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# **SENTIMENT ANALYSIS OF USER REVIEWS TRANSITION IN MULTIMEDIA FRANCHISE**

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# INTRODUCTION[1/2]

- A **Multimedia franchise** refers to developing a creative production across various media such as comics, anime, and film.
- People who enjoy a creative production in one media may enjoy the same production in another media.

## Harry Potter



# INTRODUCTION[2/2]

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- Not all productions received the same evaluation across all media; **a production that received high praise in one media may received low praise in another.**
- “It was disappointing that some of my favorite episodes from the manga were cut.”
- If a media franchise is successful, users' evaluations would have more positive words. The tendency can be grasped by sentiment analysis.
- Therefore, we conduct sentiment analysis. Then, we analyze **the relationship between multimedia franchise order and the polarity of reviews.**

# OVERVIEW OF THE ANALYSIS METHOD

1. We create a **database** that shows **the progression of multimedia franchises for each production.**
2. We choose **four types** from the database's most common multimedia franchise orders.
3. We then collect **reviews for each production by media type.**
4. We conduct **sentiment analysis** on the reviews.
5. We calculate **the rate of positive sentences of reviews of a production for each media.**
6. Then, we analyze **the relationship between multimedia franchise order and the polarity of reviews.**

# DATABASE OF PRODUCTION'S MULTIMEDIA FRANCHISE

1. Firstly, the selection of productions to be registered in the database is made. If a production is adapted for stage performance, the production is registered in the database.
  1. This is because many productions are often deployed across multiple media before being eventually deployed for stage plays and musicals.
2. We utilized the Japan 2.5D Musical Association website to search for productions. We obtained 101 titles of productions.
3. We investigated the media and the year of release for each production developed in various media. 10 types of media were registered in the database.
  1. Comic, anime, novel, radio, video game, CD, musical, stage, movie, and TV drama.

# DATABASE OF PRODUCTION'S MULTIMEDIA FRANCHISE

Table I statistical information on the created database

Information	Number of items
Titles	101
Types of expanded medium	10
Comic	96
Anime	94
Stage	85
Video Game	69
Novel	53
Radio	53
CD	50
Movie	49
Musical	22
TV Drama	11
X	427

Table 2 A part of the created database.

Production Title	Comic	Anime	Novel	Radio	Video Game	CD	Musical	Stage	Movie	TV Drama
Tsukiuta	X	2016	X	X	2017	2012	X	2016	X	X
K	2012	2012	X	2012	2012	X	X	2014	2014	X
Touken Ranbu	2016	2016	X	2016	2015	2016	2015	2016	2019	X
Durarara!!	2009	2010	2004	2019	2019	2016	X	2020	X	X
Demon Slayer	2016	2019	2019	2019	2020	X	2019	X	2020	X
B-Project	2016	2016	X	2015	2017	2015	X	2017	X	X
Psycho-Pass	2013	2012	2014	2012	2015	2013	X	2019	2015	X
Meiji Tokyo Renka	2013	2019	2013	X	2011	2011	X	2016	2015	2019
Juni Taisen: Zodiac War	2017	2017	2015	X	X	X	X	2017	X	X
Death Note	2003	2006	2006	X	2007	X	2015	X	2006	2015

- Table I presents statistical information on the created database.
- Table 2 shows a part of the created database.
- The earliest media from which a production was released is the starting media.

# GROUPING OF TITLES BY MEDIA DEPLOYMENT TRANSITION

- We group productions with similar trends in multimedia franchise transitions.
- We choose the most common four types of media franchise order.

Selected transitions of multimedia franchises and its numbers of productions

Transition of multimedia franchises	Number of analyzed productions
T1. Comic→Anime→Stage	34
T2. Anime→Comic→Stage	7
T3. Game→Anime→Comic→Stage	7
T4. Novel→Comic→Anime→Stage	6
Total	54

- We collect reviews of anime, comic, and stage.
  - Reviews of novels were not collected because the number of reviews was not enough for the analysis.

# SENTIMENT ANALYSIS OF REVIEWS

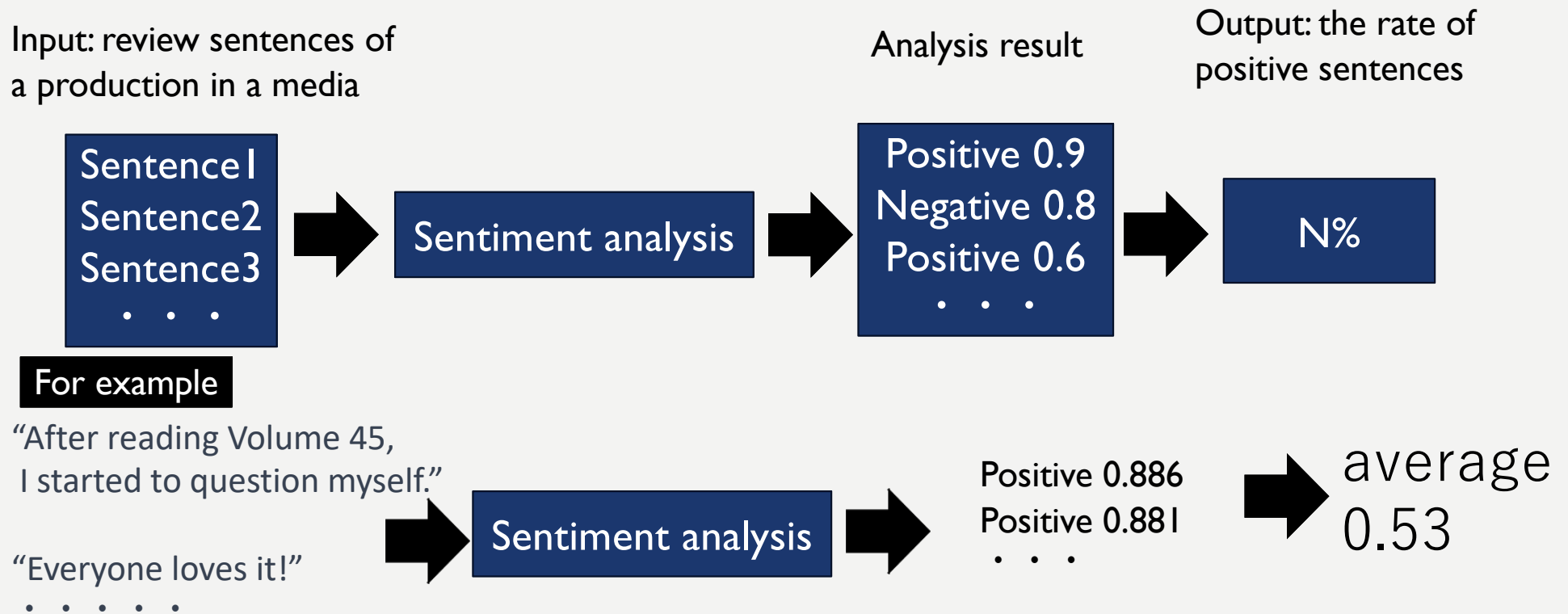
- We perform sentiment analysis on reviews.
- Table shows the number of reviews collected.

Production title	Anime	Comic	Stage
Mobile Suit Gundam 00	218	21	162
Earth Defense Club	145	9	25
Dance with devils	39	12	10
K	318	4	32
Psycho-Pass	1033	181	50
Rampo Kitan: Game of Laplace	59	1	34
Revolutionary Girl Utena	122	2	14
Kemono Friends	353	194	23
Persona 5	51	18	2
Onmyōji	3	20	5
Sakura Wars	59	36	22
Touken Ranbu	40	39	539
Hakuoki	201	13	48



# SENTIMENT ANALYSIS OF REVIEWS

- The figure shows the procedures of sentiment analysis.



# ANALYSIS RESULTS[1/4]

- Table shows **averages and variances of positive sentence rates of reviews** among all media and productions.

	Anime	Comic	Stage
Average	58%	61%	62%
Variance	0.0032	0.0291	0.0043

- We found that the rate of positive sentences **exceeded 50% across all media.**
  - This may be because we focused on productions that have expanded to stage performance.
  - Those productions might be obtained positive evaluations in multimedia franchises.

# ANALYSIS RESULTS[1/4]

- Table shows **averages and variances of positive sentence rates of reviews** among all media and productions.

	Anime	Comic	Stage
Average	58%	61%	62%
Variance	0.0032	0.0291	0.0043

- Why was the rate **higher** in “**stage play?**”
- This is because stage play audiences generally have **a positive view of creative productions.**
  - “I expected it to be good in the stage play too because it was good in the anime.”
  - “I am a big fan of the comic, so I became interested in the stage play.”

# ANALYSIS RESULTS[1/4]

- Table shows **averages and variances of positive sentence rates of reviews** among all media and productions.

	Anime	Comic	Stage
Average	58%	61%	62%
Variance	0.0032	0.0291	0.0043

- Why was the rate **lower** in “**anime?**”
- One factor was **the quality of the animation.**
  - “The animation quality deteriorated important parts.”
- The inconsistency in animation quality can cause anime to receive varied evaluations, resulting in a lower rate of positive sentences than other media.

# ANALYSIS RESULTS[1/4]

The tables show averages and variances of positive sentence rates by the media. We discuss T2 and T3.

## T2: Anime → Comic → Stage

	Rate of positive sentences in reviews		
	Anime	Comic	Stage
Average	56%	70%	63%
Variance	0.0025	0.0332	0.0066

## T3: Game → Anime → Comic → Stage

	Rate of positive sentences in reviews		
	Anime	Comic	Stage
Average	57%	62%	61%
Variance	0.0025	0.0106	0.0016

## T1: Comic → Anime → Stage

	Rate of positive sentences in reviews		
	Anime	Comic	Stage
Average	60%	60%	67%
Variance	0.0054	0.0654	0.0015

## T4: Novel → Comic → Anime → Stage

	Rate of positive sentences in reviews		
	Anime	Comic	Stage
Average	50%	60%	58%
Variance	0.0023	0.0072	0.0076

# ANALYSIS RESULTS[3/4]

T2 and T3 had a sub-transition from anime to comic.  
In the sub-transitions, the rate of positive sentences increased by about 9%.

## T2: Anime→Comic→Stage

	Rate of positive sentences in reviews		
	Anime	Comic	Stage
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Variance	0.0025	0.0332	0.0066

## T3: Game→Anime→Comic→Stage

	Rate of positive sentences in reviews		
	Anime	Comic	Stage
Average	57%	62%	61%
Variance	0.0025	0.0106	0.0016

This increase may be attributed to the fact that multimedia franchises from “anime” to “comic” involve visual art, making it easier for users to maintain a consistent image.

“The essence of the video game is mixed with the anime, making it enjoyable for both anime and original fans.”  
“Although the production is based on an anime, as you can see from the comic cover, the design is almost identical to that of the anime. The comics do not destroy the image of the original production at all.”

# ANALYSIS RESULTS[4/4]

T2 and T3 had a sub-transition from comic to stage.  
In the sub-transitions, the rate of positive sentences decreased by about 4%.

## T2: Anime→Comic→Stage

	Rate of positive sentences in reviews		
	Anime	Comic	Stage
Average	56%	70%	63%
Variance	0.0025	0.0332	0.0066

## T3: Game→Anime→Comic→Stage

	Rate of positive sentences in reviews		
	Anime	Comic	Stage
Average	57%	62%	61%
Variance	0.0025	0.0106	0.0016

The stage has a time limitation, whereas the comics develop their story over a longer period of time. Users are more likely to evaluate negatively when their image of the comic differ from their impression of the stage play.

“The stage was for busy people. The stage developed so speedy that people for the first time of the original work can not catch up with the story. The first half of the stage was almost comedy, which was difficult to express on the stage.”

# CONCLUSION & FUTURE STUDIES

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## Conclusion

This study analyzed a correlation between multimedia franchises' order and reviews' polarity.

As an overall trend, the rate of positive sentences was highest for the “stage” followed by “comic,” and finally “anime.”

The transition from “anime” to “comic” increased the rate of positive sentences. In contrast, the transition from “comic” to “stage” decreased the rate.

## Future Studies

We will conduct content analysis for each review media.

We will improve the database based on animated production.



**THANK YOU!**