# The Impact of Smartphone Addiction on Cyberloafing: The Moderating Role of Generation Differences

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**Abstract**

**Background:** Smartphone addiction, a growing issue affecting Generation X, Y, and Z, is characterized by excessive use of applications, leading to counterproductive behaviors like virtual shifting. This study aimed to investigate the moderating role of generation differences (X and Y) in the effect of smartphone addiction on cyberloafing behaviors.

**Methods:** Participants included 423 bank employees and volunteers, with 214 from the X generation and 209 from the Y generation, from three provinces in Turkey. Participants were selected through simple random sampling, and data were gathered using Google Forms between February and Mar 2024. The data were analyzed using SPSS 25 and AMOS 25 software.

**Results:** The analysis indicated that a significant positive correlation between smartphone addiction and cyberloafing behaviors. Furthermore, smartphone addiction was found to have a positive impact on cyberloafing behaviors, with no generational differences in this association.

**Conclusion:** The study results highlight the importance of smartphone addiction in the workplace, as it leads to an increase in cyberloafing behavior.

**Keywords:** Internet addiction; Smartphone addiction; Cyberloafing; Generations

## Introduction

Smartphones, which incorporate many functional features, continue to spread rapidly in Turkey and worldwide as one of the most popular communication devices in recent years. As the technological functionality of smartphones increases, the time spent using these mobile communication devices also increases significantly (1). Globally, mobile phone use has risen to 67%, and social media access on mobile phones has reached 42%. Users spend an average of 6.5 h daily on the internet (2). In Turkey, 81.68 million cellular mobile lines correspond to 95.4 % of the population. This rate increased 3.2% in 2023 compared to 2022 (3).

Widely used smartphones with advanced features (4) have also replaced cell phones. To a certain extent, they have also replaced personal computers and many other devices (5). Smartphones are

used for various purposes like socializing, entertainment, and shopping. They provide internet access without the time and space constraints (6). A smartphone enables individuals to access information quickly, share and create content, play games and music, watch and share videos, use applications, create media files, interact on social networks, shop online, send emails, conduct banking transactions, make voice and video calls, check news and weather (7, 5). Although they are beneficial devices and offer considerable benefits, smartphones can cause important physiological reactions, popularly known as "smartphone addiction" (8). In this context, it is considered a type of behavioral addiction (9) and is accepted as a type of technological addiction (10).

Smartphone addiction, also known as problematic (11-13), excessive (14-16), habitual (7, 17), or compulsive (18, 19) usage, is a behavioral and technological addiction where users lose control over their devices and experience adverse effects due to uncontrolled use (20). It has significant psychological and physiological effects, including depression (21), mood disorders, anxiety, stress, low self-esteem, loneliness, and unhappiness (22-25). Physiological effects include distraction, sleep disorders, headaches, blurred vision, fatigue, neck pain, flattening, decreased physical activity, and obesity (26-31). Smartphone addiction has become a significant problem in business life, with severe psychological and physiological effects (32). Research on smartphone addiction has shown that it has an adjuvant affect cyberloafing, which refers to activities unrelated to work that employee engages in using information devices during working hours (33, 34).

WHO also recognized that smartphone addiction is a behavioral addiction and has psychological, sociological, and physiological consequences in cases of withdrawal (35). Due to its serious consequences, smartphone addiction has become a problem in business life. One such outcome of smartphone addiction is cyberloafing, which leads to poor work performance, productivity, employee satisfaction, and various security or legal consequences (36).

Since 1952, researchers have studied generations in disciplines like economics, sociology, political science, and psychology (37). Generations are individuals who share social events, birth years, and developmental periods, resulting in similar experiences at similar ages (38, 39). The classification of generations has been a topic of debate due to the various historical turning points and stages experienced by societies (33). The most accepted classification, primarily based in the USA, is based on birth years. The Traditional Generation (1925-1944) is characterized by those born before WWII, the Baby Boom Generation (1945-1965), Generation X (1966-1979), Generation Y (1980-1995), and Generation Z after the mid-1990s (40).

The classification of generations suggests that a significant portion of the Traditional and Baby Boom generation is retired, while Generation X and Y are still working, and Generation Z is new to business life. This research analyzes Generation X and Y, who are heavily involved in business. Generation X, born during significant global events like the Oil Crisis and Cold War, is characterized by a solid commitment to organizations and intense competition (41, 42). First exposed to digital technologies, Generation X is goal-oriented, entrepreneurial, pragmatic, and prefers face-to-face communication. They have high career expectations, focus on results, respect knowledge, and expect work-life balance (43, 44). They are also loyal and respectful to authority, embracing the work environment and adapting to technology (45, 46). Generation Y, born into technology, is the first wave of the digital generation. They quickly adapt to new technologies and are proficient in digital information (47). They use various devices, prefer multitasking, and are freedom-loving, marginal, and challenging authority (48). They are characterized by questioning (42), seeing social and parental roles as equally important, and caring less about money (49). As a result, Generation Y employees may engage in more cyberloafing behaviors than Generation X employees, with some studies showing a higher overall cyberloafing level (50, 51).

Research on smartphone addiction is relatively new and is generally focused on Generation Z students (6, 52-55). However, it constantly occupies the minds of Generation X and Y employees in business life, leading to essential consequences, as mentioned above. Therefore, this study, which focuses on smartphone addiction, is expected to contribute to the literature on two points. The first of these contributions is to examine the effect of smartphone addiction on virtual shirking behavior. When the literature was examined, the research addressing these two variables was limited. The second contribution is to determine whether there is a difference between generations in the effect of smartphone addiction on cyberloafing behavior based on the multi-generational theory. When the literature is examined, it is noteworthy that Generation Y is more addicted to smartphones than Generation X (51, 53). This situation brings to mind the question, "Can there be differences between generations in the effect of smartphone addiction on cyberloafing?" and this study seeks to answer this question. We formulated the following hypotheses to address this question:

**H₁:** *Smartphone addiction positively effects cyberloafing behaviors.*

**H₂:** *Generation difference has a moderating role in the effect of smartphone addiction on cyberloafing behaviors.*

# Methods

## Participants

The research focused on the three provinces in Turkey with the most bank branches. They are Istanbul with 2446 branches, Ankara with 887 branches, and Izmir with 646. Of the 9406 bank branches in Turkey, 3979 (42.3%) are in the three provinces under examination (56). Therefore, these three provinces were selected for the study. Google forms was used due to the temporal and financial difficulties of administering face-to-face surveys to bank employees in provinces in different and remote regions of Turkey. Google Form survey links and ethics clearance document were

e-mailed to the banks' Marmara Regional Directorates for Istanbul, Aegean Regional Directorates for Izmir, and Central Anatolia Regional Directorates for Ankara. Four hundred twenty-three private bank employees from the provinces of Istanbul, Izmir, and Ankara participated in the study. Only bank employees who used smartphones and volunteered were included as participants in this study, and the researcher provided the requisite information regarding the study's aim and content. In addition, research data was collected between Feb 2024 and Mar 2024.

## Measures
## Smartphone Addiction

The Smartphone Addiction Scale (SAS) was developed by Csibi et al. (57) and was first adapted into Turkish by Altundağ et al. (58). The scale is a one-dimensional 6-item scale. The SAS, which does not have reverse-coded items, includes statements such as "My smartphone is the most important thing in my life," "Preoccupying myself with my smartphone is a way of changing my mood," and "If I cannot use or access my smartphone when I feel like, I feel sad, moody, or irritable." Items are rated on a 5-point scale from 1 (strongly disagree) to 5 (strongly agree).

## Cyberloafing

The researchers used the 14-item Cyberloafing Scale (CS) to assess cyberloafing, originally developed by Örücü & Yıldız (59). The CS, which does not have reverse coded items, has two dimensions (serious and minor cyberloafing). The scale asks respondents to rate statements such as "I participate in social networks during working hours," "I do banking transactions online during working hours," and "I visit investment-related websites during working hours" on a 5-point scale ranging from "strongly disagree" to "strongly agree."

## Data Analysis

We aimed to reveal the moderating role of X and Y generations in the effect of smartphone addiction on cyberloafing behaviors. The collected da-

ta were analyzed using IBM SPSS Statistics 25 (IBM Corp., Armonk, NY, USA) and AMOS 25. The data analysis first determined the descriptive statistics and correlation coefficients. Then, the Process Macro (for SPSS) statistical program was used to test the research hypotheses.

## Results

### Descriptive statistics

Table 1 presents the demographic characteristics of the participants.

**Table 1:** Demographic Characteristics N= 423

| Gender | N | % | Education Status | N | % |
|---|---|---|---|---|---|
| Female | 217 | 51.3 | High School | 45 | 10.6 |
| Male | 206 | 48.7 | Associate Degree | 207 | 48.9 |
| Marital Status | | | Bachelors | 53 | 12.5 |
| Married | 213 | 50.4 | Postgraduate | 30 | 3.5 |
| Single | 210 | 49.6 | Generation | | |
| Smartphone Usage | Hour/Per Day | | X | 214 | 50.6 |
| Daily average for a participant | 4.26 | | Y | 209 | 49.4 |

### Confirmatory Factor and Reliability Analysis

Before testing the hypotheses proposed within the scope of the research, CFA was conducted to determine the structural validity of the scales used in the research. During the analysis, the standardized regression coefficient of the statements in the scale was not lower than 0.70 and the *P*-value was not greater than 0.05 (60).

"CMIN/DF, IFI, CFI, RMSEA, SRMR" values were analyzed to determine the model's compatibility. The required reference values were not reached in some values, and modifications were made to some of the items for improvements. Table 2 shows the fit index values obtained after modification.

**Table 2:** Fit Index Values of the Scales

| Indexes | Reference Value | Smartphone Addiction | Cyberloafing |
|---|---|---|---|
| CMIN/DF | $0< \chi2/sd \leq 5$ | 1.59 | 1.76 |
| IFI | $\geq.90$ | .99 | .99 |
| CIFI | $\geq.90$ | .99 | .99 |
| RMSEA | $\leq.90$ | .03 | .04 |
| SRMR | $\leq.10$ | .01 | .04 |

Table 2 shows that the fit indices of the scales are within the range of the reference fit index values. After the CFA analyses, the necessary analyses were conducted to determine the reliability of the scales. The reliability analyses concluded that Cronbach Alpha coefficients (Smartphone Addiction =.90; Cyberloafing =.92) were higher than .70.

### Mean, Standard Deviation, and Correlation between Variables

Table 3 presents the mean, standard deviation, and correlation between variables.

**Table 3:** Means, Standard Deviation, and Correlations between Variables

| Variable | 1 | 2 | 3 |
|---|---|---|---|
| 1 | | | |
| 2 | .28** | | |
| 3 | .13** | .77** | |
| Mean | 21.12 | 22.51 | 50.38 |
| SD | 4.15 | 6.75 | 14.38 |

Note, 1= Generation, 2= Smartphone Addiction, 3= Cyberloafing (**P<.01)

The correlation analysis showed that smartphone addiction was positively and significantly related to cyberloafing. Participant's generation was positively related to both smartphone addiction and cyberloafing.

### Hypothesis Analysis

Process Macro (for SPSS) statistical program developed by Preacher and Hayes (2004) was used to test the hypotheses. This program is beneficial in terms of using the bootstrap technique and revealing whether the effect of the independent variable on the dependent variable differs according to different levels of the moderating effect (61, 62). The 95% confidence interval (CI) values obtained using the bootstrap technique in the analyses are essential in providing information about whether the hypotheses regarding the relationships between variables are supported (63). The hypotheses are fully supported, confidence interval values should not contain zero values (64). The results of the analyses conducted to determine the moderating effect of generations on the effect of smartphone addiction on cyberloafing behaviors are presented in Table 4.

**Table 4:** Regression Analysis Results for the Relationship between Variables

| Variable | B | SE | t | P | 95% CI, LL | 95%CI, UL |
|---|---|---|---|---|---|---|
| Dependent Variable: Cyberloafing | | | | | | |
| Smartphone Addiction (SA) | .748 | .087 | 8.547 | .000 | 3.283 | 3.680 |
| Generation(G) | .062 | .064 | .971 | .331 | -.064 | .189 |
| SAxG | -.033 | .057 | -.581 | .561 | -.146 | .079 |
| N = 423. CI = confidence interval; LL = lower limit; UL = upper limit. | | | | | | |

As seen in Table 4, smartphone addiction has a positive and significant effect on virtual shirking behavior. Hypothesis 1, which states that smartphone addiction has a positive effect on cyberloafing behavior, is supported.

The results of Hypothesis 2 are presented in Table 4. Before examining whether the hypothesis is confirmed, the significance of the moderating effect should be checked. First, it is necessary to check whether the interaction between the independent variable, smartphone addiction, and the moderator variable, generation, is significant. The interaction between smartphone addiction and generation was not significant. In line with this result, Hypothesis 2 is not supported.

## Discussion

Technology, an essential aspect of modern life, helps with work and daily tasks but can also lead to problems when overused. Excessive consumption of anything can harm human beings. Smartphone addiction is one such example. This study investigated the associations between smartphone addiction, cyberloafing, and generations among bank employees. Here are the main results and discussions of this study.

According to the analysis, being addicted to smartphones leads to spending more time on non-work-related activities online, known as cyberloafing. Several studies in the literature have also found a link between smartphone addiction and increased online time, as seen in (65, 35, 66, 67, 6). However, most of these studies have concentrated on examining the impact of smartphone use on children and university students. However, studies are scarce investigating how smartphone usage affects productivity in work environments. Both younger individuals, such as children and university students, and older employees from Generation X and Y are increasingly using smartphones, leading to addiction and ultimately contributing to cyberloafing.

In addition, the study also examined whether there is a difference between generations in the effect of smartphone addiction on virtual shirking behavior. Smartphone addiction has a positive impact on cyberloafing behavior in both Generation X and Generation Y employees. However, the study did not find any moderating effect of Generations X and Y on the relationship between smartphone addiction and cyberloafing. However, when the literature is examined in general, it has been revealed that Generation Y has a higher level of smartphone addiction than Generation X (53, 51), and similarly, young employees exhibit more cyberloafing behaviors (68, 69). The result is surprising, given the studies mentioned above and the multigenerational theory. In the literature, no study investigates the mediating role of generations in the relationship between smartphone addiction and cyberloafing. The study has obtained findings that will significantly contribute to the literature.

## Limitations and Suggestions

Some limitations should be noted when interpreting the results of this study. First, the data collection method involved convenience sampling from specific banks, limiting the generalizability of the study results. As a result, conducting future studies in diverse locations with larger sam-

ple sizes can help re-examine these relationships. Additionally, future studies could target companies across various sectors to extend the findings to different generations. Second, the study group consisted of participants from Generation X and Generation Y. In future studies, Generation Z employees joining the workforce can be included. Third, the research utilized cross-sectional data for its analysis. Longitudinal research would provide more accurate insights into generational differences by tracking attitudes and values over time, leading to more reliable results. Limiting the study to investigate only one organizational behavior (cyberloafing) can be considered a significant constraint. Future studies can investigate the differences between generations in terms of different attitudes and values (job performance, fear of missing out, mobile flow, workplace happiness, loneliness, etc.). The other limitation of the research is the use of quantitative methods. This situation can be analyzed quantitatively and qualitatively using mixed methods in future studies. Due to financial and time constraints in this study, the face-to-face survey method can be used instead of Google Forms in future studies. Lastly, the variables examined in this study were assessed using a sample from Turkey. Future studies could explore differences in generational attitudes and values through a cross-cultural research design, leading to more comprehensive and illuminating outcomes.

## Conclusion

The study highlights that smartphone addiction is not only a common problem among children or students. However, it is also increasingly seen at work, leading to negative behaviors such as cyberloafing.

## Journalism Ethics considerations

This study's ethical approval was obtained from Adnan Menderes University Social and Humanities Research Ethics Committee (SHREC No.31906847).

## Acknowledgements

## Conflict of interest

The authors declare that there is no conflict of interests.

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