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Statistical Analysis on Engagement Patterns of Fresh Graduates around Different Online Learning Platforms

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Abstract

In the digital era, online learning platforms have become essential tools for delivering education at a global scale. This study examines user engagement across three major platforms—Coursera, edX, and LinkedIn Learning—with a focus on how engagement metrics correlate with perceived learning outcomes. Utilizing a mixed-methods approach, data were collected from 124 fresh graduates (within 0–3 years post-graduation) through structured questionnaires and analyzed using descriptive statistics, ANOVA, t-tests, and chi-square tests. The results indicate that users primarily engage with these platforms to enhance employability and earn certifications, with Coursera and LinkedIn Learning being the most frequently used. Courses related to career-specific skills and personal development were highly preferred. Engagement frequency was high, with most participants accessing content daily or weekly. Motivating features included video lectures and interactive elements, while time constraints and high subscription costs were identified as major barriers. Regression analysis confirmed a statistically significant relationship between user engagement and perceived learning effectiveness ($p \leq 0.05$). Furthermore, the study found significant differences in engagement patterns influenced by platform interactivity, content quality, and the availability of certifications. The study

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concludes that optimizing platform design by offering accessible, career-relevant content and reducing time and cost barriers is critical to improving learner engagement and educational outcomes.

Keywords: Online Learning Platforms; Fresh Graduates; Engagement Pattern; Learning Outcomes; Digital Education

INTRODUCTION

In the rapidly evolving educational landscape, online learning platforms have become a cornerstone of modern education, facilitating access to knowledge for learners across the globe. With the proliferation of these platforms ranging from Massive Open Online Courses (MOOCs) to specialized e-learning tools—understanding how users engage with these resources is crucial for enhancing educational outcomes and platform effectiveness.

This digital age, online learning platforms have revolutionized the way education is delivered and consumed. The shift from traditional classroom settings to online learning environments has been accelerated by advancements in technology, increased internet accessibility, and recent global events, such as the COVID-19 pandemic. With the proliferation of platforms such as Coursera, edX, Khan Academy, LinkedIn Learning, and many others, educators and learners now have access to a vast array of courses and learning materials. As educational institutions and individual learners increasingly rely on online platforms, there is a growing need to assess and optimize how these platforms are used.

Engagement is a critical factor in the effectiveness of online learning. It encompasses various aspects such as time spent on the platform, participation in interactive elements, completion rates of courses, and overall user satisfaction. However, engagement patterns can vary significantly between different platforms. For instance:

- Coursera and edX offer a wide range of university-level courses and specializations, featuring video lectures, quizzes, and peer-reviewed assignments. Their engagement metrics might include course completion rates and participation in discussion forums.**(**Pappano, L. (2012)).
- Khan Academy provides educational content primarily for K-12 students, with interactive exercises and instructional videos. Engagement on Khan Academy might be measured through practice exercise completion and time spent on the platform. (Cummings, W. K., &

Vyas, R. (2014)).

- LinkedIn Learning focuses on professional development with a library of video courses in business, technology, and creative skills. Engagement metrics could include course progress and integration with professional networking activities. (Pappano, L. (2017))

As online learning platforms become increasingly integral to education, understanding user engagement on these platforms is essential for maximizing their effectiveness and improving learning outcomes. Despite the growth in the number and variety of online learning platforms, there is limited comprehensive research on how engagement patterns differ across these platforms and what factors most significantly influence these patterns such as varied engagement metrics, Comparative Understanding, Influencing Factors and Impact on Learning Outcomes.

MATERIALS AND METHODS

This research employs a mixed-methods approach to comprehensively analyze engagement patterns across different online learning platforms. It combines quantitative analysis of engagement metrics with qualitative insights from user feedback to provide a holistic understanding of how various platforms perform and what factors contribute to their success. The study will focus on three different types of platforms namely: Coursera, edX and LinkedIn Learning.

Our research objectives are to compare engagement metrics across different online learning platforms; analyze user experiences to understand factors influencing engagement and identify best practices and recommendations for enhancing engagement on online learning platforms.

Data collection

Data were collected using structured questionnaire focusing on user experiences, satisfaction, and perceived engagement factors which were administered on the users of these online platforms. Stratified sampling method was adopted to ensure each platform was properly represented in the sample. A sample size of one hundred and twenty four (124) fresh graduates participated in the study,

Methods of Data Analysis

The following method were adopted in the analysis of this research:

Descriptive Statistics:

- Calculate means, standard deviations, and other descriptive statistics for each engagement metric.

Mean (μ):

$$\mu = \frac{1}{N}\sum_{i=1}^{N} x_i$$

Standard Deviation (σ):

$$\sigma = \sqrt{\frac{1}{N-1}\sum_{i=1}^{N}(x_i - \mu)^2}$$

- Tools: Use statistical software such as SPSS or R.

2. Comparative Analysis:

- ANOVA/T-tests: Compare engagement metrics across platforms to identify significant differences.

ANOVA:

$$F = \frac{\text{Between-group Variance}}{\text{Within-group Variance}}$$

Where:

- Between-group Variance measures the variance between the means of different groups.
- Within-group Variance measures the variance within each group.

T-Test: To compare the means of engagement metrics between two platforms.

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$$

- Post-hoc Tests: Conduct post-hoc analyses to explore specific differences between platforms if ANOVA results are significant.
- Effect Sizes: Calculate effect sizes to understand the magnitude of differences.

3. The Chi-square test of independence assesses whether the distribution of sample categorical data matches an expected distribution based on the assumption that the variables are independent. The test compares the observed frequencies in each category of a contingency table to the frequencies expected if the variables were independent.

Hypotheses

Null Hypothesis (H_0): There is no significant relationship between user engagement metrics and learning outcome

Alternative Hypothesis (H_1): There issignificant relationship between user engagement metrics and learning outcome.

Procedure

i. Collect data for the two categorical variables in rows and columns in a suitable format for analysis (e.g., a contingency table).

ii. Calculate Expected Frequencies $E_{ij} = \frac{Row\ Total \times Column\ Total}{Grand\ Total}$

iii. Compute the Chi-Square Statistic

$$\square^2 = \sum_{i=1}^{r}\sum_{j=1}^{c}\frac{(O_i - E_i)^2}{E_i} \qquad (1)$$

iv. Determine Degrees of Freedom d.f = $(r-1)(c-1)$

v. Find the Critical Value and Compare

vi. Determine the critical value from the Chi-Square distribution table using the degrees of freedom and significance level (typically $\alpha = 0.05$).

vii. Compare the calculated Chi-Square statistic to the critical value.

viii. Decision Making

If the Chi-Square statistic is greater than the critical value, reject the null hypothesis.

If the Chi-Square statistic is less than or equal to the critical value, fail to reject the null hypothesis.

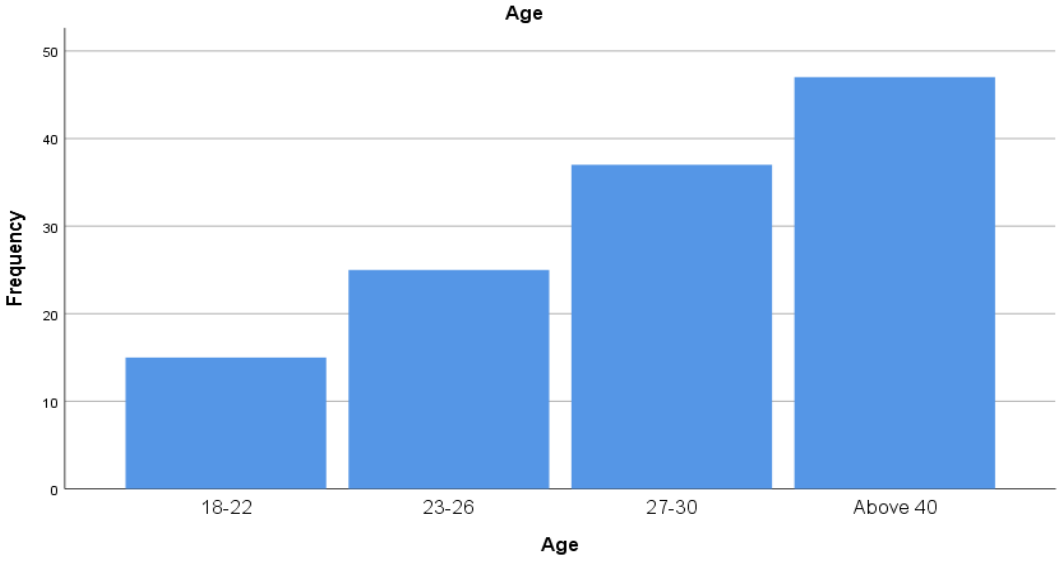
RESULTS

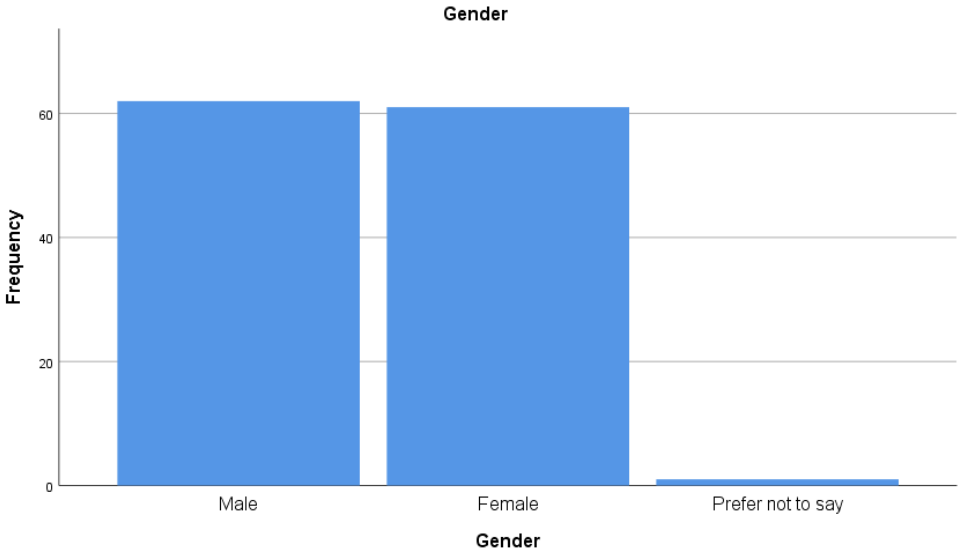
The results presented below was based on the information retrieved from one hundred and twenty-four (124) fresh graduates participated in the study. Frequency, charts, mean and standard deviation were used to present the data while regression analysis was used to test hypothesis at 5% significant level. A p-value less than or equal to 0.05 was considered significant.

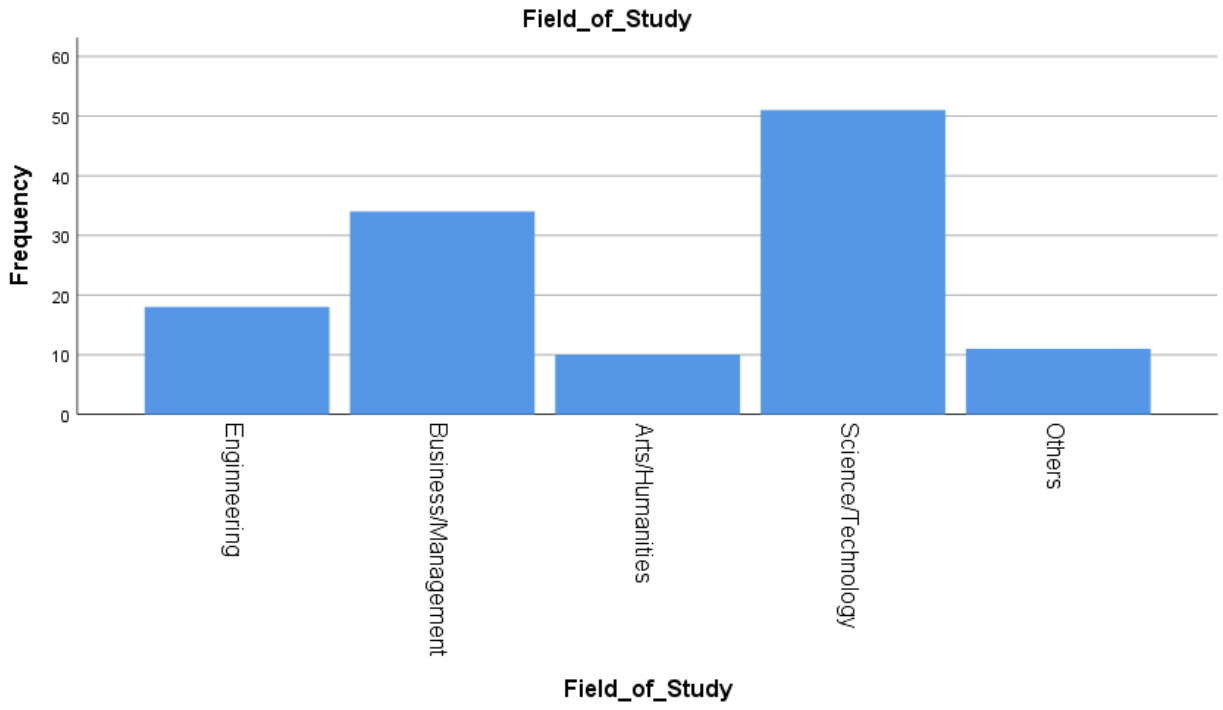
Tabel 1: Socio-Demographic Characteristics of the Respondents

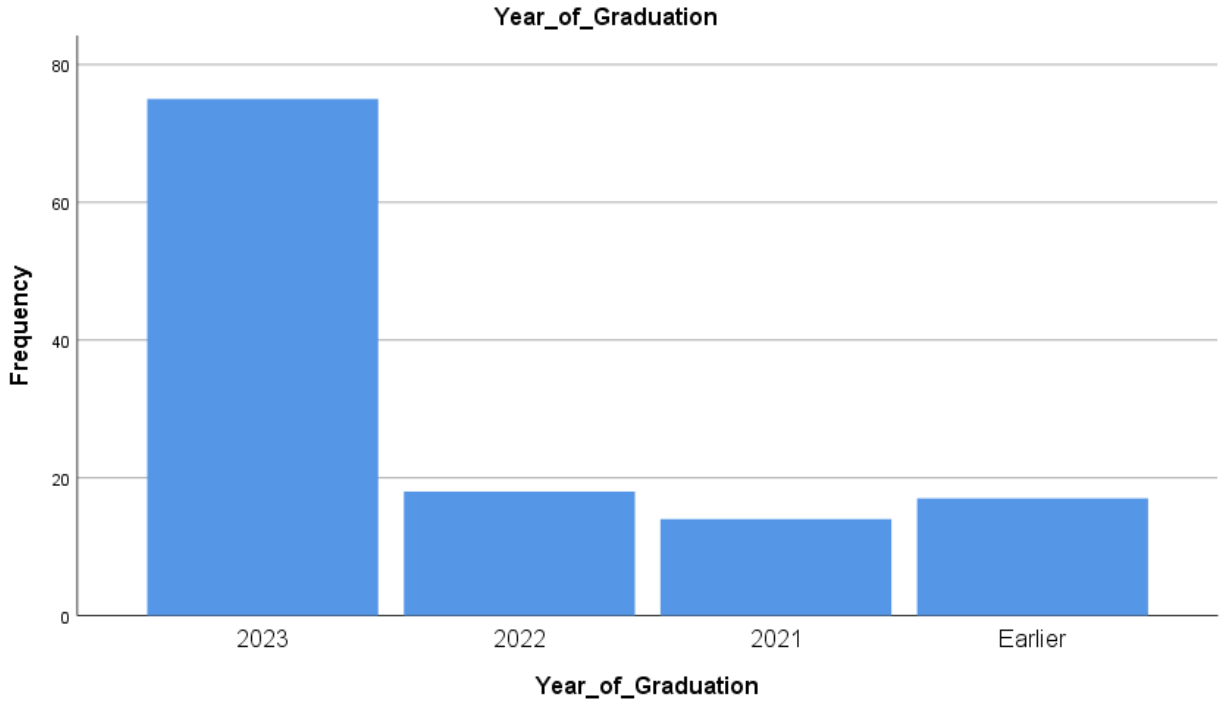
Variables	Frequency	Percentage
Age Group		
18-22	15	12.1
23-26	25	20.2
27-30	37	29.8
Above 40	47	37.9
Total	124	100.0
Mean ± SD years	**2.94 ± 1.03 years**	
Gender		
Male	62	50.0
Female	61	49.2
Prefer not to say	1	.8
Total	124	100.0
Field of Study		
Engineering	18	14.5
Business/Management	34	27.4
Arts/Humanities	10	8.1
Science/Technology	51	41.1
Others	11	8.9
Total	**124**	**100.0**
Year of Graduation		
2023	75	60.5
2022	18	14.5
2021	14	11.3
Earlier	17	13.7
Total	124	100.0

Table 1 shows socio-demographic characteristics of 124 respondents, The average age of the students was 2.94 ± 1.03 years with the majority (37.9%) aged above 40, followed by 29.8% aged 27–30, and a smaller proportion (12.1%) aged 18–22. Gender distribution was nearly equal, with 50% male, 49.2% female, and 0.8% preferring not to disclose their gender. Most respondents (41.1%) were from Science/Technology fields, followed by Business/Management (27.4%), Engineering (14.5%), and smaller groups in Arts/Humanities (8.1%) and other fields (8.9%). A significant portion graduated in 2023 (60.5%), with the rest from earlier years.






Field_of_Study
Frequency
60
50
40
30
20
10
0
Enginneering
Business/Management
Arts/Humanities
Science/Technology
Others
Field_of_Study


Year_of_Graduation
Frequency
80
60
40
20
0
2023
2022
2021
Earlier
Year_of_Graduation

Descriptive Analysis of the Research Instrument

Table 2: Online Learning Preferences Statements

Statements	Frequency	Percentage
Which online learning platforms have you used?(Select all that apply):		
Mean ± SD	**5.43 ± 3.09**	
Coursera	23	18.5
Coursera, edX	2	1.6
Coursera, Linkedin Learning	15	12.1
Coursera, Linkedin Learning, Others	9	7.3
Coursera, Others	15	12.1
EdX	5	4.0
LinkedIn Learning	21	16.9
LinkedIn Learning, Others	2	1.6
Others	23	18.5
Coursera, Linkedin Learning, Others	4	3.2
Coursera, Linkedin Learning, edX	3	2.4
LinkedIn Learning, edX	2	1.6
Total	124	100.0
What type of courses do you prefer? (Select all that apply):		
Mean ± SD	**6.61 ± 5.03**	
Career-specific skills (e.g., coding, marketing)	24	19.4
Soft skills (e.g., communication, time management)	12	9.7
Academic subjects (e.g., mathematics, economics)	4	3.2
Personal development (e.g., productivity, mindfulness)	13	10.5
Others	6	4.8
Career-specific skills & Soft skills	10	8.1
Career-specific skills, Personal development	9	7.3
Career-specific skills, Academic subjects, Personal development	7	5.6
Career-specific skills, Personal development	11	8.9
Soft skills, Academic subjects	3	2.4
Academic subjects, Personal development	2	1.6
Career-specific skills, Academic subjects	3	2.4
Soft skills, Personal development	5	4.0
Soft skills, Academic subjects, Personal development	2	1.6

Statements	Frequency	Percentage
Soft skills, Personal development, Others	2	1.6
How often do you engage with online learning platforms?		
Mean ± SD	**2.10± 1.00**	
Daily	41	33.1
Weekly	44	35.5
Monthly	25	20.2
Rarely	14	11.3
Total	124	100.0
On average, how many hours per week do you spend on online learning?		
Mean ± SD	**2.04 ± 0.90**	
Less than 2 hours	38	30.6
2-5 hours	52	41.9
6-10 hours	25	20.2
More than 10 hours	9	7.3
Total	124	100.0
Which device do you most commonly use for online learning?		
Mean ± SD	**1.49 ± 0.64**	
Laptop/Desktop	72	58.1
Smartphone	44	35.5
Tablet	7	5.6
Others	1	.8
Total	124	100.0

Table 2 shows examined fresh graduates' engagement with online learning platforms. Coursera and Others are the most commonly used platforms (18.5% each), followed by LinkedIn Learning (16.9%), indicating a preference for platforms offering career-oriented courses. Multi-platform usage is evident, with combinations like Coursera and LinkedIn Learning (12.1%) and Coursera, LinkedIn Learning, Others (7.3%), highlighting the flexibility and diverse learning needs of users. The mean number of platforms used is 5.43

± 3.09, showing moderate variability in platform engagement.

Course preferences reveal that career-specific skills (19.4%) are the most sought after, reflecting a strong emphasis on employability and professional development. Other popular courses include personal development (10.5%) and soft skills (9.7%), while academic subjects are less preferred (3.2%). The combination of career-specific skills and personal development (7.3%) and other mixed preferences further indicates a demand for holistic learning.

Engagement frequency is high, with 33.1% engaging daily and 35.5% engaging weekly. This frequent interaction corresponds to the average time spent on online learning, where most graduates dedicate 2–5 hours per week (41.9%), with an overall mean of 2.04 ± 0.90 hours. Regarding devices, laptops/desktops are the preferred choice (58.1%), followed by smartphones (35.5%), demonstrating the importance of accessibility and device compatibility.

Fresh graduates are actively engaging with online learning platforms, prioritizing career-related skills while seeking flexibility through multi-platform usage. Their consistent interaction and significant time investment underscore the importance of tailored, accessible, and professionally relevant content to meet their diverse needs.

Table 3: Engagement Patterns Statements

Statements	**Frequency**	**Percentage**
What motivates you to use online learning platforms (Select all that apply):		
Mean ± SD	**8.06 ± 5.38**	
To improve employability skills	25	20.2
To gain certifications	6	4.8
To explore personal interests	8	6.5
Peer recommendations	2	1.6
Others	3	2.4
To gain certifications, To explore personal interests	2	1.6
To improve employability skills, To explore personal interests	10	8.1
To improve employability skills, To gain certifications	14	11.3
To gain certifications, Peer recommendations	1	.8
To explore personal interests, Peer recommendations	1	.8
To improve employability skills, Peer recommendations	4	3.2
To improve employability skills, To gain certifications, To explore personal interests	27	21.8

To improve employability skills, To gain certifications, To explore personal interests, Others	2	1.6
To improve employability skills, To gain certifications, Others	3	2.4
To explore personal interests, Others	1	.8
To improve employability skills, To gain certifications, To explore personal interests, Peer recommendations, Others	5	4.0
To improve employability skills, To gain certifications, To explore personal interests, Peer recommendations	8	6.5
To improve employability skills, To gain certifications, Peer recommendations	2	1.6
Total	124	100.0
Which features of online learning platforms do you find most engaging? (Select all that apply):		
Mean ± SD	**9.24 ± 6.50**	
Interactive content (quizzes, exercises)	9	7.3
Video lectures	16	12.9
Gamification (points, badges, etc.)	4	3.2
Certificates of completion	9	7.3
Community interaction (forums, group projects)	7	5.6
Video lectures, Certificates of completion	8	6.5
Video lectures, Certificates of completion, Community interaction	2	1.6
Interactive content, Certificates of completion	6	4.8
Interactive content, Video lectures, Certificates of completion	12	9.7
Interactive content, Video lectures	7	5.6
Interactive content, Community interaction	3	2.4
Interactive content, Video lectures, Community interaction	9	7.3
Certificates of completion, Community interaction	2	1.6
Video lectures, Community interaction	1	.8
Interactive content, Certificates of completion, Community interaction	1	.8
Interactive content, Video lectures, Certificates of completion, Community interaction	6	4.8
Video lectures, Gamification	1	.8
Interactive content, Video lectures, Gamification	1	.8
Interactive content, Video lectures, Gamification, Certificates of completion	7	5.6
Interactive content, Video lectures, Gamification, Certificates of completion, Community interaction	9	7.3
Video lectures, Gamification, Certificates of completion, Community interaction	1	.8
Interactive content, Gamification, Certificates of completion, Community interaction	1	.8

Interactive content, Gamification, Certificates of completion	2	1.6
Total	124	100.0
What challenges do you face while engaging with online learning platforms? (Select all that apply):		
Mean ± SD	**7.17± 5.82**	
Lack of time	19	15.3
High costs of courses	19	15.3
Difficulty staying motivated	8	6.5
Poor course quality/content	4	3.2
Others	10	8.1
High costs of courses, Difficulty staying motivated	7	5.6
Lack of time, High costs of courses	14	11.3
Lack of time, High costs of courses, Difficulty staying motivated	10	8.1
Difficulty staying motivated, Others	1	.8
High costs of courses, Others	2	1.6
Lack of time, High costs of courses, Difficulty staying motivated, Others	1	.8
High costs of courses, Poor course quality/content	4	3.2
Lack of time, High costs of courses, Difficulty staying motivated, Poor course quality/content	5	4.0
Lack of time, Difficulty staying motivated, Difficulty staying motivated	10	8.1
Lack of time, Difficulty staying motivated, Others	2	1.6
Lack of time, Difficulty staying motivated, Poor course quality/content	1	.8
Lack of time, Difficulty staying motivated, Difficulty staying motivated, Others	1	.8
Poor course quality/content, Others	1	.8
Lack of time, High costs of courses, Others	1	.8
Lack of time, Difficulty staying motivated, Difficulty staying motivated, Poor course quality/content	1	.8
High costs of courses, Difficulty staying motivated, Poor course quality/content	1	.8
Lack of time, High costs of courses, Poor course quality/content	1	.8
Lack of time, Difficulty staying motivated, Difficulty staying motivated, Poor course quality/content, Others	1	.8
Total	124	100.0
How do you typically interact with online course content?Select all that apply):		
Mean ± SD	**6.22 ± 3.43**	
Watch video lectures only	12	9.7
Take notes and review materials	16	12.9
Complete quizzes and assignments	11	8.9
Participate in discussions or forums	2	1.6

Watch video lectures only, Complete quizzes and assignments	6	4.8
Take notes and review materials, Complete quizzes and assignments	8	6.5
Watch video lectures only, Take notes and review materials, Complete quizzes and assignments	26	21.0
Watch video lectures only, Take notes and review materials	7	5.6
Watch video lectures only, Take notes and review materials, Complete quizzes and assignments, Participate in discussions	15	12.1
Watch video lectures only, Take notes and review materials, Participate in discussions	6	4.8
Take notes and review materials, Complete quizzes and assignments, Participate in discussions or forums	9	7.3
Watch video lectures only, Complete quizzes and assignments, Participate in discussions or forums	3	2.4
Watch video lectures only, Participate in discussions or forums	2	1.6
Take notes and review materials, Participate in discussions or forums	1	.8
Total	**124**	**100.0**

The table 3. revealed information into fresh graduates' motivations, challenges, and interaction styles with online learning platforms. Based on the results on the table, the primary motivation is to improve employability skills (20.2%) and gain certifications (11.3%), reflecting a focus on career advancement. A significant proportion (21.8%) is motivated by a combination of employability skills, certifications, and personal interests, showing diverse learning objectives. Peer recommendations and other factors are less common motivators, with only a small percentage relying on these.

Video lectures are the most engaging feature (12.9%), followed by interactive content and certificates of completion (7.3% each). Combining features such as interactive content, video lectures, and certificates of completion (9.7%) is appealing, suggesting the importance of variety and reward mechanisms. Community interaction and gamification features (e.g., badges, points) show limited engagement (3.2% and 5.6%, respectively), indicating these may not be priorities for many users.

Lack of time and high costs of courses are equally significant challenges, each affecting 15.3% of respondents. Many users face a combination of these challenges, with 11.3% reporting both lack of time and high costs, and 8.1% struggling with motivation and financial barriers simultaneously. Poor course quality/content (3.2%) and other factors (8.1%) are less frequently cited but still present barriers.

The most common interaction style is a comprehensive approach, with 21.0% watching

video lectures, taking notes, and completing quizzes and assignments. A notable percentage (12.9%) focuses on taking notes and reviewing materials, while others exclusively watch video lectures (9.7%). Interaction through forums or discussions is minimal (1.6%), showing limited engagement in collaborative learning.

Fresh graduates are primarily motivated by employability and certification goals when using online learning platforms. Video lectures, interactive content, and certification options are the most appealing features, while gamification and community engagement hold less appeal. Time constraints and high costs are the most significant challenges, affecting learners' ability to maximize their engagement. Users typically adopt a comprehensive approach to learning, combining video lectures, note-taking, and assignments, while interaction in forums remains limited. affordability, time efficiency, and feature variety are critical to enhancing engagement with these platforms.

Table 4: Perceived Impact Statements

Statements	**Frequency**	**Percentage**
How would you rate the effectiveness of online learning platforms in helping you acquire new skills?		
Mean ± SD	**3.51 ± 6.93**	
Not Effective	2	1.6
Neutral	8	6.5
Somewhat Effective	39	31.5
Very Effective	75	60.5
Total	124	100.0
Have you used any skills or knowledge gained from these platforms in practical scenarios (e.g., projects, internships, jobs)?		
Mean ± SD	**1.48 ± 0.63**	
Yes, Frequently	74	59.7
Yes, Occasionally	41	33.1
Not Yet	9	7.3
Total	124	100.0
Do you believe online learning platforms are a good substitute for traditional classroom learning?		
Mean ± SD	**1.55± 0.74**	
Yes	74	59.7
No	32	25.8
Not sure	18	14.5
Total	124	100.0

Which platform do you think provides the best value for money?		
Mean ± SD	**2.33 ± 1.42**	
Coursera	47	37.9
Udemy	33	26.6
LinkedIn Learning	20	16.1
EdX	4	3.2
Others	20	16.1
Total	124	100.0
What improvements would make online learning platforms more effective for fresh graduates?		
Mean ± SD	**6.78 ± 4.04**	
Lower course costs	15	12.1
More interactive content	8	6.5
Better certification programs	14	11.3
Enhanced community features (forums, group projects)	5	4.0
Others	4	3.2
Lower course costs, Better certification programs	15	12.1
More interactive content, Better certification programs	7	5.6
Lower course costs, More interactive content	13	10.5
More interactive content, More interactive content, Better certification programs	8	6.5
More interactive content, More interactive content, Better certification programs, Enhanced community features	13	10.5
More interactive content, Enhanced community features	5	4.0
Lower course costs, Better certification programs, Enhanced community features	5	4.0
Lower course costs, More interactive content, Enhanced community features	6	4.8
Lower course costs, Enhanced community features	3	2.4
Lower course costs, Better certification programs, Enhanced community features, Others	1	.8
More interactive content, More interactive content, Better certification programs, Others	1	.8
More interactive content, Enhanced community features, Others	1	.8
Total	124	100.0

The findings in table 4. above revealed that online learning platforms are highly effective in helping users acquire new skills, with 60.5% rating them as "Very Effective" and 31.5% as "Somewhat Effective." Additionally, most respondents (59.7%) reported frequently applying the skills they gained in practical scenarios such as jobs, internships, and projects, while 33.1% applied them occasionally. However, 7.3% of participants have not yet utilized

their acquired knowledge practically. When asked about the potential of online learning platforms as a substitute for traditional classroom learning, 59.7% agreed they were viable alternatives, though 25.8% disagreed, and 14.5% were unsure.

Regarding value for money, Coursera was deemed the most cost-effective platform by 37.9% of respondents, followed by Udemy (26.6%) and LinkedIn Learning (16.1%), while other platforms like edX and niche options accounted for smaller proportions. Respondents suggested several areas for improvement to enhance platform effectiveness for fresh graduates. These include lowering course costs (12.1%), creating more interactive content (6.5%), offering better certification programs (11.3%), and enhancing community features like forums and group projects (4.0%). Many participants recommended a combination of these improvements, emphasizing affordability and interactivity as key factors.

Table 5: Open-Ended Feedback (Optional)

Statements	**Frequency**	**Percentage**
Would you recommend online learning platforms to your peers?		
Mean ± SD	**1.01 ± 0.09**	
Yes	123	99.2
No	1	.8
Total	**124**	**100.0**
Which platform do you use most often, and why?		
Mean ± SD	**3.04 ± 2.15**	
Coursera	56	45.2
LinkedIn Learning	27	21.8
EdX	3	2.4
Others	38	30.6
Total	**124**	**100.0**

The findings in table 5 above revealed the significant role of online learning platforms in skill development and professional growth among fresh graduates. A vast majority (99.2%) of respondents would recommend these platforms to their peers, reflecting high satisfaction and trust in their effectiveness. Coursera emerged as the most popular platform (45.2%)likely due to its comprehensive course offerings, credibility, or perceived value for money; followed by LinkedIn Learning (21.8%)suggesting its popularity among users looking to develop professional skills or career-oriented content., with respondents valuing their comprehensive course offerings and professional focus. While EdX was less

utilized (2.4%), 30.6% preferred other niche platforms tailored to specific needs.

DISCUSSION

Based on the objectives of the project, here is a summary of the results:

Objective one: To Identify Various Engagement Metricsfor measuring user engagement on various platforms, such as session duration, frequency of use, course completion rate and interaction levels.

The data reveals key metrics for user engagement on online learning platforms. Users primarily dedicate 2–5 hours per week to learning, with most engaging on a weekly or daily basis, reflecting moderate yet consistent use. Laptops/desktops (58.1%) are the preferred devices, emphasizing the need for accessible and user-friendly interfaces. Engagement is driven by interactive features such as video lectures, quizzes, and assignments, which help sustain user interest.

Career-focused motivations dominate, with users aiming to improve employability skills and gain certifications, while personal interest exploration is a secondary factor. Despite high engagement levels, many users report not yet applying learned skills practically, suggesting potential gaps in practical applicability or confidence. The platforms are seen as moderately effective, but lower course costs, enhanced community features, and better certification programs are suggested for improvement.

Objective Two: To Examine how various factors such as platform features, content types, and user demographics influence engagement levels.

The factors influencing engagement levels on online learning platforms can be evaluated based on platform features, content types, and user demographics:

Platform Features: Interactive content such as quizzes, video lectures, and gamified elements strongly influence engagement. Features like **certifications of completion** and **community interactions (forums, group projects)** motivate users to stay engaged. The need for **lower course costs** and improved **certification programs** highlights the importance of affordability and perceived value.

Content Types: Users are most drawn to **career-specific skills** (e.g., coding, marketing) and **personal development courses**, indicating a strong preference for practical and self-improvement-focused content. The least engagement is with purely academic

subjects, suggesting that content tailored to job readiness is more effective in maintaining interest.

User Demographics: The majority of users engage through **laptops/desktops (58.1%)**, reflecting a professional or study-oriented user base. Time availability varies, with most users dedicating **2–5 hours weekly**, signalling that engagement is impacted by competing commitments. Additionally, while most users report learning new skills, **only a small percentage apply these skills frequently**, implying a gap in transitioning from learning to practical use.

Engagement is driven by career-oriented goals, such as improving employability skills and gaining certifications. However, **high costs of courses**, **time constraints**, and challenges in staying motivated are significant barriers, affecting overall engagement levels.

Objective Three: To Assess the Relationship Between Engagement and Learning Outcomes:

Assessing the relationship between user engagement metrics and learning outcomes reveals that higher engagement levels generally correlate with better learning outcomes. Metrics such as session duration, frequency of use, course completion rates, and active participation (e.g., quizzes, assignments, and community discussions) are strong indicators of positive learning outcomes. Users who engage more frequently and invest more time on platforms tend to report greater skill acquisition and practical application of knowledge. However, challenges such as lack of time, high course costs, and motivation issues can limit engagement, potentially affecting outcomes. Platforms that prioritize interactive content, career-relevant courses, and effective certification programs see better performance indicators among users.

Testing of Hypotheses

Hypothesis One

H_{01}: There is no significant relationship between user engagement metrics and learning outcomes

Table 6: Pearson Chi-Square Tests

		Engagement Metrics
Learning Outcomes	Chi-square	22.542
	df	9
	Sig.	.007*
*. The Chi-square statistic is significant at the .05 level.		

The results provided above in Table 6 is a Pearson Chi-Square test, which is used to assess the relationship between two categorical variables. Since the p-value (.007) is less than 0.05, we therefore reject the null hypothesis. This means there is a statistically significant association between Engagement Metrics and Learning Outcomes of fresh graduates.

Hypothesis Two:

H_{02}:There is no significant difference between the mean of the user engagement metrics across platforms

Table 7: ANOVA for Engagement Metrics

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4.688	3	1.563	1.280	.284
Within Groups	145.231	119	1.220		
Total	149.919	122			

The output provided in table 7 is from a one-way ANOVA test, which is used to compare the means of a dependent variable (engagement metrics) across multiple groups (e.g., different platforms) to determine if there are significant differences among them.

The p-value of 0.284 is greater than the significance level (α=0.05), meaning we fail to reject the null hypothesis. There is no statistically significant difference in the mean of user engagement metrics across the platforms. The engagement metrics do not vary significantly across platforms. This suggests that platform type may not have a meaningful impact on user engagement.

CONCLUSION

This study analyzed engagement patterns of 124 fresh graduates with various online learning platforms using Primary data. The analysis revealed significant insights into user preferences, engagement behaviors, challenges, and the perceived impact of these platforms

on learning outcomes.Fresh graduates primarily engage with platforms such as Coursera, LinkedIn Learning, and Udemy, driven by features like interactive content, video lectures, and certification programs. The majority of users spend 2-5 hours weekly on these platforms and interact with course content by watching lectures, completing assignments, and participating in discussions.

Career-specific skills dominate course preferences, followed by personal development and soft skills. This preference aligns with users' motivations to improve employability, gain certifications, and explore personal interests. Common barriers to engagement include lack of time, high course costs, and difficulty maintaining motivation. These factors hinder consistent platform use and learning outcomes.

Most users find online learning platforms effective in helping them acquire new skills. However, a significant proportion of users have yet to apply these skills in practical scenarios. There is also skepticism about whether online learning can fully replace traditional classroom education. Most users find online learning platforms effective in helping them acquire new skills. A significant proportion of users have apply these skills in practical scenarios.

The study concluded that online learning platforms are valuable tools for skill development among fresh graduates. However, their effectiveness depends on user engagement, which is influenced by platform features, content relevance, and accessibility. While platforms like Coursera and LinkedIn Learning are highly regarded, barriers such as high costs and lack of time hinder optimal engagement. Furthermore, while higher engagement correlates with better learning outcomes, the practical application of acquired skills remains underutilized. These insights underscore the need for continuous improvement of online learning platforms to better meet the needs of users.

Recommendations

Based on the findings, the following recommendation were made:

1. Online learning platforms should prioritize interactive content, gamification, and community engagement tools to sustain user interest and motivation.
2. Affordable pricing models, scholarships, or tiered payment plans should be introduced to make courses more accessible to fresh graduatesfacing economic challenges.
3. Platforms should expand their offerings of career-specific skills and certifications to ensure alignment with job market demands.

4. Partnerships with organizations for internships, projects, or job placements can bridge the gap between learning and real-world application.

5. Adaptive scheduling options that cater to users with limited time can enhance engagement and completion rates.

6. Platforms should utilize AI-driven personalization to recommend courses and features based on user preferences and progress.

7. Campaigns highlighting the value of certifications, skill acquisition, and career advancement through online learning can drive higher participation.

8. Regular feedback, goal-setting tools, and reward mechanisms can help users maintain motivation throughout their learning journey.

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