

```
dt.sort_values(["query", "predicted_score"], ascending=[True, False])
```

	query	document	relevance	tfidf_score	query_length	doc_length	predicted_score
0	eco friendly travel	eco friendly travel focuses on reducing carbon...	3	1.000000	3	12	11.136914
1	eco friendly travel	sustainable tourism practices for responsible ...	2	0.000000	3	6	5.571994
3	eco friendly travel	latest smartphone models released this year	0	0.000000	3	6	5.571994
2	eco friendly travel	best travel destinations around the world	1	0.577350	3	6	5.567910
5	local food experiences	how food reflects culture and heritage in diff...	2	0.577350	3	9	8.353907
4	local food experiences	exploring local street food and traditional cu...	3	0.816497	3	9	8.352215
6	local food experiences	easy homemade recipes for beginners	1	0.000000	3	5	4.643328
7	local food experiences	online food delivery app discounts	0	0.577350	3	5	4.639244
8	slow living lifestyle	slow living promotes mindfulness balance and i...	3	0.816497	3	9	8.352215
9	slow living lifestyle	reducing stress by simplifying daily routines	2	0.000000	3	6	5.571994
11	slow living lifestyle	fast fashion trends in urban markets	0	0.000000	3	6	5.571994
10	slow living lifestyle	morning routines of successful entrepreneurs	1	0.000000	3	5	4.643328

```
rank_model.fit(X_pairwise[:, :@1], y_pairwise)
```

```
df = pd.DataFrame(data, columns=["query", "document", "relevance"])
df
```

	query	document	relevance
0	eco friendly travel	eco friendly travel focuses on reducing carbon...	3
1	eco friendly travel	sustainable tourism practices for responsible ...	2
2	eco friendly travel	best travel destinations around the world	1
3	eco friendly travel	latest smartphone models released this year	0
4	local food experiences	exploring local street food and traditional cu...	3
5	local food experiences	how food reflects culture and heritage in diff...	2
6	local food experiences	easy homemade recipes for beginners	1
7	local food experiences	online food delivery app discounts	0
8	slow living lifestyle	slow living promotes mindfulness balance and i...	3
9	slow living lifestyle	reducing stress by simplifying daily routines	2
10	slow living lifestyle	morning routines of successful entrepreneurs	1
11	slow living lifestyle	fast fashion trends in urban markets	0

df.head()

	query	document	relevance	tfidf_score	query_length	doc_length	predicted_score	score_tfidf_only
0	eco friendly travel	eco friendly travel focuses on reducing carbon...	3	1.000000	3	12	11.136914	1.644866e+00
1	eco friendly travel	sustainable tourism practices for responsible ...	2	0.000000	3	6	5.571994	2.166206e-16
2	eco friendly travel	best travel destinations around the world	1	0.577350	3	6	5.567910	9.496639e-01
3	eco friendly travel	latest smartphone models released this year	0	0.000000	3	6	5.571994	2.166206e-16
4	local food experiences	exploring local street food and traditional cu...	3	0.816497	3	9	8.352215	1.343028e+00

```
pd.DataFrame({  
    "Model": ["TF-IDF Only Ranker", "Full Feature Ranker"],  
    "NDCG@3": [ndcg_tfidf, ndcg_full]  
})
```

	Model	NDCG@3
0	TF-IDF Only Ranker	0.867503
1	Full Feature Ranker	0.867503

```
np.unique(y_pairwise, return_counts=True)
```

```
(array([0, 1]), array([18, 18]))
```

```
rank_model = LogisticRegression(max_iter=1000)
rank_model.fit(X_pairwise, y_pairwise)
```

▼ LogisticRegression



```
LogisticRegression(max_iter=1000)
```

```
evaluate_ndcg(df)
```

```
0.8858338322718243
```