

# Write-Deck: An Enriched Social Reading Fan Fiction Site With Recommendation System

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**Abstract.** The Covid-19 pandemics have pushed individuals away from having any personal contact with each other, in a long period of isolation. Spending time on relaxing activities such as writing fan fiction help alleviate the negative effects of long isolation. Writer-Deck is a system to read fan and original fiction online which is enriched with a recommender system. Writer-Deck aims to provide users with simple ways to find the most likely fiction for leisure reading, simple navigation to access information on their favourite fiction, the ability to save to the library to read later and notification of a new chapter to be released. In addition, the review and rating functions are available for writers to gauge their writing skills. The usability test on 30 respondents indicated that on average 76.6% of respondents respond positively in terms of navigation, design and layout, features, search and recommendation.

**Keywords:** fan fiction, social reading, recommender system, information seeking, writing platform.

## 1. Introduction

A long period of isolation will have an impact on individuals' social behavior and could lead to experiencing poor sleep quality, feeling of loneliness and depressive symptoms as well as a sense of estrangement from family, school, and peers, and even loss of self-control [1]. Spending time on relaxing activities and hobbies such as reading could help alleviate the negative effects of long isolation. This overabundance of free time has led people to spend a lot more time on their hobbies. One of the mentioned hobbies is writing and reading as it has seen a sudden increase according to [2], reading can be a powerful coping tool. Pairing a book with an issue like grieving, loneliness, or anxiety can help kids process their emotions through the story narratives and characters. Other than that, this hobby could benefit children, teenagers and even adults to enhance their reading comprehension, vocabulary and grammar.

With the recent rise in popularity of sites such as Facebook and MySpace, all these conventional ways of contacting one another have been changed. Social Networking Services (SNS) provide a unique opportunity to allow authors to connect with their readers, generate interest in their works, and build their fan bases [3]. With that in mind, Writer-Deck is a system to read fan and original fiction online. Designed to provide users with simple ways to navigate and search for their fiction perfect for leisure reading. Users can also add their favourite fiction to the library to read later or while waiting for a new chapter to be released. Interaction between the reader and writer can be done through the review section

eliminating the hassle of the writer making a new account in the SNS and the reader searching for favourite writers. In addition to reading and interaction, the reader and writer can also provide expertise or personal use of language, by improving the use of the language to be more skillful and fluent. Improving the ability to write something provides the reader with an emotional response and a better understanding of how to create new connections between ideas [4].

Most original and fanfiction web applications right now like the wattpad do not provide a way for readers to give a proper review for writers to take and improve upon their writing skills. Other than that, they also do not have a dedicated gallery section for users to get a better immersion in the fiction and some of the writers are likely to host their fiction on an independent site that is hard to gather a reader-base. Thus, this paper aims to create a centralized platform for the writer to get better exposure for their novel and give the reader a wider option of fiction.

Most fanfiction sites lack the feature to share, illustrate their story better and convey a meaning or atmosphere that is hard to be expressed with words [3]. In addition, they lack a proper channel to give feedback on writer performance. They are an independent site that only shares one or a small group of writer's fiction, lacks the feature to review their fiction, and some sites only allow uploading covers for their fiction

## 2. Literature Review

Research has been carried out on existing applications that are like the proposed application. The strengths and weaknesses of these applications are reviewed to find out their limitations, find ways to improve the weaknesses of the proposed products and review existing products and identify the features to be implemented. The discussion will mainly focus on these products' functionality and usability as these are one of the most important factors to determine whether the application will solve or contribute to the existing problems. The similar products used for this background study are Honeyfeed [5], Wattpad [6] and Booksie [7].

Honeyfeed [5] is a web novel platform where many original works can be read for free. It is a social platform specially made for story-tellers who are passionate about creating and sharing their unique ideas. It is a community site that encourages writers of all types whether it is fiction, web novel, or original story out of their heads and into the world. The homepage of the site entails regular announcements such as writing contests, weekly rankings, and monthly rankings. It also listed fiction, browses by genre, creates your novels for writers and has a search function. Yet, it could not sort by multiple genres and there was no rating/review for the fiction.

Wattpad [6] is an online reading platform intended for users to read and write original fiction. Plenty of wattpad fiction has been published, produced, or adapted to TV or film. Wattpad gives the option for writers to monetize their fiction by locking the chapter until the user buys the specific chapters using the wattpad currency. Other than that, wattpad also has a premium account with the perk of no ads, unlimited offline stories and wattpad currency. A special feature is a fiction picked by the editor to be recommended. Yet, it could not also sort by multiple genres and there was no rating nor review for the fiction.

Booksie [7] is a free online writing site that provides the tools for writers to publish their work and connect with readers from across the world. Users can post poems, short stories, books, articles and more. Over the past ten years, tens of thousands of writers have posted hundreds of thousands of short stories, novels, poems, and articles. A writer can pay for their fiction to be advertised and recommended by booksie. It could not also sort by multiple genres and there was no rating/review for the fiction.

On the other hand, the recommender system has become essential in most domains such as e-commerce, healthcare, movie, music, travel, news and book [8-10]. In particular, the book recommender system [11-12] suggests the book to users according to their preference effectively improving users' book-reading experience. More importantly, users now can access the book that they most likely like at their fingertips. One of the recommendation techniques, which utilize similar user ratings is user-based collaborative filtering [13]. This technique predicts the items that a user might most likely on the basis of ratings given to that item by the other users who have similar taste with that of the target user [14]. In this user-based filtering, the users are selected for their similarity to the active user. This similarity is

determined by matching users who have posted similar ratings. Based on the previous similarity, it's presumed that future likes and dislikes also will be similar.

Several important features have been identified and will be implemented in our proposed system named Writer-Deck.

- A review and rating feature for the user can advise and a proper evaluation of the fiction will be implemented.
- A better sorting function where the user can sort the novel based on status, multiple genres, or the number of chapters. Announcement section on the fiction detail where the writer can post their content.
- A section for writers to upload and show their fiction illustrations.

Table 1 summarises the comparison between Honeyfeed [5], Wattpad [6], Booksie [7] and our proposed system, Writer-Deck in terms of features supported.

### 3. Proposed System

#### 3.1. Design

Fig. 1 shows the main users of the Writer-Deck, which consists of writer, admin and regular user. Each user is able to register and login Writer-Deck. Next, a user will be able to edit the profile details of the user account, view fiction lists, sort by available options like by number of chapters and rating, and search fiction by title. There is also an advanced search that combines multiple criteria to search for desired fiction like genre, author and fiction title and view fiction page. Once in the fiction page, users can see the picture/illustration posted, see the announcement posted, add review to the fiction, see the chapter posted, view list of user's own fiction (View writer fiction list). writers will be able to add new fiction, view written fiction pages, edit fiction details, delete fiction, add chapter, add picture/illustration, add announcements, edit synopsis, add fiction to the library.

**Table 1.** Comparison between some existing system and the proposed system (Writer-Deck)

Features	Honeyfeed [5]	Wattpad [6]	Booksie [7]	Writer-Deck
Upload Cover picture	Yes	Yes	Yes	Yes
Manage account	Yes	Yes	Yes	Yes
Upload chapter	Yes	Yes	Yes	Yes
Edit chapter	Yes	Yes	Yes	Yes
Reporting function	Yes	Yes	Yes	Yes
Search bar	Yes	Yes	Yes	Yes
Add favourite	Yes	Yes	Yes	Yes
<b>New/Enhanced Feature</b>				
Review	No	No	No	Yes
Rating	No	No	No	Yes
Improved sort function	No	No	No	Yes

Table 2. (continued).

Announcement section	No	No	No	Yes
Gallery section	No	No	No	Yes
Recommended reading	No	No	No	Yes

On the other hand, the admin will have a special function where the admin can view the report made by the user and act like email the reported fiction if the report is found to be valid. The admin has the power to delete fiction, manage user accounts, create new admin accounts, and delete users. On top of that, admin can view user detail, manage fiction, view all report lists on the selected fiction and delete the fiction. lastly admin will be able to view user statistics in a line graph that show views daily, bar graph of total view count by genre.

Admin	Writer	User
<ul style="list-style-type: none"> <li>•Manage account information</li> <li>•Manage fiction <ul style="list-style-type: none"> <li>•View report</li> </ul> </li> <li>•Generate statistics for analysis purpose</li> </ul>	<ul style="list-style-type: none"> <li>•Manage profile details</li> <li>•Upload and edit fiction <ul style="list-style-type: none"> <li>•Can use search/advanced search function for fictions</li> <li>•Upload cover art/illustration for their novel</li> </ul> </li> <li>•See the review of their fictions</li> <li>•Review on other fictions <ul style="list-style-type: none"> <li>•Utilised the recommendation list</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>•Manage profile details</li> <li>•Review(and rate) on fictions</li> <li>•Can use search function for fictions</li> <li>•Add favourite fictions <ul style="list-style-type: none"> <li>•Utilised the recommendation list</li> </ul> </li> </ul>

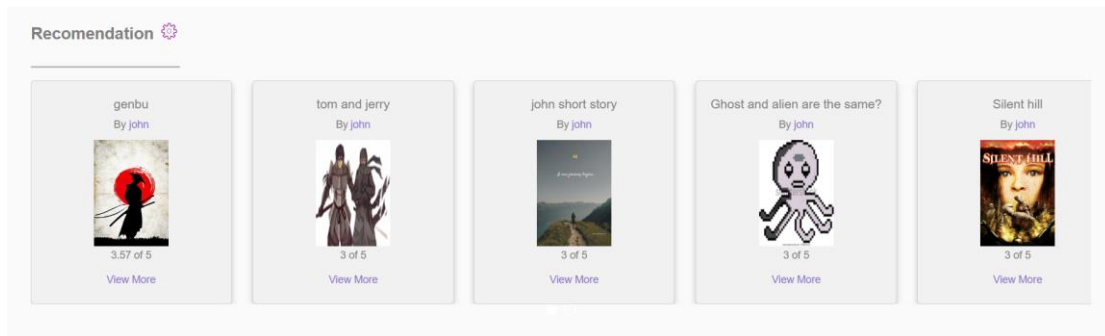
**Figure 1.** The user right based on each category.

Figure. 2 shows the recommendation engine of Writer-Deck displayed on homepage. The recommendation uses a user-based collaborative filtering technique used to predict the fiction that a user might like on the user rating given to that fiction by the other users who have similar taste with that of the target user. The process work by finding a similarity using the Eq1. Next is using a weightage average approach using the formula shown Eq2 to predict the missing rating on other fiction. Fig. 2 shows the recommendation section visualization fiction recommended to users.

$$Sim(a, b) = \frac{\sum_p (r_{ap} - \bar{r}_a)(\bar{r}_{ab} - \bar{r}_b)}{\sqrt{\sum_p (r_{ap} - \bar{r}_a)^2} \sqrt{\sum_p (r_{bp} - \bar{r}_b)^2}} \quad (1)$$

$r_{up}$ : rating of user  $u$  against item  $p$   
 $p$ : items

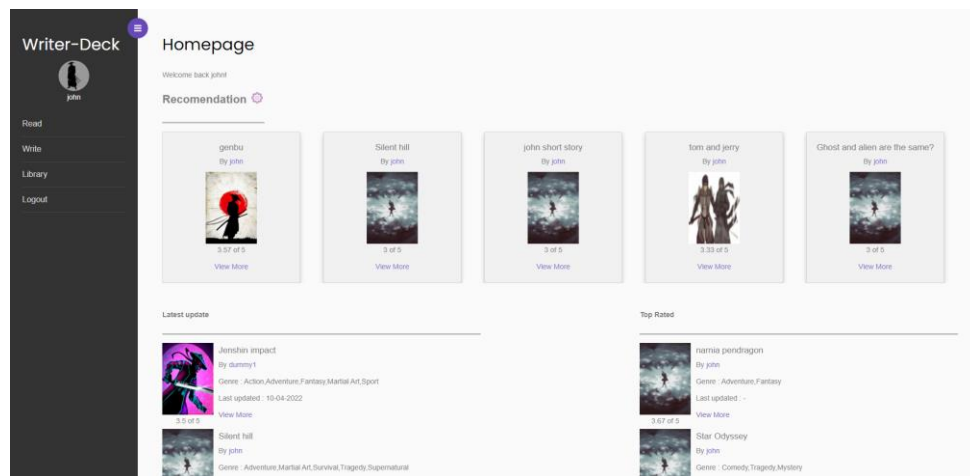
$$r_{up} = \bar{r}_u + \frac{\sum_{i \in Users} sim(u, i) * r_{ip}}{\sum_{i \in Users} |sim(u, i)|} \quad (2)$$



**Figure 2.** Visualization for recommendation section.

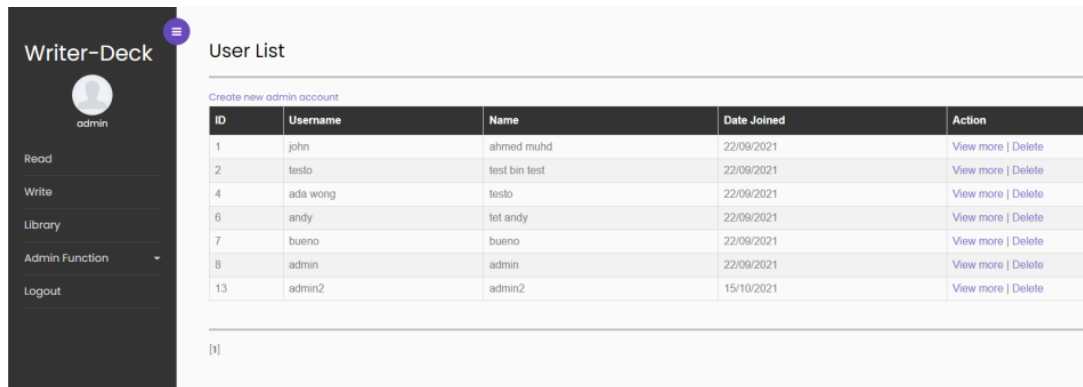
### 3.2. User interface design

Fig. 3 shows the user interface (UI). It will showcase the recommended fiction based on user rating, top 5 of latest updated and top-rated fiction from Writer-Deck web application. On the sidebar if the user clicks on the read option, users will be redirected to a fiction page where the user will be able to sort and view selected fiction. Other than that, users can post or create their fiction by clicking on the write option. Also, users will be able to view the library where they can find the fiction the user has book-marked. Lastly, users can click on the profile picture to access the profile page and edit the account details.

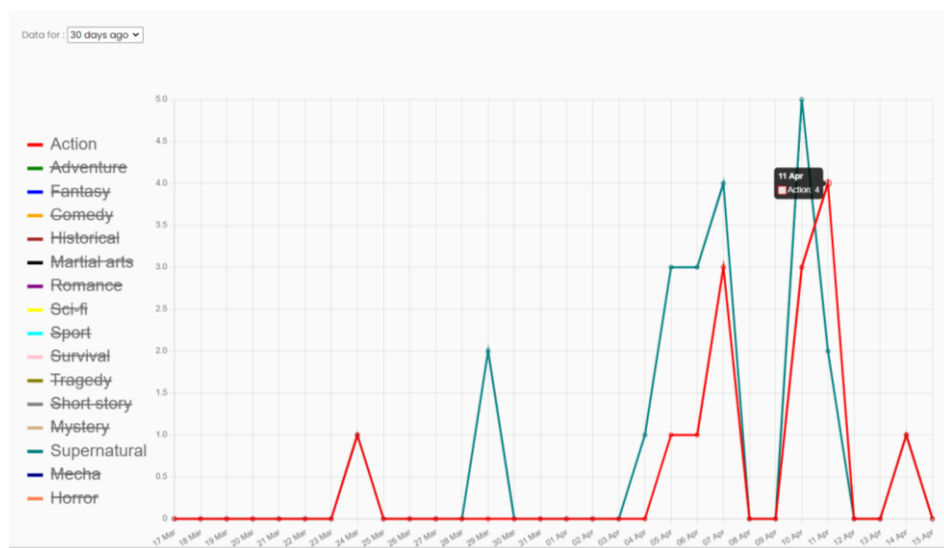


**Figure 3.** Writer-Deck user interface.

Figure. 4 shows dashboard for the admin role. The admin can see all the users and their activities. In addition, the admin can view statistical data and visualize it in either line or bar graphs. They are able to analysis the data in any graphs such as bar, line and so on. (see Fig. 5(a)). Fig. 5(b) depicts the top 5 most viewed fiction for that genre selected while Fig. 5(c) lists the recommendation sorted by frequency order.

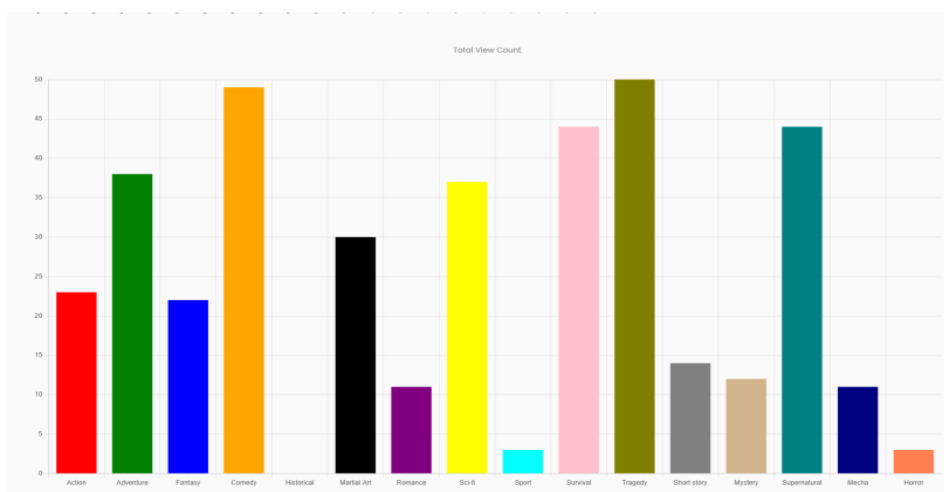


**Figure 4.** Writer-Deck main dashboard for admin.





(a)

**Figure 5.** Various visualization and charting (a) line graph.



(b)

**Figure 5.** Various visualization and charting (a) bar graph.

Top most viewed fiction	
Fiction	View count
 <p>Ghost and alien are the same?</p>	Count : 37
 <p>Star Odyssey</p>	Count : 12

(c)

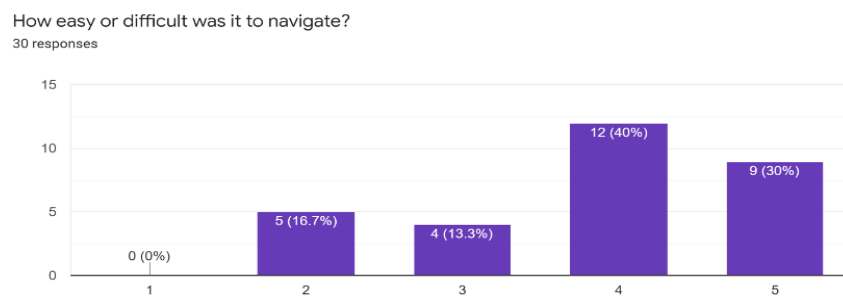
**Figure. 5.** Various visualization and charting (c) frequency.

## 4. Testing and Evaluation

### 4.1. Design

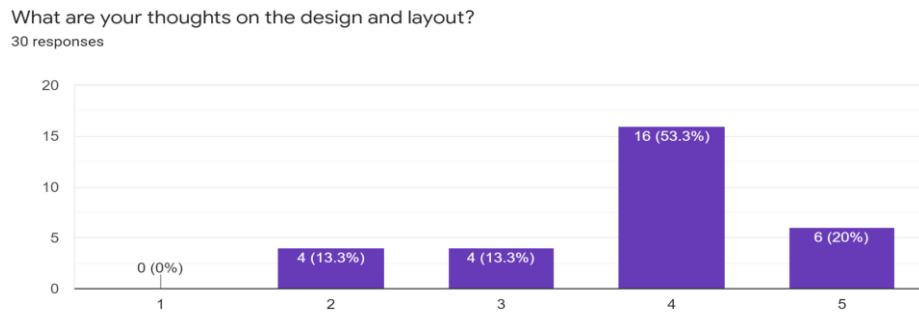
We have conducted a usability test via online survey to get the users input on the website. Our sample size is 30 respondents. The criteria to pass is to achieve at least 60% of favourable options (4 points and above) of the system [15].

Based on Fig. 6, 16.7% of the respondents think Writer-Deck is hard to navigate, 13.3% is neutral, 40% think it is easy to navigate and 30% respond that it is very easy to navigate.



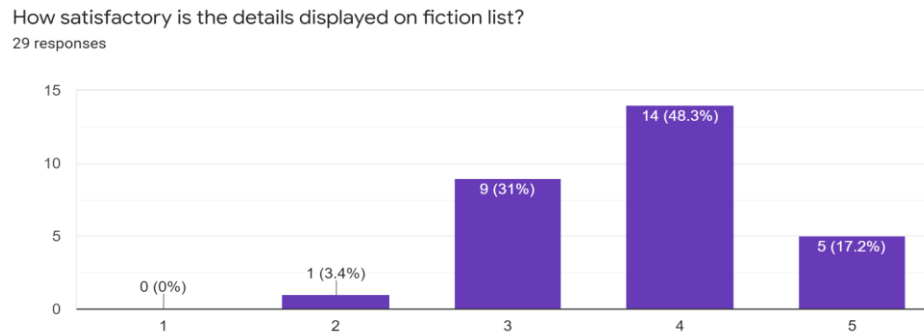
**Figure. 6.** Q1: Usability test on ease of navigation.

Based on Fig. 7, 13.3% dislike the design and layout, 13.3% are neutral, 53% like it and 20% really liked the design and layout.



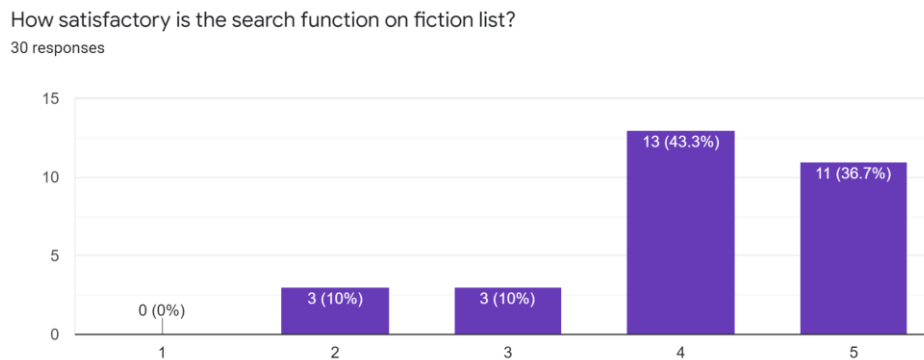
**Figure. 7.** Q2: Usability test on design and layout.

From Fig. 8, 3.4% of the respondents think the fiction details displayed are unsatisfactory, 31% are neutral, 48% think it is satisfactory and 17% respond that it is very satisfactory.



**Figure. 8.** Q3: Usability test on display of fiction list.

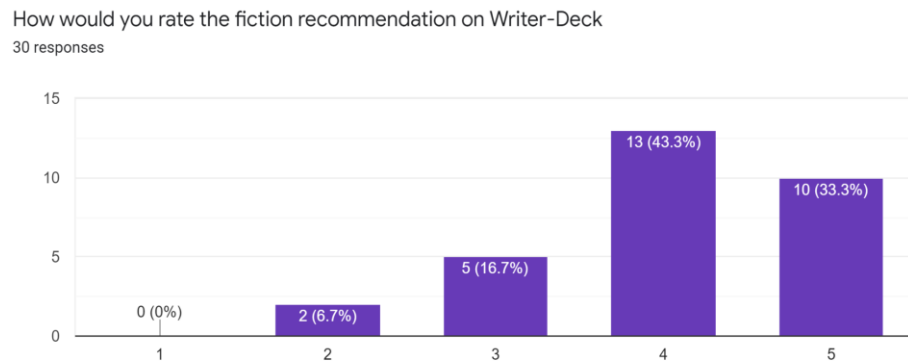
From Fig. 9, it is observed that 10% of the respondents think the search function is unsatisfactory, 10% are neutral, 43.3% think it is satisfactory and 36.7% respond that it is very satisfactory.



**Figure. 9.** Q4: Usability test on search function.

Lastly, Fig. 10 shows that 6.7% of the respondents give it 2 out of 5, 16.7% are neutral, 43.3% give 4 out of 5 and 33.3% give it 5 out of 5.





**Figure. 10.** Q5: Usability test on recommendation function.

From the results gathered, it revealed that 70% favourable opinion on the ease of navigation (Q1), 73.3% favourable opinion on layout and design (Q2), 65.5 favourable opinion on fiction display (Q3), 80% favourable opinion on search function and 76.6 % favourable opinion on the recommendation function. On average, 73.08% have a favourable opinion on the usability tests conducted.

## 5. Conclusion and Future Work

In this paper, we have reviewed some existing writer-deck products and identify the features to be implemented. We have also developed the fiction site and conducted the usability test. The usability testing was done through a survey with google form with sample size of 30 respondents. The results show that on average 76.6% respondents respond positively.

In our future work, we will incorporate the topic modelling and textual reviews to enhance the current recommendations.

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