

What Factors Contribute to a **Manga**'s Success?

Solving business problem through analytics and predictive model

Agenda

1. Business Problem

2. Background knowledge

3. Insights

4. Model

5. Recommendation



Business Problem

Publishers search for best formulas to create the next hit

What is success?



Quality



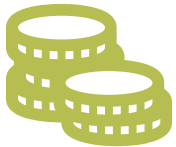
Review score on MAL* > 3rd quartile



Popularity



Number of time scored on
MAL > 3rd quartile



Monetary



Adapted to animation or not

How to discover?

- Provide insights to publishers by storytelling through visualization and interactive dashboard
- Build up a machine model to predict if a manga will be animated using features like genre, theme, and popularity

matplotlib

Visualization



Predictive Model



Dashboard

* MyAnimeList, the largest ACG forum in western communities

Data collection and cleaning

Data Collection

The logo for MyAnimeList, featuring the text "MyAnimeList" in white on a blue rectangular background.

MyAnimeList, the largest
ACG forum in the western
communities

The logo for Jikan API, featuring the text "Jikan" in white and "API" in blue on a dark blue rectangular background.

Jikan, the public web API for
MyAnimeList



Using Python modules like
requests, and time to write a
web scraping program

Data Cleaning





Background Knowledge



Manga is a deeply ingrained cultural phenomenon in Japan

What is Manga?

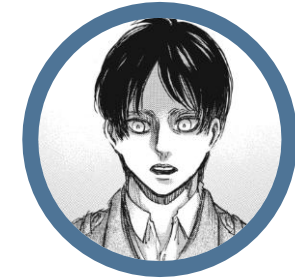


- Japanese comic
- Major pop culture of Japan, with influence increasing around the world
- Cover multiple genres, themes, and demographics

Demographics



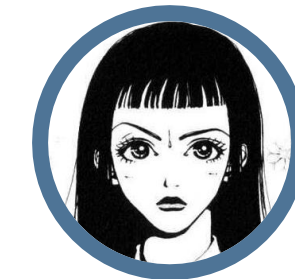
Shounen
(Teenaged Boy)



Seinen
(Adult Male)



Shoujo
(Teenaged Girl)

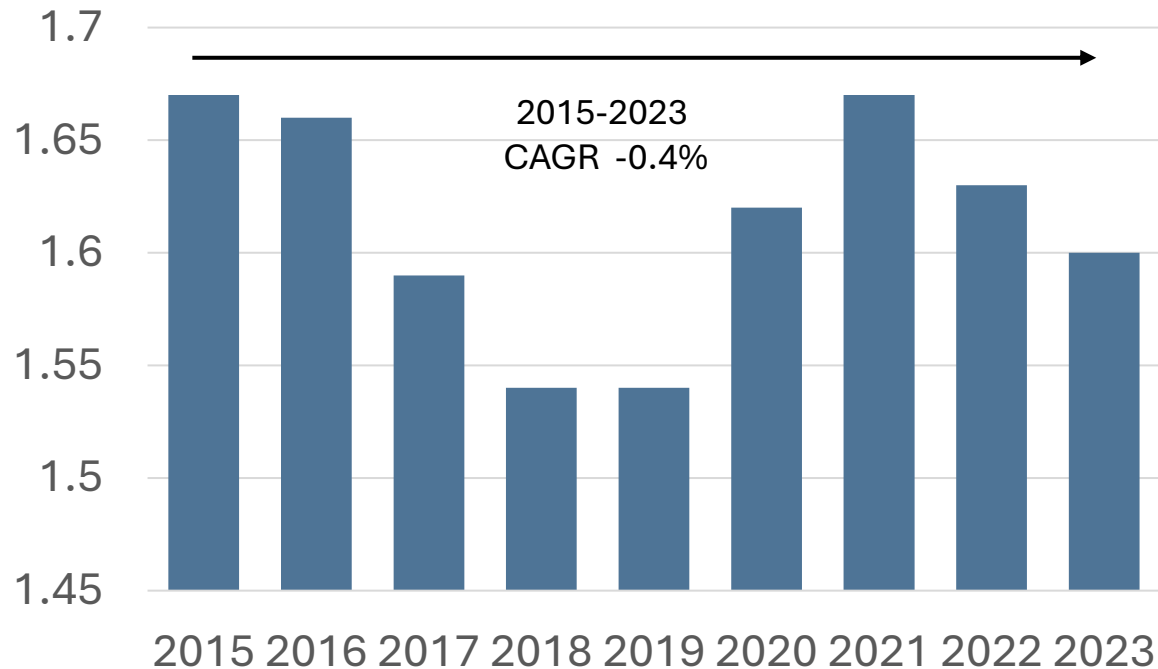


Josei
(Adult Female)



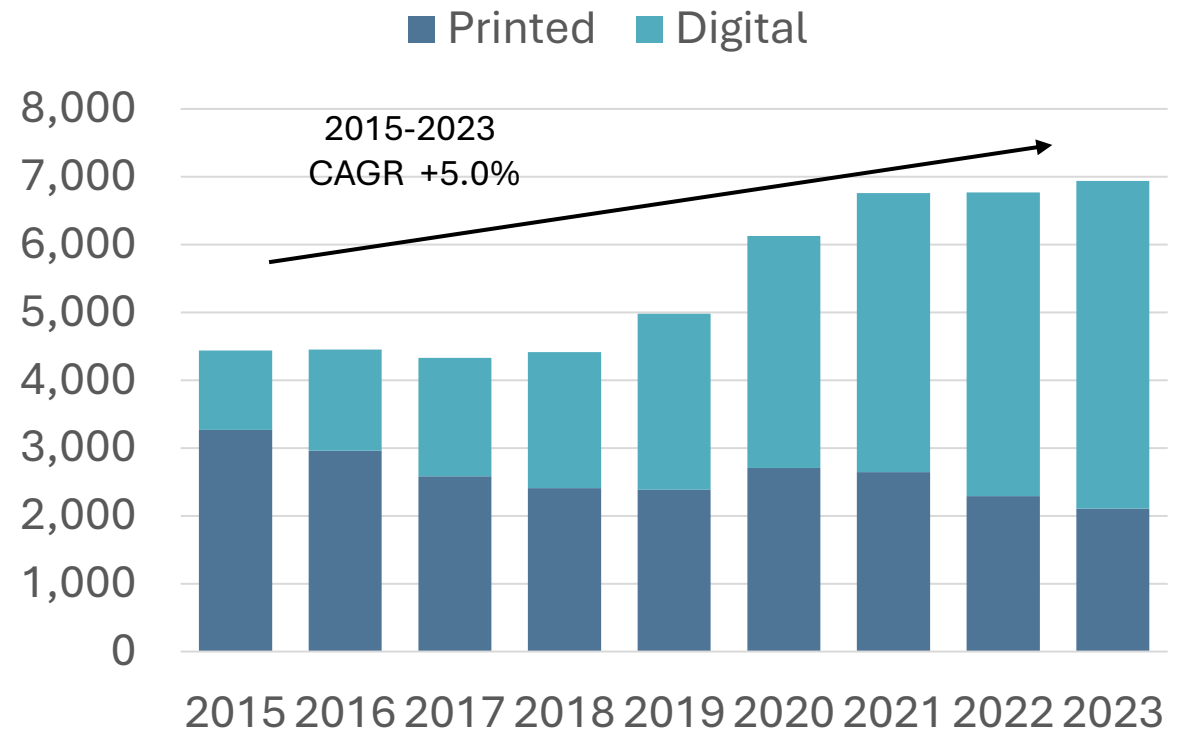
Manga's popularity has grown consistently through the years

Sales of Japan Publishing Industry
(JPY trn)



Publishing industry's growth has been stagnant for extended period

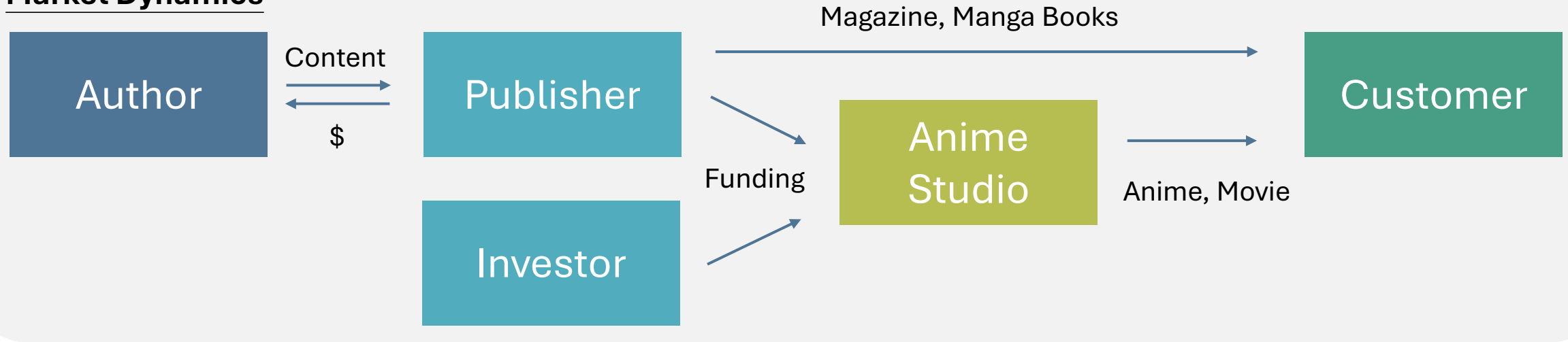
Manga Sales in Japan (JPY bn)



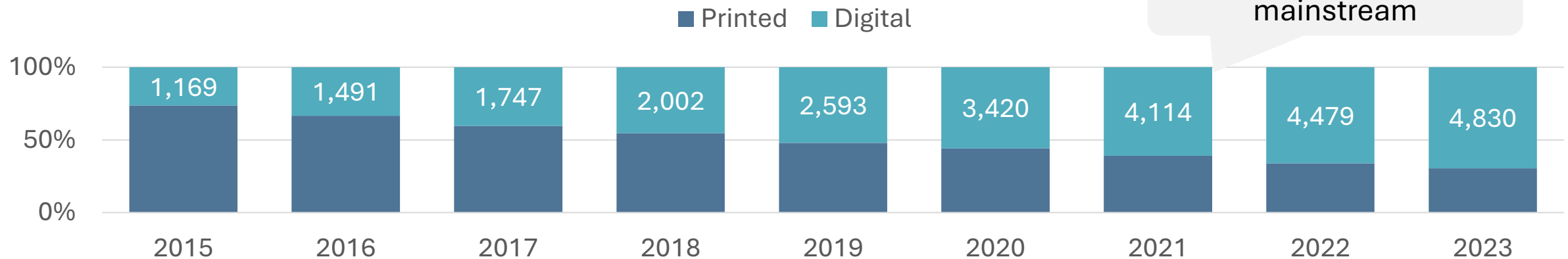
As a subsector of publishing, manga continue to grow at a high clip at the same moment instead

Digital sales has become the mainstream sales channel

Market Dynamics



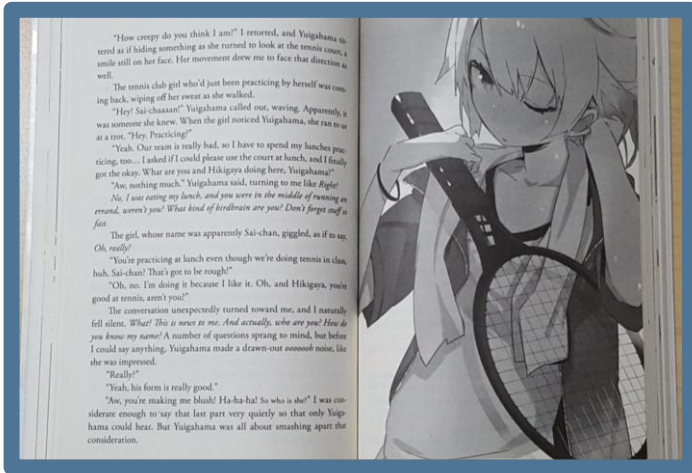
Manga Sales in Japan (JPY bn)





Substitutes for manga have developed continuously

Light Novel



- Primarily targeting young adults
- Characterized by its relatively short length, easy-to-read text
- Often accompanied by manga-style illustrations

Manhua (Chinese)



- Chinese comics
- Incorporates elements of Chinese culture, history, and mythology, providing a distinct cultural flavor
- Mostly are fully colored

Manhwa (Korean)



- Korean comics
- A significant portion is published as webtoons, which are digital comics designed for vertical scrolling on smartphones and computers.
- Mostly are fully colored

Animation's business impact provides monetization opportunities

Advertising effect



Demon Slayer

- Before its anime adaptation, the manga had sold around 3.5 million copies. After, sales skyrocketed to over 150 million copies.



Frieren: Beyond Journey's End

- The manga's sales doubled from 10 million to over 20 million copies following the release of its anime adaptation.

IP Monetization



Merchandise



Movie



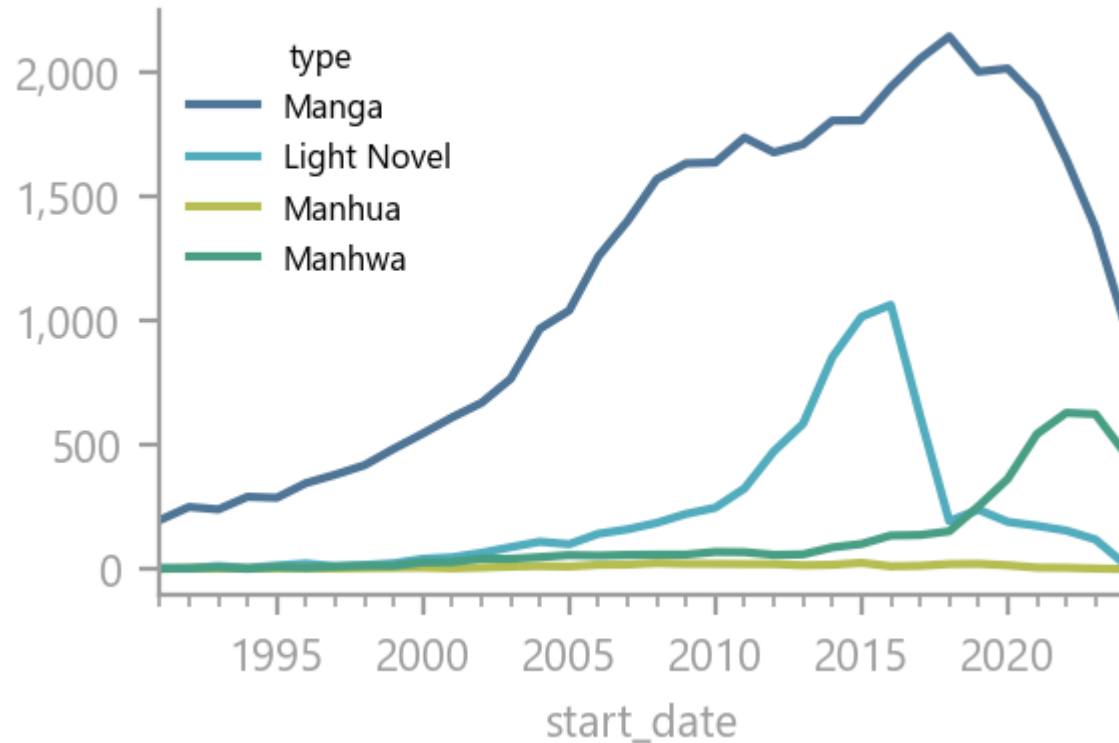
Events



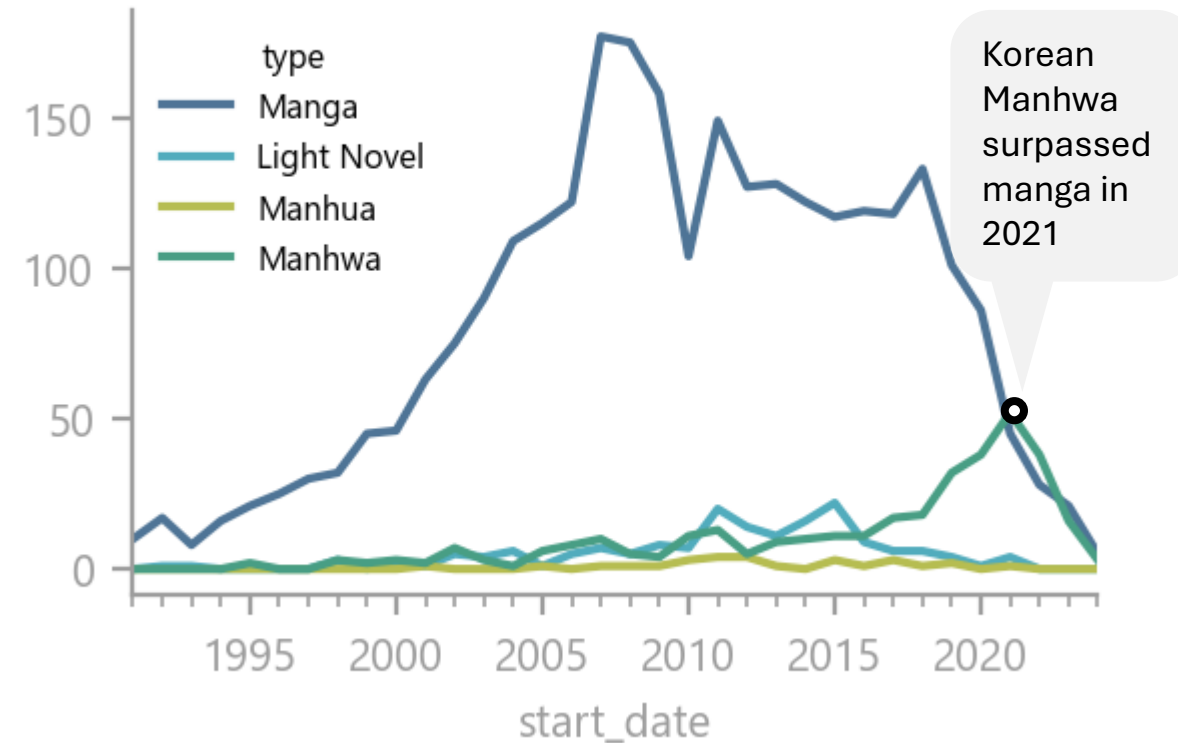
Insights

Korean Manhwa catches up Manga for both quantity and quality

Number of Titles from 1991 to 2024



Number of Quality* Titles from 1991 to 2024



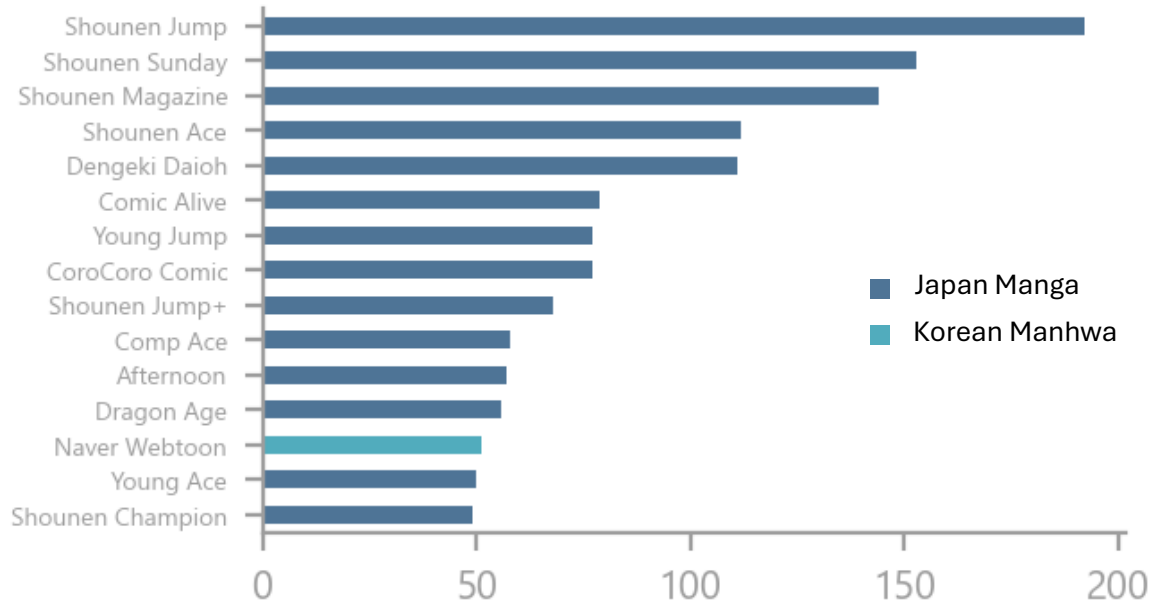
Japanese manga dominates for 2 decades, while Korean manhwa follows closely behind recently.

Besides quantity, Korean manhwa performs even better in terms of quality.



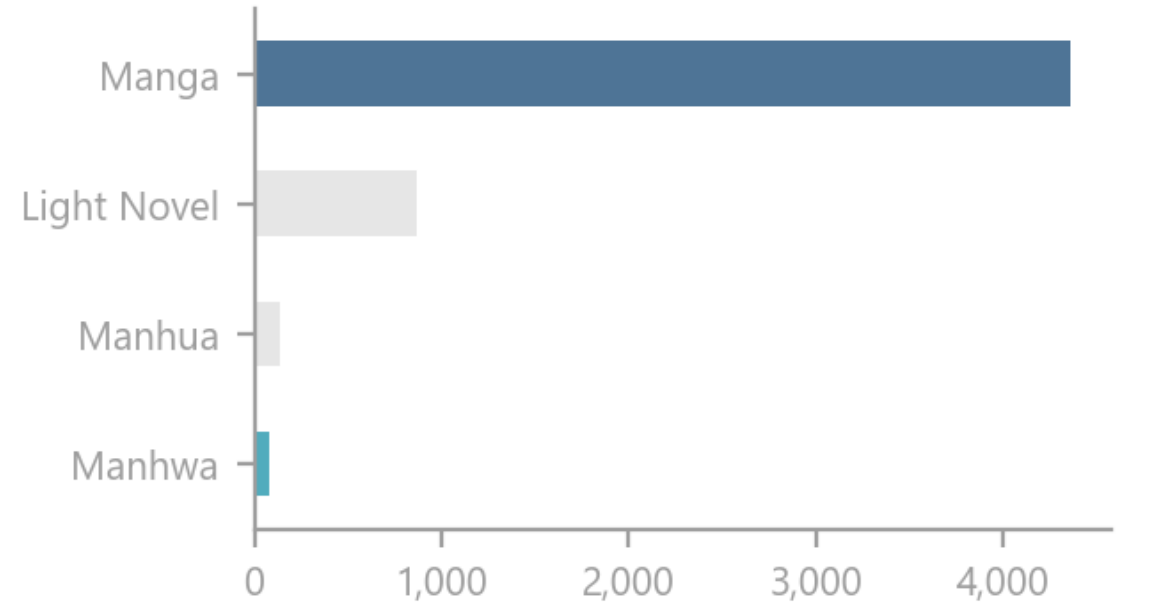
Japan's ecosystem is still more favorable for anime adaptation

Number of Titles Animated by Serializations



For top 15 media platform (e.g., magazine, mobile apps) with title animated, Korean manhwa only has one appearance.

Number of Titles Animated by Media Type

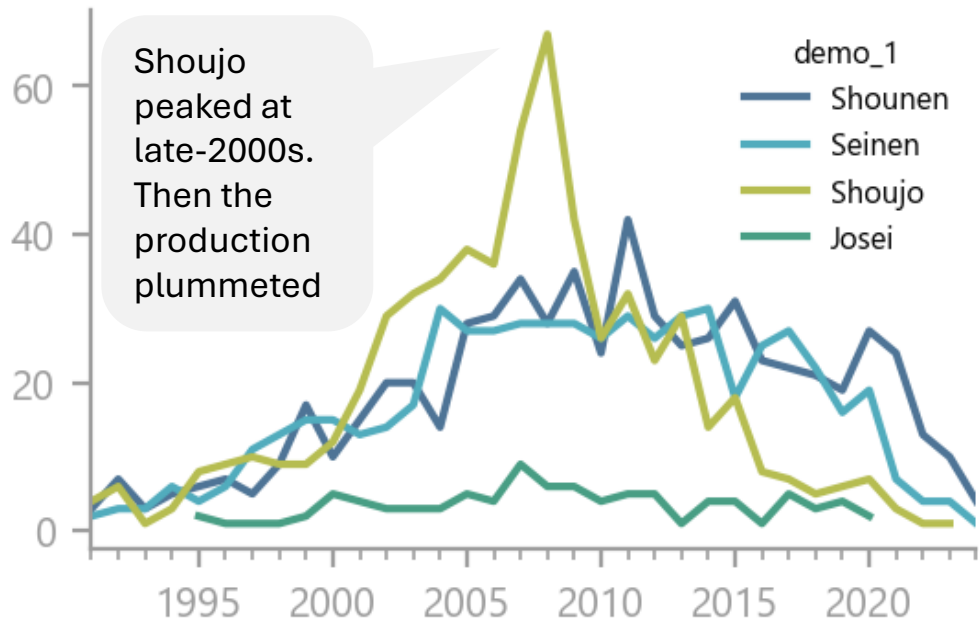


For media type, Korean manhwa ranks last for the number of titles getting adaptation to anime, which is a major source of monetization.

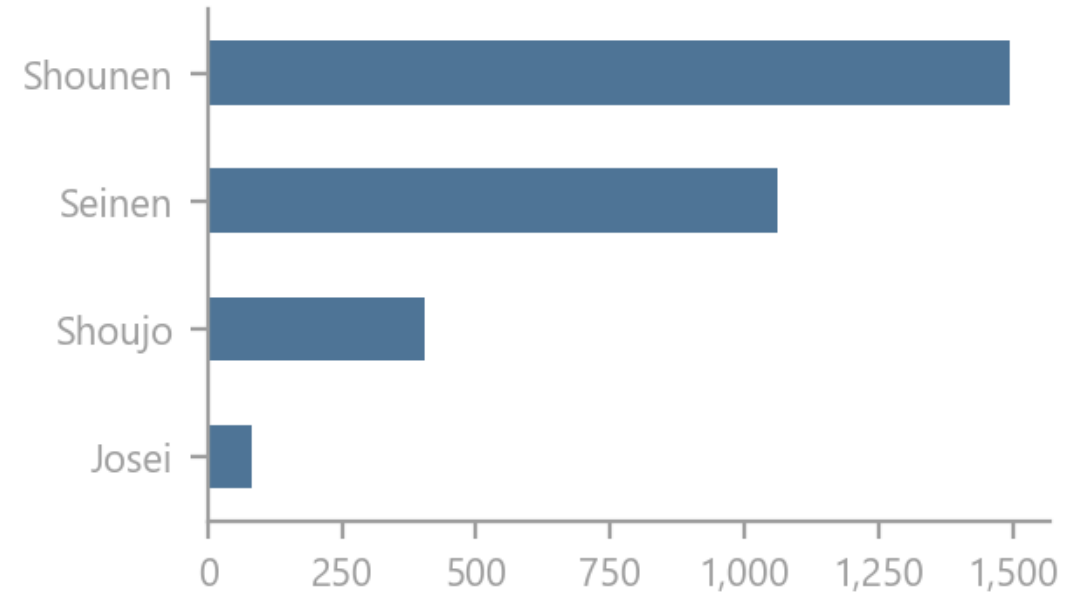


Shounen and Seinen manga continue to have better reception

Number of Quality* Titles by Demographic



Number of Titles Animated by Demographics



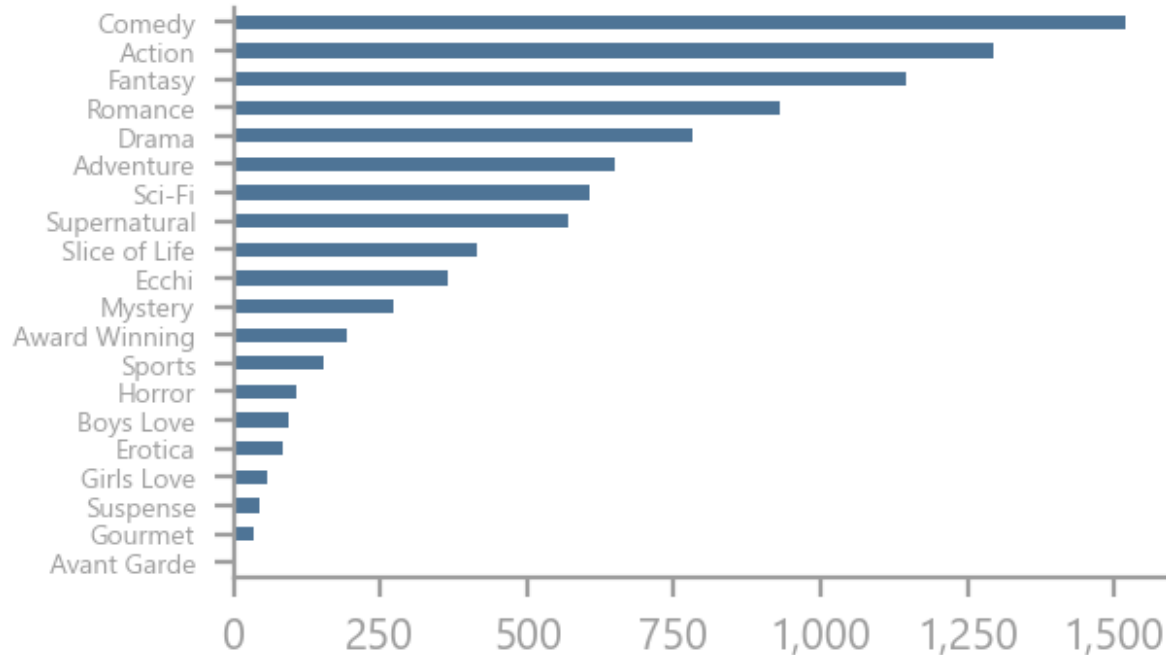
Shounen and Seinen manga have a larger audience base as it can attract both male and female readers. However, for Shoujo and Josei, it can only have limited male readers .

Similar dynamics can be found in anime adaptation, Shounen and Seinen have easier road to potential commercial success, while Shoujo and Josei have to explore other opportunities.



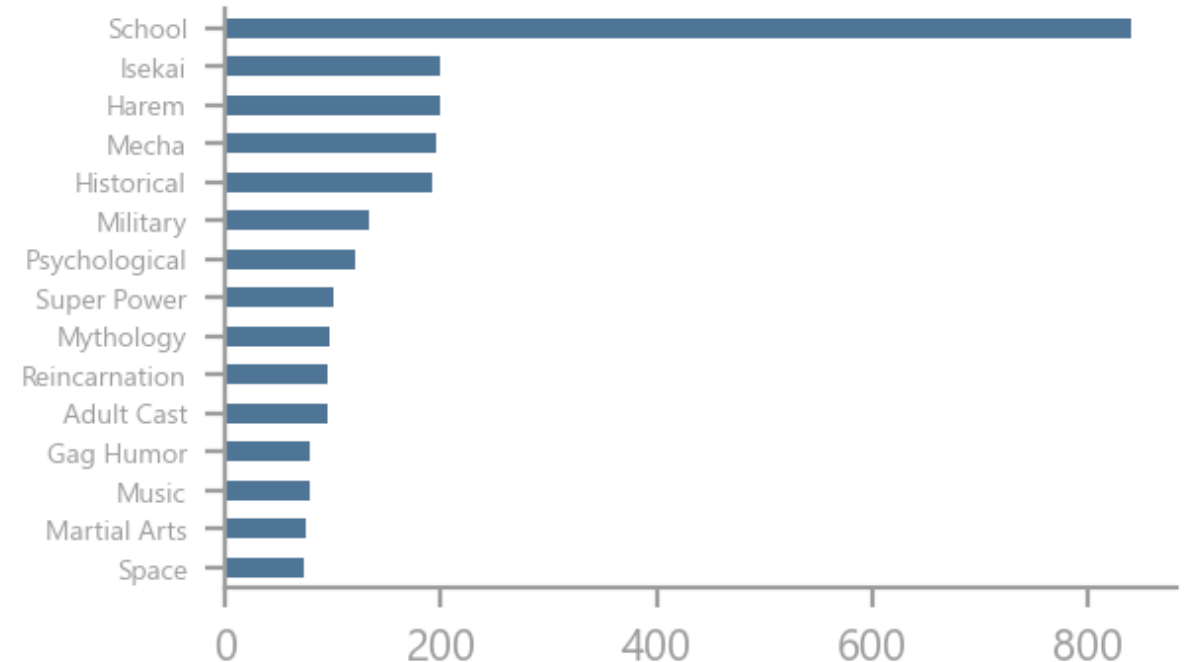
Genre and Theme Selection will increase the chance of success

Number of Titles Animated by Genre



Aside from popular genres like comedy and action, fantasy stands out as manga can depict a more realistic world comparing to human-cast media.

Number of Titles Animated by Theme



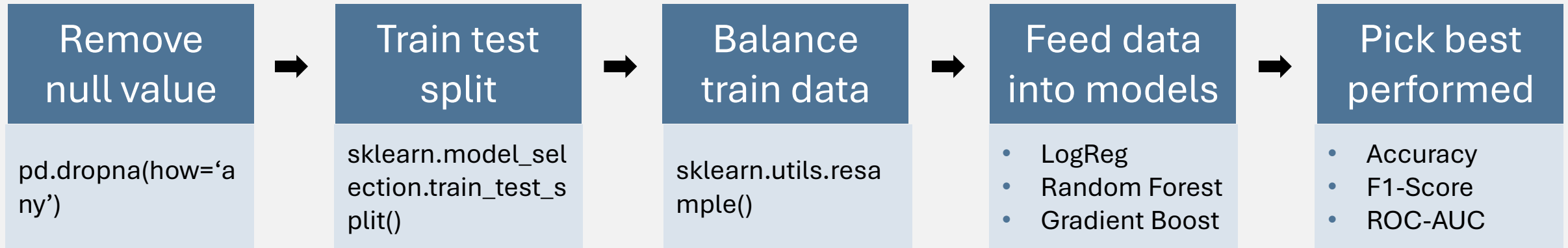
For theme categories, school is the far away first as it caters to the common teenaged protagonist. Also, unique ones like Isekai and Harem show the interesting aspects of Japanese culture.



Model

Machine learning pipeline and features

Pipeline



Features

mal_id	Genre	Theme	Type	chapter s	volume s	score	scored	scored_ by	rank	popular ity	membe rs	favorite s	animat ed
1	TRUE	TRUE	TRUE	162	18	9.16	9.16	105170	5	29	260461	22153	TRUE

One-hot encoding

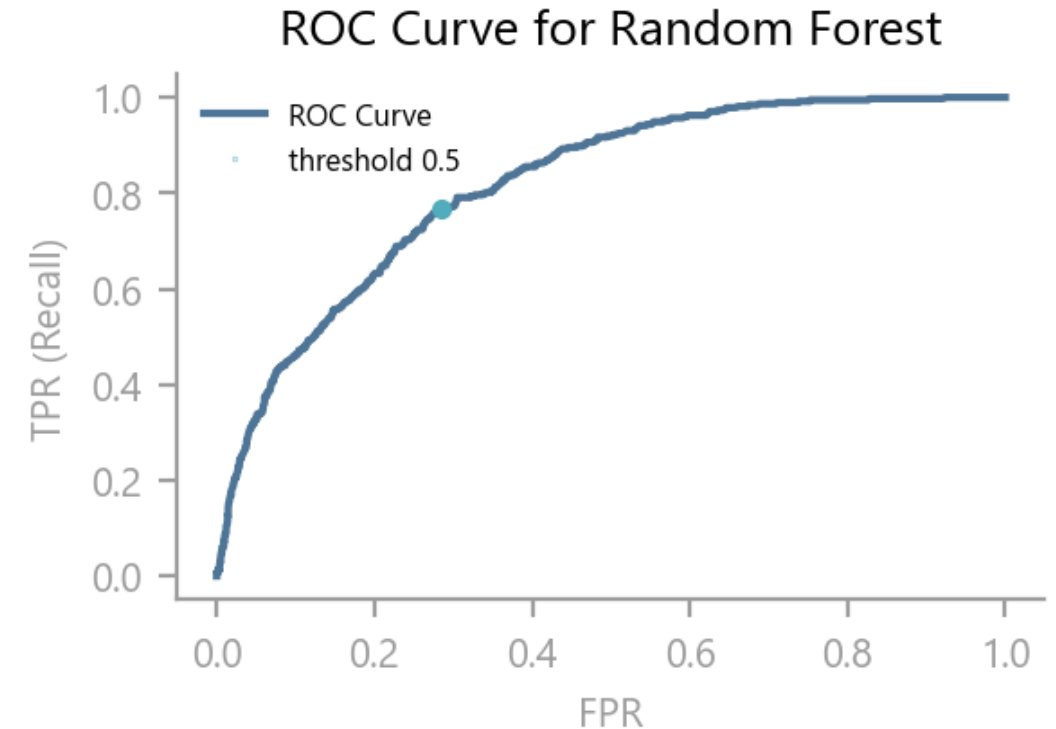
X variables

Y variable

Model selection and evaluation

Evaluation

Model/Metric	Logistic Regression	Random Forest	Gradient Boost
Accuracy	0.70	0.72	0.73
F1 Score (Animated)	0.33	0.39	0.37
ROC-AUC Score	0.73	0.82	0.80



Since ROC-AUC Score takes different risk tolerance into consideration, it will be a more suitable evaluation metrics for publishers, as each project (manga) has different risk level. Therefore, Select Random Forest as the best model since it has a highest ROC-AUC score of 0.82.

Results interpretation and improvements

Interpretation

Feature	Importance
chapters	0.103
favorites	0.095
volumes	0.085
scored_by	0.080
members	0.077
popularity	0.076
rank	0.070
score	0.065
scored	0.064
Sci-Fi	0.025

Key Success Factors

- Longevity: number of chapters
- Popularity: scored_by
- Quality: score

Improvement areas

1. Data Quality
 - Data source is maintained by communities. Completeness and recency are the 2 major issues.
 - Some features have the chicken-and-egg conundrum. For example, some manga was popular before being animated while some are popular because of it.
2. Model Tuning
 - ~70% accuracy is not good enough for supporting real-life business decision. Using grid search or cross validation to adjust model parameters will be helpful.
3. Lack of Interpretability
 - If the purpose of the model is to investigate the relationships hiding in the data, results from random forest is not easy to interpret. As such, regression model might be a better choice.

Recommendation

- 1. As sales continue its digitalization, publishers should adapt their business model accordingly. Expand sales channels to more easily reach customers.**

- 2. The secret behind the huge growth of Korean manhwa is its consideration of user friendliness. Publisher should re-orient their focus on user to tack on the ever-increasing competition.**

- 3. When selecting new manga to invest on, genre, theme, and demographics play critical role for a manga's success. Publisher can encourage author to design plots catering to these needs.**