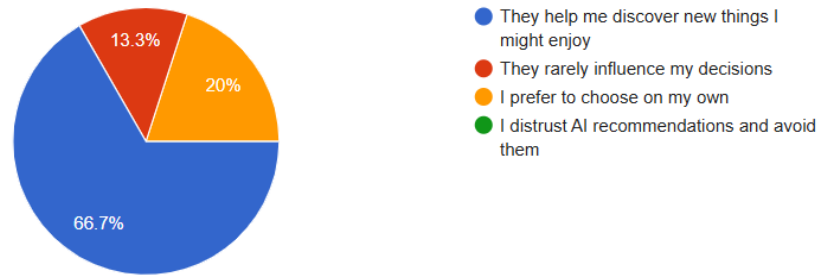
- **Awareness:**



4.11. Pie chart Awareness

The overwhelming majority (100%) of respondents are aware of AI-powered recommendations on streaming platforms. This suggests a high level of familiarity with this technology among the surveyed population.

- **Perception:**

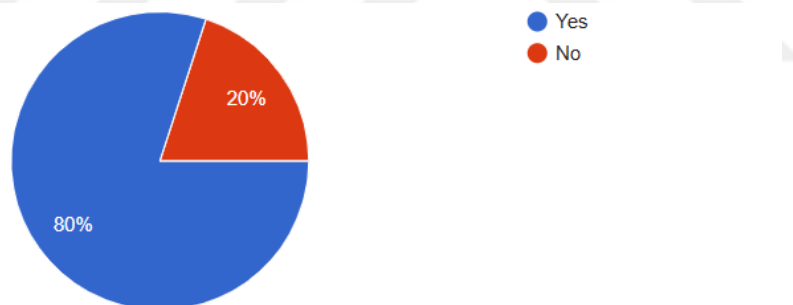


4.12. Pie chart Perception

A significant majority (66.7%) of respondents believe that AI recommendations help them discover new things they might enjoy. This suggests that users see value in AI's ability to broaden their entertainment horizons.

Meanwhile 20% of respondents indicate that AI recommendations rarely influence their decisions. This group likely prioritizes personal preferences and independent exploration.

- **Past Experiences:**

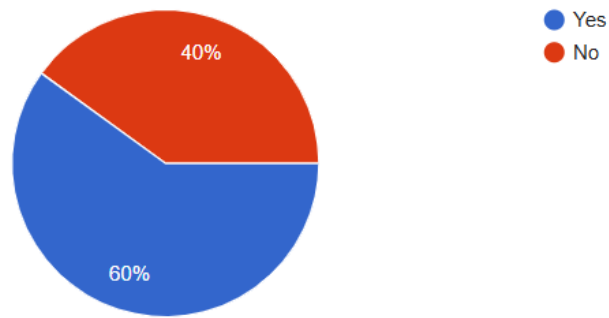


4.13. Pie chart Past experiences

A significant majority of respondents, 80%, have had a positive experience with AI recommendations. They were able to find something they enjoyed based on an AI suggestion, and only 20% of respondents could not recall an instance where an AI recommendation led them to something they enjoyed.

The high percentage of positive experiences suggests that AI recommendations are generally effective in helping users discover content they like, and the results indicate that AI algorithms can be valuable tools for enhancing the streaming experience by suggesting new and enjoyable content.

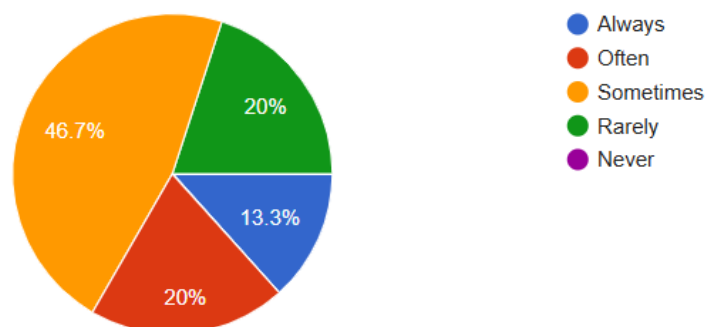
- **Trust:**



4.14. Pie chart Trust

40% of the 15 respondents have encountered AI recommendations that they considered inappropriate or irrelevant. This suggests that a considerable number of users have experienced negative experiences with AI-powered suggestions. Which indicate that there is room for improvement in the accuracy and relevance of AI recommendations. Algorithm refinement is necessary to minimize the occurrence of inappropriate or irrelevant suggestions. As The high percentage of inappropriate recommendations can negatively impact user experience, leading to frustration and potentially decreasing trust in AI-powered systems, which is not the result that mot of companies are seeking, The data highlights the need for continued development and refinement of AI algorithms to better understand and cater to individual user preferences, like Implementing robust content filtering mechanisms can help mitigate the occurrence of inappropriate or irrelevant recommendations.

- **Following the recommendation**



4.15. Pie chart Following the recommendation

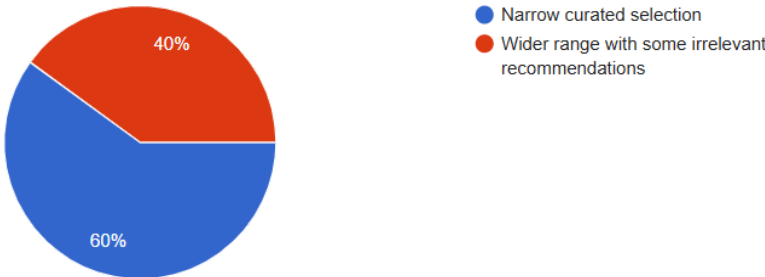
The responses shows how frequently respondents rely on AI recommendations when making decisions about their streaming content.

A significant portion of respondents (46.7%) "Sometimes" rely on AI recommendations. This suggests a balanced approach, where users consider AI suggestions alongside their own preferences.

20% of respondents "Often" rely on AI recommendations, indicating a moderate level of trust and utilization, equal to the 20% of respondents with "Never" rely on AI recommendations, indicating a strong preference for personal choice and control.

While a significant portion of users utilize AI recommendations to some extent, a considerable number prefer independent exploration. Understanding these preferences is crucial for developing effective and user-friendly AI recommendation systems.

- **Preferability**



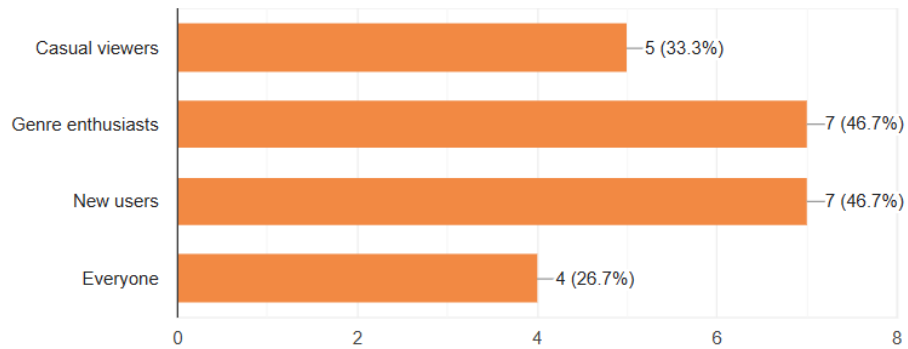
4.16. Pie chart Preferability

A majority of respondents, 60% prefer a narrow range of options. This indicates a value for focused recommendations and a preference for avoiding irrelevant suggestions.

And in the other hand 40% of respondents prefer a wider selection of curated content even if it includes less relevant recommendations. This suggests a preference for exploration and discovery over a curated, but potentially limited selection.

Streaming platforms should consider offering options that cater to both preferences. This could include personalized recommendation algorithms that allow users to adjust the level of curation, providing users with control over the level of curation and the ability to filter recommendations based on their preferences can enhance user satisfaction.

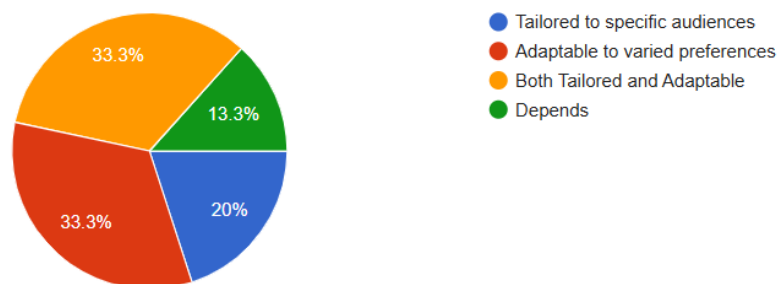
- **Profiles of Consumers and the Impact of AI**



4.17. Line graph Profiles of customers

The highest percentage of respondents (46.7%) believe that both genre enthusiasts and new users benefit most from AI-powered recommendations. As genre enthusiasts AI can help them discover new content within their preferred genres, and new users AI can help them navigate the vast content libraries and find content that aligns with their interests.

Streaming platforms should focus on developing algorithms that effectively cater to the needs of genre enthusiasts and new users with the high percentage of respondents who believe everyone benefits suggests that AI recommendations have the potential to enhance the streaming experience for a wide range of users.

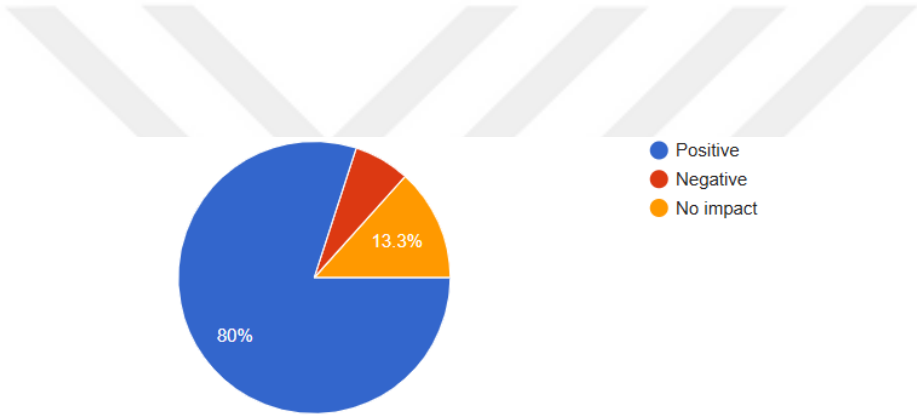


4.18. Pie chart Preferability of recommendation

A significant portion of respondents (33.3%) believe that AI recommendations can be both tailored to specific audiences and adaptable to varied preferences. This suggests a recognition of the complex nature of recommendation systems and the ability of AI to cater to diverse user needs.

As 33.3% of respondents believe that AI recommendations are adaptable to varied preferences. This indicates a belief in the potential of AI to provide personalized recommendations for users with diverse interests and tastes.

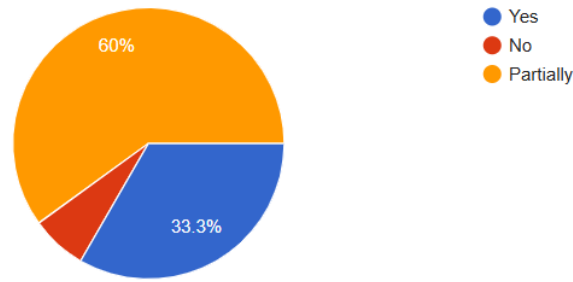
While 20% of respondents believe that AI recommendations are primarily tailored to specific audiences. This suggests a concern about the potential for AI to create echo chambers or limit user exposure to new and diverse content. Which indicate that Streaming platforms need to strike a balance between providing personalized recommendations and exposing users to new and diverse content, while providing users with transparency and control over the personalization process, such as the ability to adjust recommendation settings, can enhance user satisfaction and trust.



4.19. Pie chart Recommendation tailoring

A significant majority of respondents, 80%, believe that AI recommendations have a positive impact on discovering new content. This suggests that users perceive AI as a valuable tool for content discovery.

Only 13.3% of respondents believe that AI recommendations have no impact on discovering new content. This suggests that concerns about AI limiting discovery are relatively low within this sample, and that users rely primarily on their own exploration and discovery methods.



4.20. A Pie chart Impact on the user choice

The largest portion of respondents (60%) believe that AI recommendations can only "Partially" capture the nuances of individual preferences and tastes. This indicates a degree of skepticism regarding the ability of current AI algorithms to fully understand and cater to individual preferences.

33.3% of respondents "Yes," believe that AI recommendations can effectively capture the nuances of individual preferences and tastes. This suggests confidence in the potential of AI to personalize recommendations.

6.7% of respondents "No," believe that AI recommendations cannot effectively capture the nuances of individual preferences and tastes. This suggests a concern about the limitations of AI in understanding and catering to individual tastes.

The high percentage of respondents who believe AI recommendations can only "Partially" capture individual preferences highlights the need for continued research and development to improve the accuracy and personalization of AI algorithms.

By providing users with transparency and control over the personalization process, such as the ability to adjust recommendation settings, can enhance user satisfaction and trust, and Acknowledging the limitations of current AI algorithms and actively working to address them is crucial for building user trust and improving the effectiveness of AI recommendations.

5. CONCLUSION

This study highlights a key change in today's corporate environment: the necessity of using technology to comprehend and meet changing client demands. AI-recommendation systems are a key technology in the field of customer-business interactions, facilitating engagement and providing tailored experiences.

But achieving these systems' full potential calls for a sophisticated strategy. An analysis of the literature highlights how important it is to understand the benefits and drawbacks of various recommendation systems. Data analysis offers important insights into user preferences, behaviors, and how suggestions affect their experience, especially when done through user surveys and streaming platform data analysis. Best practices for incorporating AI recommendations into company plans are demonstrated by case studies, which also highlight successful implementations, for how much these system are affecting the customer-business relationship, which lead automatically to a successful business and profitable company.

The study also highlights how important it is to address ethical issues including algorithmic bias, data privacy, and manipulation potential. Gaining consumers' trust is crucial, and this calls for openness, user control over suggestions, and a dedication to moral AI development.

Future developments in AI-powered suggestions are probably going to include more context awareness, customization, and social feature integration. As these systems get more complex, it's critical to keep an eye on how they affect user experience and make sure they meet user expectations.

To sum up, recommendation systems driven by AI present a number of chances to improve client encounters, increase engagement, and cultivate enduring partnerships. Businesses can open up new growth opportunities and prosper in the rapidly changing digital landscape by using these technologies sensibly and morally.

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How Artificial Intelligence Enhances User Experience in the Digital World, 2024

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STATE OF EDUCATION:

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2022.2025, Haliç University, MBA, Marketing

2012.2015, ISBAT: Higher Institute of Fine Arts of Tunis, Master's Degree, Fine Arts

• Undergraduate:

2019.2021, CFT-Tunis: Tunis Technology Training Center, Tunis, Superior technician certificates, Audio-visual

2012.2015, ISBAT: Higher Institute of Fine Arts of Tunis, Bachelor's Degree, Fine Arts

WORK EXPERIENCE:

2024. Present Quality Analysis Assurance Audit specialist-Customer Support
Teleperformance, Turkey

2024. Quality Assurance Audit specialist-Moderation
Teleperformance, Turkey

2023. 2024 TikTok AR HTD agent
Teleperformance, Turkey

2018. Freelance photographer/video editor

2022.2023 Videographer/ video editor
Elkoujina, Tunisia

2022.2023 Animated video editor
FX production, Tunisia

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Arije production, Tunisia

2021.2022 camera operator, video editor
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2017.2018 Art teacher
Jannet el Mourouj Kindergarten, Tunisia

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