**Dsa 210: Analyzing the Interaction Between Professional and Entertainment Screen Time: LinkedIn vs TikTok Usage**

**Ayşegül Çelikok**

**1. Project Motivation**

As a final-year university student, balancing professional development and digital entertainment is crucial. I use **LinkedIn** primarily for job searching and professional networking, while **TikTok** serves as my main source of casual entertainment.

This study explores how screen time spent on these platforms fluctuates across one year and whether there is a **trade-off or behavioral pattern** between professional engagement and entertainment consumption—especially during **exam periods** and **active job application days**.

**2. Data Source and Processing**

**Data Collection:**

* **Screen Time Data:** Daily screen time for TikTok and LinkedIn, manually collected or exported from screen time tracking tools.
* **Other Features:** Day type (weekday/weekend), academic events (exam or not), time of day each app was used, and number of job applications submitted via LinkedIn.

**Data Structure:**

Each row represents a single calendar day and includes:

* Date
* Linkedin\_ScreenTime (minutes)
* Total\_ScreenTime TikTok (minutes)
* Jobs\_Applied
* Academic\_Events ("Exam Period" or "No Event")
* Day\_Type (Weekday/Weekend)
* Usage\_Time TikTok
* Usage\_Time\_LinkedIn

**Libraries Used:**

* **Pandas:** For data handling.
* **Matplotlib / Seaborn:** For detailed visualizations.
* **Statsmodels / Scipy:** For statistical testing.
* **Scikit-learn:** For classification and regression modeling.

**3. Data Overview**

| **Metric** | **LinkedIn Screen Time** | **TikTok Screen Time** |
| --- | --- | --- |
| **Mean (minutes)** | 19.4 | 82.1 |
| **Standard Deviation** | 21.1 | 54.6 |
| **Min – Max (minutes)** | 2 – 156 | 4 – 206 |

**4. Visual Insights**

**Line Chart Insights**

**Line Chart 1: Daily Screen Time Trend for LinkedIn and TikTok**

This line chart tracks **daily screen time** for both platforms over the entire year.

* **LinkedIn:**  
  Usage is relatively low and stable, with occasional spikes on job application days.
* **TikTok:**  
  Usage is more volatile, with noticeable peaks and drops—often higher during weekends or non-exam days.

**Key Insight:**  
Day-to-day usage shows that **TikTok is more variable and sensitive to mood/free time**, while **LinkedIn is accessed more purposefully**. metin, öykü gelişim çizgisi; kumpas; grafiğini çıkarma, çizgi, ekran görüntüsü içeren bir resim

Yapay zeka tarafından oluşturulmuş içerik yanlış olabilir.

**Line Chart 2: Weekly Average Screen Time Trend**

This smoothed line chart visualizes the **weekly average** screen time over time.

* **TikTok:**  
  Gradual decline over the year, especially in later months—possibly indicating a **shift in focus toward graduation and productivity**.
* **LinkedIn:**  
  Some fluctuation with occasional peaks, but no strong increasing trend. This suggests **usage is driven by job-search bursts rather than gradual buildup**.

**Key Insight:**  
The weekly trend reveals behavioral transitions: **entertainment habits decrease**, while **career engagement remains intermittent but focused**.

**çizgi, öykü gelişim çizgisi; kumpas; grafiğini çıkarma, yazı tipi, diyagram içeren bir resim

Yapay zeka tarafından oluşturulmuş içerik yanlış olabilir.**

**Bar Chart Insights**

**1.Average Job Applications on Weekdays vs Weekends**

This bar chart highlights the average number of job applications submitted on weekdays versus weekends.

* **Insights:**
  + **Weekday average** is substantially higher than **weekend average**.
  + Reflects a professional engagement aligned with standard working days.
* **Design Notes:**
  + Color-coded: **Sky blue for weekdays**, **salmon for weekends**
  + Clear separation for quick comparison

**metin, ekran görüntüsü, öykü gelişim çizgisi; kumpas; grafiğini çıkarma, diyagram içeren bir resim

Yapay zeka tarafından oluşturulmuş içerik yanlış olabilir.**

**2.Average Screen Time by Contextual Day Type**

This grouped bar chart compares **average screen time on LinkedIn and TikTok** for three contextual day types:

* **Job Application Days**
* **Exam Days**
* **No Event Days**
* **Insights:**
  + **LinkedIn usage** peaks on job application days.
  + **TikTok usage** is highest during no-event days.
  + Both platforms show a **decline in usage during exam days**, likely due to academic workload.
* **Interpretation:**
  + Professional and entertainment behaviors are both **context-sensitive**, reacting strongly to personal deadlines and obligations.

ekran görüntüsü, çizgi, öykü gelişim çizgisi; kumpas; grafiğini çıkarma, diyagram içeren bir resim

Yapay zeka tarafından oluşturulmuş içerik yanlış olabilir.

**3. Average Screen Time by Time of Day**

This dual bar chart visualizes screen time preferences for each platform throughout different times of the day.

* **LinkedIn:**
  + Used primarily in **mornings and afternoons**, reflecting workday usage behavior.
* **TikTok:**
  + Peaks in **evenings and nights**, suggesting usage as a post-activity or relaxation habit.
* **Interpretation:**
  + Strong temporal distinction exists between the two platforms.
  + Screen time behavior aligns with typical daily rhythms of productivity and relaxation.

**Pie Chart Insights**

**Job Applications During Exam vs Non-Exam Periods**

A pie chart illustrates the proportion of job applications submitted during **exam periods** versus **non-exam days**.

* **Insights:**
  + A vast majority of job applications were submitted on **non-exam days**.
  + Only a small fraction occurred during **exam periods**, suggesting academic pressure likely reduces career-related activity.
* **Data Highlights:**
  + **53 applications** were submitted on non-exam days.
  + Only **2 applications** occurred during exam periods.
* **Interpretation:**
  + This visual affirms that job-seeking activity is deprioritized during academically intense periods.
  + The segmentation clearly communicates behavioral shifts between high-stress and flexible timeframes.

metin, ekran görüntüsü, diyagram, daire içeren bir resim

Yapay zeka tarafından oluşturulmuş içerik yanlış olabilir.

**Heatmap Insights**

**Average Screen Time by Time of Day and Day Type**

Two heatmaps were generated to showcase how TikTok and LinkedIn usage vary depending on both **day type (Weekday/Weekend)** and **usage time (Morning, Afternoon, Evening, Night)**.

**a. TikTok Heatmap:**

* **Usage peaks** during the **evening and night**, especially on **weekends**.
* **Minimal usage** is recorded during **mornings**, regardless of the day type.

**b. LinkedIn Heatmap:**

* Shows higher usage during **mornings and afternoons on weekdays**.
* Very low activity is observed on weekends, particularly during evening and night.
* **Interpretation:**
  + These patterns reinforce the **entertainment vs productivity** roles of TikTok and LinkedIn respectively.
  + Weekend evenings are dominated by leisure (TikTok), while weekday mornings cater to professional focus (LinkedIn).

metin, ekran görüntüsü, diyagram, dikdörtgen içeren bir resim

Yapay zeka tarafından oluşturulmuş içerik yanlış olabilir.

**Boxplot Insights**

**Box Plots: Screen Time by Day Type**

Two box plots visualize how **LinkedIn** and **TikTok** screen time vary across:

* **Job Application Days**
* **Exam Days**
* **No Event Days**

**LinkedIn:**

* Highest usage on **job application days**
* Noticeably lower during **exam periods**

**TikTok:**

* Most used on **no-event days**
* Significantly reduced during **exam days**

**Key Insight:**  
LinkedIn usage aligns with professional focus, while TikTok serves more as a leisure activity—**both decrease under academic pressure**, especially during exams

diyagram, ekran görüntüsü, plan, dikdörtgen içeren bir resim

Yapay zeka tarafından oluşturulmuş içerik yanlış olabilir.

**5. Hypothesis Testing**

The following hypotheses were tested to investigate behavioral patterns in LinkedIn and TikTok usage throughout the academic year:

* **H₁:** LinkedIn usage is significantly higher during standard working hours.  
  *Result:* Supported. A statistically significant increase in usage was observed during morning and afternoon time slots compared to evening and night.
* **H₂:** TikTok usage peaks at night on weekends.  
  *Result:* Supported. Usage data confirmed a concentration of TikTok activity during late hours on weekends.
* **H₃:** LinkedIn usage increases as graduation approaches.  
  *Result:* Not supported. No significant upward trend was detected in LinkedIn usage over the academic year.
* **H₄:** TikTok usage decreases throughout the academic year.  
  *Result:* Supported. A moderate negative correlation (r = -0.28) indicates a decline in usage over time.
* **H₅:** LinkedIn usage decreases as graduation approaches.  
  *Result:* Not supported. The analysis revealed no significant temporal trend.
* **H₆:** LinkedIn usage is higher on days when job applications are submitted.  
  *Result:* Supported. A strong positive correlation (r = 0.66) was found between job application activity and LinkedIn screen time.
* **H₇:** LinkedIn usage decreases during exam periods.  
  *Result:* Supported. A significant decrease in usage was observed on days marked by academic exams.
* **H₈:** TikTok usage decreases during exam periods.  
  *Result:* Supported. Screen time data showed a statistically significant reduction during exam days.
* **H₉:** There is a negative correlation between LinkedIn and TikTok usage.  
  *Result:* Not supported. The correlation was weak and statistically insignificant (r = -0.04, p = 0.4471).

**6. Correlation Analysis**

To quantify relationships between platform usage and contextual variables, Pearson correlation coefficients were calculated:

* The correlation between **LinkedIn and TikTok screen time** was weak and not statistically significant (r = -0.04, p = 0.4471), indicating no meaningful interaction between the two platforms.
* A **moderate negative correlation** was found between **TikTok usage and exam periods** (r = -0.19, p = 0.0003), suggesting a decrease in entertainment activity during academically intense periods.
* **LinkedIn usage** exhibited a **strong negative correlation** with exam periods (r = -0.30, p < 0.0001), confirming reduced professional engagement during exams.
* A **strong positive correlation** was observed between **LinkedIn screen time and the number of job applications submitted** (r = 0.66, p < 0.0001), highlighting LinkedIn’s role as a tool for active job searching.
* No significant correlation was found between **LinkedIn usage and academic year progress** (r = -0.01, p = 0.9211), indicating that usage did not consistently increase or decrease toward graduation.
* **TikTok usage**, on the other hand, showed a **moderate decline** over time (r = -0.28, p < 0.0001), reflecting a potential shift in focus away from entertainment.

**7. Machine Learning**

**Classification Model:**

**Goal:** Predict if a day is part of an exam period

* **Model:** Random Forest Classifier
* **Features:** LinkedIn usage, TikTok usage, job applications
* **Result:**
  + Good accuracy for non-exam days
  + Lower recall for exam days (model fails to catch all)

**Regression Models:**

* **TikTok Prediction:**
  + **MAE:** ~45 mins
  + **Conclusion:** TikTok behavior is highly irregular.
* **LinkedIn Prediction:**
  + **MAE:** ~10 mins
  + **Conclusion:** LinkedIn usage is more predictable and structured.

**8. Conclusion**

* **TikTok usage declined** as graduation approached, indicating increased focus.
* **LinkedIn activity spiked** around job application days, aligning with career goals.
* **No strong trade-off** between TikTok and LinkedIn was found—one doesn’t significantly reduce the other.
* **Usage patterns are context-dependent**: both academic and professional demands influence behavior more than platform competition.