

# A Study on Cellphone Design Features and Consumer Preferences in Southern Taiwan

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## Abstract

**Introduction:** This study explored Taiwanese perspectives on cellphones as recreational, informative, or functional tools, surveying 471 participants from southern Taiwan (171 males, 300 females).

**Methods:** An 11-item questionnaire was developed and validated with 135 participants before the main study. Factor analysis confirmed three key factors—recreational, informative, and functional—demonstrating high reliability (.866) and explaining 67.793% of total variance.

The questionnaire was administered online in 2022, and data were analyzed using SPSS.

**Main Findings:** Findings revealed that females used cellphones more than males across all categories, including gaming, learning, and fitness tracking. Younger and middle-aged individuals engaged more in recreational and informative activities than older groups, highlighting generational differences in mobile technology use. Students dominated recreational use, except for those in agriculture-related fields. Service workers and individuals in unspecified occupations exhibited higher recreational and informative use than professionals and retirees. Cellphone ownership duration also influenced usage patterns. Participants who owned phones for over 10 years showed lower recreational use, likely due to habituation, while those with 5-8 years of ownership engaged more in informative activities. Daily usage time further shaped usage behaviors, with 3-5 hours of daily use linked to more recreational activities.

**Conclusion:** These results highlight demographic influences on cellphone functions.

**Keywords:** cellphone, recreational, informative, functional

## 1. Introduction

### *1.1 Research Background and Motivation*

Cellphones have become indispensable in daily life, offering recreational, informative, and functional purposes such as gaming, online shopping, learning, and tracking steps. Their versatility makes life without them unimaginable. This study explores whether gender, age, occupation, cellphone preference, ownership duration, and daily usage time influence cellphone usage patterns. It examines how these variables shape the use of cellphones as tools for entertainment, information-seeking, and practical functions, highlighting the diverse ways people integrate mobile technology into their everyday lives.

### *1.2 Research Purpose and Questions*

This study investigates whether gender, age, occupation, cellphone preference, ownership duration, and daily usage time influence cellphone use as a recreational, informative, or functional tool. The researchers address this aim by examining three key questions:

- (1) What are the outcomes of using cellphones for recreational, informative, and functional purposes?
- (2) Do gender and cellphone preference influence these usage patterns?
- (3) Are there differences in cellphone use based on age, occupation, ownership duration, and daily usage time?

The study seeks to uncover variations in how diverse demographic and behavioral factors shape the multifunctional use of cellphones in daily life.

## 2. Literature Review

### 2.1 Cellphone Use as a Recreational Tool

Research highlights extensive recreational use of mobile phones, including gaming, chatting, and watching videos. Dlodlo and Mahlangu (2013) found strong links between these activities and youth, influenced by enjoyment, dependency, and addiction. Chan et al. (2023) similarly emphasized popular recreational uses like chatting, gaming, music, and video consumption.

### 2.2 Cellphone Use as an Informative Tool

Mobile phones are pivotal for learning and information sharing, offering benefits like unrestricted knowledge access, skill development, and improved communication. Ilci (2014) highlighted their potential for abundant learning opportunities, while Sanga et al. (2016), and Abidin and Tho (2018) emphasized their role in enhancing effective learning. Abidin and Tho also noted advantages such as fostering critical thinking and global knowledge sharing. Mohammadi et al. (2020) identified a global trend in using mobile phones for information dissemination, while Dar and Lone (2022) described their evolution into user-friendly tools for remote learning and navigation. Chan et al. (2023) further highlighted their use for web surfing and educational purposes. Overall, mobile phones have become essential tools for accessible and diverse learning experiences worldwide.

### 2.3 Cellphone Use as a Functional Tool

Mobile phones have become versatile tools for various tasks, such as taking photos, tracking steps, emailing, online shopping, and sharing content. Freeman et al. (2020) emphasized the integration of digital devices and apps into daily life across all age groups, highlighting age-related differences in usage. Older adults primarily use mobile phones to connect with family and share information, while younger users engage in a wider range of functions. Freeman et al. also noted diverse technological activities, including gaming, shopping, banking, and social networking. Chan et al. (2023) highlighted the evolution of mobile phones over the past two decades, from communication tools to devices central to information-seeking, entertainment, relaxation, and financial management, demonstrating their expanded role in modern life.

### 2.4 Uses and Gratifications Theory (UGT)

Uses and Gratifications Theory (UGT) views media users as active participants who select media to meet personal needs and goals, seeking specific gratifications. UGT assumes that users consciously choose media based on motivations and preferences, interpret content subjectively, and influence media effects through interactions.

Katz, Gurevitch, and Haas (1973) categorized media gratifications into five areas: Cognitive Needs, focusing on acquiring information and enhancing understanding, linked to cellphones' informative use; Affective Needs, involving emotional satisfaction and entertainment, tied to cellphones' recreational use; Integrative Needs, addressing confidence, status, and credibility, combining cognitive and affective elements; Social Integrative Needs, strengthening relationships with family and friends, connected to cellphones' functional use; and Tension-Release Needs, fulfilling relaxation and escapism desires.

UGT explains media choices across platforms, including traditional and digital media, based on motivations like entertainment, information, and social interaction. Mobile devices and apps cater to diverse needs, from recreational activities like gaming and music to informative purposes like learning and news.

UGT's application extends to digital platforms, such as social media and streaming services, offering insights into user engagement and satisfaction (Stafford et al., 2004; Ruggiero, 2000). This study highlights UGT's relevance in analyzing cellphone use across demographics, emphasizing how personal needs influence diverse usage patterns.

### *2.5 Technology Acceptance Model (TAM)*

The Technology Acceptance Model (TAM), developed by Fred Davis in 1986, highlights two key factors shaping attitudes toward technology: perceived usefulness (PU) and perceived ease of use (PEOU). PU refers to the belief that a technology enhances performance or helps achieve goals, while PEOU reflects how effortless the technology is perceived.

TAM emphasizes how PU and PEOU influence users' attitudes and behavioral intentions, which predict actual adoption. Attitudes reflect overall feelings toward the technology, influenced by PU and PEOU, while behavioral intention, driven by PU and attitudes, determines usage likelihood.

TAM's flexibility has made it a foundational framework for understanding user behavior in various fields, including e-commerce, e-learning, mobile applications, and healthcare technology.

## **3. Methodology**

### *3.1 Subjects*

In the study, there were valid 471 subjects from southern Taiwan, including 171 males and 300 females. The subjects were volunteers to take part in the survey online in 2022.

### *3.2 Research Instrument*

The researchers initially developed a questionnaire of 17 items (6 related to background information and 11 focused on cellphone use, as shown in the Appendix). To ensure clarity, appropriateness, and lack of ambiguity in the items, three experts were consulted. Data collection was carried out online in 2022, and the questionnaire served as the research tool, yielding 471 valid responses, including 171 males and 300 females.

## **4. Results and Discussion**

### *4.1 Descriptive Statistics*

The study revealed that 64% of participants were female and from southern Taiwan. Over half (52.9%) were aged 15-30, with nearly half being students (46.9%), indicating younger individuals' greater participation in online surveys. Educators and government employees comprised 15.7%, likely due to their fixed working hours. Additionally, 41% reported owning a cellphone for over 10 years, and over 70% used their cellphone for more than 3 hours daily,

highlighting significant daily engagement with mobile devices among the respondents (see Table 1).

Table 1. Demographic Characteristics and Backgrounds of the Subjects ( $N=471$ )

<i>Category</i>	<i>n</i>	<i>%</i>
<b>Gender</b>		
Female	300	63.7%
Male	171	36.3%
<b>Age</b>		
10-15 years	12	2.5%
15-20 years	155	32.9%
20-30 years	94	20.0%
30-40 years	26	5.5%
40-50 years	73	15.5%
50-60 years	86	18.3%
over 60 years	25	5.3%
<b>Occupation</b>		
Student	221	46.9%
Government employee, educator, or military personnel	74	15.7%
Service worker	62	13.2%
Business professional	29	6.2%
Employee in agriculture, forestry, fishing, or animal husbandry	2	0.4%
Freelancer	12	2.5%
Retired	28	5.9%
Other	43	9.1%

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Cellphone preference		
Yes	463	98.3%
No	8	1.7%
Duration of cellphone ownership		
Less than 3 years	10	2.1%
3-5 years	91	19.3%
5-8 years	103	21.9%
8-10 years	74	15.7%
Over 10 years	193	41.0%
Daily usage time		
Less than one hour	16	3.4%
1-3 hours	117	24.8%
3-5 hours	178	37.8%
More than 5 hours	160	34.0%

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To address research question 1 (*What are the outcomes of using cellphones for recreational, informative, and functional purposes?*), the study revealed key statistics about cellphone usage: approximately 86% of participants use cellphones as alarms, over 83% for searching information, and more than 70% for taking photos, chatting with friends, and note-taking. Additionally, over 60% use cellphones for learning and listening to music, while nearly half reported using them to watch videos (see Table 2).

Informative uses, such as finding information and learning, highlight the role of cellphones in enhancing productivity and knowledge acquisition, aligning with perceived usefulness (PU) in the Technology Acceptance Model (TAM). Functional uses, like photo-taking and step tracking, emphasize their practicality and versatility, resonating with TAM's PU. Recreational activities, including gaming and chatting, particularly popular among younger users, reflect the intuitive and engaging nature of these activities, aligning with TAM's perceived ease of use (PEOU). These findings showcase cellphones' multifunctionality across user demographics and purposes.

Table 2. The Summary of the Subjects' Cellphone Usage ( $N=471$ )

<i>Item</i>	<i>n</i>	<i>%</i>
<b>Recreational Tool</b>		
Watch videos		
SA+A	270	57.3%
N	79	16.8%
SD+D	122	25.9%
Play games		
SA+A	208	44.2%
N	84	17.8%
SD+D	179	38.0%
Chat with friends		
SA+A	330	71.3%
N	100	21.2%
SD+D	35	7.4%
Listen to music		
SA+A	295	62.6%
N	76	16.1%
SD+D	100	21.2%
Online shopping		
SA+A	232	49.3%
N	87	18.5%
SD+D	152	32.3%
<b>Informative Tool</b>		
Find information		
SA+A	393	83.4%
N	60	12.7%
SD+D	18	3.8%

Learning		
SA+A	313	66.5%
N	106	22.5%
SD+D	52	11.0%
Alarm		
SA+A	404	85.8%
N	27	5.7%
SD+D	40	8.5%
Take notes		
SA+A	333	70.7%
N	94	20.0%
SD+D	44	9.3%
Functional Tool		
Take photos		
SA+A	359	76.2%
N	73	15.5%
SD+D	39	8.3%
Track steps		
SA+A	160	34.0%
N	130	27.6%
SD+D	181	38.4%

*Note.* SA-strongly agree; A-agree; N-neutral; D-disagree; SD-strongly disagree.

#### 4.2 Inferential Statistics

In order to answer research question 2 (*Do gender and cellphone preference influence these usage patterns?*), a one-sample T test was performed to examine the variables (as Tables 3-4).

From Table 3, the 171 males who used a cellphone as a recreational tool ( $M = 16.55$ ,  $SD = 5.69$ ) compared to the 300 females ( $M = 18.53$ ,  $SD = 5.21$ ) demonstrated significant difference,  $t(469) = -3.84$ ,  $p = .000$ . There was significant effect for gender on cellphone use as a recreational tool. In other words, females used a cellphone to watch videos, play games, chat



with friends, listen to music, and shop online more than males. In addition, the 171 males who used a cellphone as an informative tool ( $M = 16.28$ ,  $SD = 3.09$ ) compared to the 300 females ( $M = 16.91$ ,  $SD = 3.20$ ) demonstrated significant difference,  $t(469) = -2.08$ ,  $p = .038$ . Gender significantly influenced cellphone use as an informative tool, with females using cellphones more than males for tasks like finding information, learning, note-taking, and alarms. Finally, the 171 males who used a cellphone as a functional tool ( $M = 6.79$ ,  $SD = 2.13$ ) compared to the 300 females ( $M = 7.37$ ,  $SD = 1.93$ ) demonstrated significant difference,  $t(469) = -3.04$ ,  $p = .002$ . Gender significantly influenced cellphone use as a functional tool, with females using cellphones more for photo-taking and fitness tracking, likely due to higher perceived usefulness (PU) of these features.

Table 3. The One-Sample *T*-Test between Gender and Cellphone Use as a Recreational/Informative/Functional Tool ( $N=471$ )

Tool	Gender	N	Mean	SD	<i>t</i>	<i>df</i>	<i>p</i>
Recreational	Male	171	16.55	5.69	-3.84	469	.000
	Female	300	18.53	5.21			
Informative	Male	171	16.28	3.09	-2.08	469	.038
	Female	300	16.91	3.20			
Functional	Male	171	6.79	2.13	-3.04	469	.002
	Female	300	7.37	1.93			

From Table 4, a *t*-test analysis revealed the following results regarding the relationship between enjoyment of cellphone use and its functions: (1) Recreational Tool: The 463 participants who enjoyed using cellphones as a recreational tool ( $M = 17.94$ ,  $SD = 5.40$ ) compared to the 8 who did not ( $M = 10.50$ ,  $SD = 4.31$ ) showed no significant difference,  $t(469) = 3.87$ ,  $p = .305$ . Thus, enjoyment of cellphones did not significantly affect their use as a recreational tool.

(2) Informative Tool: The 463 participants who enjoyed using cellphones as an informative tool ( $M = 16.73$ ,  $SD = 3.10$ ) compared to the 8 who did not ( $M = 13.75$ ,  $SD = 5.47$ ) showed a significant difference,  $t(469) = 2.66$ ,  $p = .004$ . This indicates that those who enjoyed using cellphones were more likely to use them for finding information, learning, and similar purposes.

(3) Functional Tool: The 463 participants who enjoyed using cellphones as a functional tool ( $M = 7.22$ ,  $SD = 1.99$ ) compared to the 8 who did not ( $M = 4.00$ ,  $SD = 1.31$ ) showed no significant difference,  $t(469) = 4.56$ ,  $p = .142$ . Therefore, enjoyment did not significantly affect cellphone use for functional purposes such as taking notes or tracking steps.

In summary, while enjoyment significantly influenced the use of cellphones as an informative tool, it had no significant effect on their use as recreational or functional tools.

Table 4. The One-Sample *T*-Test between Enjoying Using a Cellphone and Cellphone Use as a Recreational/Informative/Functional Tool ( $N=471$ )

Tool	Enjoy	N	Mean	SD	<i>t</i>	<i>df</i>	<i>p</i>
Recreational	Yes	463	17.94	5.40	3.87	469	.305
	No	8	10.50	4.31			
Informative	Yes	463	16.73	3.10	2.66	469	.004
	No	8	13.75	5.47			
Functional	Yes	463	7.22	1.99	4.56	469	.142
	No	8	4.00	1.31			

In order to answer research question 3 (*Are there differences in cellphone use based on age, occupation, ownership duration, and daily usage time?*), a one-way ANOVA was performed to examine the variables (as Tables 5-12).

From Tables 5 and 6, a one-way between-subjects ANOVA was conducted to examine the effect of using cellphones as recreational tools across seven age groups. The analysis revealed a significant effect at the  $p < .05$  level [ $F(6, 464) = 86.04, p = .000$ ]. Post hoc comparisons using the *Scheffé* test showed the following:

The mean score for Group 1 (under 15 years old,  $M = 21.17, SD = 3.10$ ) was significantly higher than Group 5 (40-50 years old,  $M = 15.51, SD = 4.72$ ), Group 6 (50-60 years old,  $M = 11.57, SD = 3.23$ ), and Group 7 (over 60 years old,  $M = 11.68, SD = 6.06$ ). The mean score for Group 2 (15-20 years old,  $M = 21.31, SD = 3.11$ ) was also significantly higher than Groups 5, 6, and 7. The mean score for Group 3 (20-30 years old,  $M = 20.45, SD = 3.84$ ) was significantly higher than Groups 5, 6, and 7. The mean score for Group 4 (30-40 years old,  $M = 18.92, SD = 3.50$ ) was significantly higher than Groups 5, 6, and 7.

In summary, younger age groups are more likely to use cellphones recreationally than older ones. Individuals under 15 are more inclined to use cellphones for recreational purposes compared to those aged 40-60 and over. Similarly, those aged 15-20 are more likely to engage in recreational activities than older age groups, and individuals aged 20-30 use cellphones recreationally more than those aged 40-50 and over 60. People aged 30-40 are also more likely to use cellphones for recreation than older age groups. Younger users likely find recreational tools more intuitive, reflecting a higher perceived ease of use (PEOU).

A one-way between-subjects ANOVA was conducted to evaluate the effect of using cellphones as informative tools across seven age groups. The results indicated a significant effect at the  $p < .05$  level [ $F(6, 464) = 17.85, p = .000$ ]. Post hoc comparisons using the *Scheffé* test revealed the following:

The mean score for Group 1 (under 15 years old,  $M = 17.83, SD = 2.12$ ) was significantly higher than Group 6 (50-60 years old,  $M = 13.95, SD = 3.26$ ). The mean score for Group 2 (15-

20 years old,  $M = 17.48$ ,  $SD = 2.27$ ) was significantly higher than Groups 6 and 7 (over 60 years old,  $M = 15.64$ ,  $SD = 4.39$ ). The mean score for Group 3 (20-30 years old,  $M = 17.68$ ,  $SD = 2.54$ ) was significantly higher than Groups 6 and 7. The mean score for Group 4 (30-40 years old,  $M = 16.85$ ,  $SD = 2.29$ ) was significantly higher than Group 6. The mean score for Group 5 (40-50 years old,  $M = 17.01$ ,  $SD = 3.54$ ) was significantly higher than Group 6.

Younger and middle-aged groups are more likely to use cellphones for informative purposes than older age groups. Individuals under 15 are more inclined to use cellphones informatively compared to those aged 50-60, while those aged 15-20 and 20-30 also use cellphones for information more than individuals aged 50-60 and over 60. People aged 30-40 are more likely to use cellphones informatively compared to those aged 50-60, and individuals aged 40-50 use cellphones for information more than those aged 50-60. This suggests that younger and middle-aged users, more familiar with mobile technologies, are likely to engage in informational activities. This trend aligns with Uses and Gratifications Theory (UGT) in meeting cognitive needs and the Technology Acceptance Model (TAM), which emphasizes the perceived usefulness (PU) of mobile devices.

A one-way between-subjects ANOVA was conducted to evaluate the effect of using cellphones as functional tools across seven age groups. The results showed no significant effect at the  $p < .05$  level [ $F(6, 464) = 1.66$ ,  $p = .130$ ]. In summary, all age groups use cellphones as functional tools in a similar manner, with no notable differences between them.

Table 5. The Summary of Different Age Groups Use a Cellphone as a Recreational/Informative/Functional Tool ( $N=471$ )

Tool	Age group	<i>N</i>	<i>Mean</i>	<i>SD</i>
Recreational	1: 10-15 years	12	21.17	3.10
	2: 15-20 years	155	21.31	3.11
	3: 20-30 years	94	20.45	3.84
	4: 30-40 years	26	18.92	3.50
	5: 40-50 years	73	15.51	4.72
	6: 50-60 years	86	11.57	3.23
	7: Over 60 years	25	11.68	6.06
Informative	1: 10-15 years	12	17.83	2.12
	2: 15-20 years	155	17.48	2.27
	3: 20-30 years	94	17.68	2.54
	4: 30-40 years	26	16.85	2.29

	5: 40-50 years	73	17.01	3.54
	6: 50-60 years	86	13.95	3.26
	7: Over 60 years	25	15.64	4.39
Functional	1: 10-15 years	12	8.00	1.81
	2: 15-20 years	155	7.25	1.92
	3: 20-30 years	94	6.95	2.38
	4: 30-40 years	26	7.69	1.41
	5: 40-50 years	73	7.31	2.15
	6: 50-60 years	86	6.74	1.80
	7: Over 60 years	25	7.48	2.00

Table 6. The One-Way ANOVA among Age and Cellphone as a Recreational/Informative/Functional Tool ( $N=471$ )

Item		<i>SS</i>	<i>df</i>	<i>F</i>	<i>Scheffé</i>
recreational	Between	7394.91	6	86.04***	1>5, 1>6, 1>7, 2>5, 2>6, 2>7, 3>5, 3>6, 3>7, 4>5, 4>6, 4>7
	Within	6646.65	464		
	Total	14041.56	470		
informative	Between	885.48	6	17.85***	1>6, 2>6, 2>7, 3>6,
	Within	3836.75	464		3>7, 4>6, 5>6
	Total	4722.23	470		
functional	Between	40.30	6	1.66	
	Within	1879.44	464		
	Total	1919.74	470		

\*\*\* $p < .001$

*Note.* 1: 10-15 years; 2: 15-20 years; 3: 20-30 years; 4: 30-40 years; 5: 40-50 years; 6: 50-60 years; 7: Over 60 years.

From Tables 7 and 8, a one-way between-subjects ANOVA was conducted to examine the effect

of using cellphones as recreational tools on occupation across eight groups. The analysis revealed a significant effect at the  $p < .05$  level [ $F(7, 463) = 41.57, p = .000$ ]. Post hoc comparisons using the *Scheffé* test showed:

The mean score for Group 1 (students,  $M = 20.95, SD = 3.42$ ) was significantly higher than Group 2 (government employees, educators or military personnel,  $M = 14.05, SD = 6.24$ ), Group 3 (service workers,  $M = 17.21, SD = 3.77$ ), Group 4 (business professionals,  $M = 12.76, SD = 3.74$ ), Group 6 (employees in agriculture, forestry, fishing, or animal husbandry,  $M = 13.00, SD = 3.30$ ), Group 7 (retired,  $M = 11.64, SD = 4.97$ ), and Group 8 (other occupations not included in the survey,  $M = 18.14, SD = 5.27$ ). The mean score for Group 3 (service workers,  $M = 17.21, SD = 3.77$ ) was significantly higher than Group 2, Group 4, and Group 7. The mean score for Group 8 ( $M = 18.14, SD = 5.27$ ) was significantly higher than Group 2, Group 4, and Group 7.

In summary, students are the most likely to use cellphones recreationally, with the exception of those working in agriculture, forestry, fishing, or animal husbandry, possibly due to rural isolation. Service workers and those in unspecified occupations also show higher recreational cellphone use compared to government employees, educators, and professionals.

A one-way between-subjects ANOVA was conducted to examine the effect of using cellphones as informative tools across eight occupational groups. The analysis showed a significant effect at the  $p < .05$  level [ $F(7, 463) = 8.32, p = .000$ ]. Post hoc comparisons using the *Scheffé* test revealed the following:

The mean score for Group 1 (students,  $M = 17.41, SD = 2.36$ ) was significantly higher than Group 2 (government employees, educators or military personnel,  $M = 15.22, SD = 4.07$ ), Group 4 (business professionals,  $M = 14.97, SD = 4.14$ ), and Group 7 (retired,  $M = 15.11, SD = 3.68$ ). The mean score for Group 3 (service workers,  $M = 17.37, SD = 2.59$ ) was significantly higher than Group 2 (government employees, educators or military personnel,  $M = 15.22, SD = 4.07$ ).

In summary, students are more likely to use cellphones as informative tools compared to government employees, educators or military personnel, and retired individuals. Additionally, service workers are more likely to use cellphones as informative tools than government employees, educators, or military personnel.

A one-way between-subjects ANOVA was conducted to examine the effect of using cellphones as functional tools across eight occupational groups. The analysis revealed a significant effect at the  $p < .05$  level [ $F(7, 463) = 3.89, p = .000$ ]. Post hoc comparisons using the *Scheffé* test indicated that the mean score for Group 8 (other occupations not included in the survey,  $M = 8.14, SD = 1.67$ ) was significantly higher than that of Group 6 (freelancers,  $M = 5.67, SD = 2.15$ ). In summary, individuals in occupations not specifically included in the survey are more likely to use cellphones as functional tools compared to freelancers.

Table 7. The Summary of Different Occupation Groups Use a Cellphone as a Recreational/Informative/Functional Tool ( $N=471$ )

Tool	Occupation group	<i>N</i>	<i>Mean</i>	<i>SD</i>
Recreational	1	221	20.95	3.42
	2	74	14.05	6.24
	3	62	17.21	3.77
	4	29	12.76	3.74
	5	2	11.00	0.00
	6	12	13.00	3.30
	7	28	11.64	4.97
	8	43	18.14	5.27
Informative	1	221	17.41	2.36
	2	74	15.22	4.07
	3	62	17.37	2.59
	4	29	14.97	4.14
	5	2	11.00	0.00
	6	12	16.67	3.28
	7	28	15.11	3.68
	8	43	16.91	3.05
Functional	1	221	7.13	2.17
	2	74	6.85	2.08
	3	62	7.53	1.46
	4	29	7.07	1.87
	5	2	4.00	0.00
	6	12	5.67	2.15
	7	28	6.86	1.60
	8	43	8.14	1.67

*Note.* 1: Student; 2: Government employee, educator, or military personnel; 3: Service worker; 4: Business professional; 5: Employee in agriculture, forestry, fishing, or animal husbandry; 6: Freelancer; 7: Retired; 8: Other.

Table 8. The One-Way ANOVA among Occupation and Cellphone as a Recreational/Informative/Functional Tool ( $N=471$ )

Item		<i>SS</i>	<i>df</i>	<i>F</i>	<i>Scheffé</i>
recreational	Between	5419.25	7	41.57***	1>2, 1>3, 1>4, 1>6, 1>7, 1>8, 3>2, 3>4, 3>7, 8>2, 8>4, 8>7
	Within	8622.31	463		
	Total	14041.56	470		
informative	Between	527.75	7	8.32***	1>2, 1>4, 1>7, 3>2
	Within	4194.48	463		
	Total	4722.23	470		
functional	Between	106.62	7	3.89***	8>6
	Within	1813.12	463		
	Total	1919.74	470		

\*\*\* $p < .001$ .

From Tables 9 and 10, a one-way between-subjects ANOVA was conducted to examine the effect of using cellphones as recreational tools on cellphone ownership duration across five groups. The analysis revealed a significant effect at the  $p < .05$  level [ $F(4, 466) = 37.43, p = .000$ ]. Post hoc comparisons using the *Scheffé* test showed that the mean score for Group 5 ( $M = 14.65, SD = 5.38$ ) was significantly lower than that of Group 1 ( $M = 21.80, SD = 3.08$ ), Group 2 ( $M = 19.71, SD = 4.41$ ), Group 3 ( $M = 20.72, SD = 3.69$ ), and Group 4 ( $M = 19.14, SD = 5.03$ ). This suggests that individuals who have owned cellphones for more than 10 years are less likely to use them for recreational purposes compared to the other four groups. Long-term ownership (over a decade) may diminish the perceived usefulness (PU) of cellphones for recreation, possibly due to habituation or technology fatigue.

A one-way between-subjects ANOVA was conducted to examine the effect of using cellphones as informative tools on cellphone ownership duration across five groups. The analysis showed a significant effect at the  $p < .05$  level [ $F(4, 466) = 2.60, p = .036$ ]. Post hoc comparisons using the *Scheffé* test revealed that the mean score for Group 3 ( $M = 17.38, SD = 2.58$ ) was significantly higher than that of Group 5 ( $M = 16.24, SD = 3.31$ ). This suggests that individuals who have owned cellphones for 5-8 years are more likely to use them as informative tools compared to those who have owned cellphones for over 10 years.

A one-way between-subjects ANOVA was conducted to examine the effect of using cellphones as functional tools on cellphone ownership duration across five groups. The results showed no

significant effect at the  $p < .05$  level [ $F(4, 466) = 1.03, p = .389$ ]. This indicates that the length of cellphone ownership does not significantly influence the use of cellphones as functional tools.

Table 9. The Summary of Groups with Different Cellphone Ownership Periods Use a Cellphone as a Recreational/Informative/Functional Tool ( $N=471$ )

Tool	Period group	<i>N</i>	<i>Mean</i>	<i>SD</i>
Recreational	1: Less than 3 years	10	21.80	3.08
	2: 3-5 years	91	19.71	4.41
	3: 5-8 years	103	20.72	3.69
	4: 8-10 years	74	19.14	5.03
	5: Over 10 years	193	14.65	5.38
Informative	1: Less than 3 years	10	16.60	3.24
	2: 3-5 years	91	17.03	2.85
	3: 5-8 years	103	17.38	2.58
	4: 8-10 years	74	16.43	3.73
	5: Over 10 years	193	16.24	3.31
Functional	1: Less than 3 years	10	8.00	1.33
	2: 3-5 years	91	7.08	1.03
	3: 5-8 years	103	7.01	2.19
	4: 8-10 years	74	7.46	2.10
	5: Over 10 years	193	7.12	2.00



Table 10. The One-Way ANOVA among Cellphone Ownership Periods and Cellphone as a Recreational/Informative/Functional Tool ( $N=471$ )

Item		<i>SS</i>	<i>df</i>	<i>F</i>	<i>Scheffé</i>
recreational	Between	3414.16	4	37.43***	1>5, 2>5, 3>5, 4>5
	Within	10627.40	466		
	Total	14041.56	470		
informative	Between	102.98	4	2.60*	3>5
	Within	4619.25	466		
	Total	4722.23	470		
functional	Between	16.89	4	1.03	
	Within	1902.85	466		
	Total	1919.74	470		

\*\*\* $p < .001$ , \*\*  $p < .01$ , \*  $p < .05$

*Note.* 1: Less than 3 years; 2: 3-5 years; 3: 5-8 years; 4: 8-10 years; 5: Over 10 years.

Tables 11 and 12 present the results of a one-way between-subjects ANOVA conducted to examine the impact of using cellphones as recreational tools on daily usage hours across four groups. The analysis revealed a significant effect at the  $p < .05$  level [ $F(3, 467) = 20.61, p = .000$ ]. Post hoc comparisons using the *Scheffé* test showed that the mean score for Group 3 ( $M = 18.44, SD = 5.15$ ) was significantly higher than that of Group 1 ( $M = 13.00, SD = 5.22$ ) and Group 2 ( $M = 15.26, SD = 6.21$ ). Additionally, the mean score for Group 4 ( $M = 19.46, SD = 4.21$ ) was significantly higher than for Group 1 ( $M = 13.00, SD = 5.22$ ) and Group 2 ( $M = 15.26, SD = 6.21$ ). In summary, individuals using their cellphones for 3-5 hours daily are more likely to use them as recreational tools compared to those using them for less than 1 hour or 1-3 hours per day.

A one-way between-subjects ANOVA was conducted to examine the effect of using cellphones as an informative tool on daily usage hours across four groups. The results revealed a significant effect at the  $p < .05$  level [ $F(3, 467) = 17.75, p = .000$ ]. Post hoc comparisons using the *Scheffé* test showed that the mean score for Group 1 ( $M = 11.50, SD = 2.88$ ) was significantly lower than that of Group 2 ( $M = 16.38, SD = 3.06$ ), Group 3 ( $M = 17.11, SD = 2.97$ ), and Group 4 ( $M = 16.94, SD = 3.03$ ). This suggests that individuals using cellphones for less than one hour per day are less likely to utilize them as informative tools compared to those using cellphones for 1-3 hours or more than 5 hours daily.

A one-way between-subjects ANOVA was conducted to examine the effect of using cellphones as functional tools on daily usage hours across four groups. The results indicated no significant

effect at the  $p < .05$  level [ $F(3, 467) = .966, p = .408$ ]. This suggests that the time people spend on their cellphones daily does not significantly differ in their use of cellphones as functional tools.

Table 11. The Summary of Groups with Different Daily Cellphone Use Time Use a Cellphone as a Recreational/Informative/Functional Tool ( $N=471$ )

Tool	Using Time	<i>N</i>	<i>Mean</i>	<i>SD</i>
Recreational	1: Less than 1 hour	16	13.00	5.22
	2: 1-3 hours	117	15.26	6.21
	3: 3-5 hours	178	18.44	5.15
	4: More than 5 hours	160	19.46	4.21
Informative	1: Less than 1 hour	16	11.50	2.88
	2: 1-3 hours	117	16.38	3.06
	3: 3-5 hours	178	17.11	2.97
	4: More than 5 hours	160	16.94	3.03
Functional	1: Less than 1 hour	16	6.50	1.93
	2: 1-3 hours	117	7.06	1.75
	3: 3-5 hours	178	7.30	2.10
	4: More than 5 hours	160	7.14	2.12

Table 12. The One-Way ANOVA among Daily Cellphone Use Time and Cellphone as a Recreational/Informative/Functional Tool ( $N=471$ )

Item		<i>SS</i>	<i>df</i>	<i>F</i>	<i>Scheffé</i>
recreational	Between	1641.54	3	20.61***	3>1, 3>2, 4>1, 4>2
	Within	12400.02	467		
	Total	14041.56	470		
informative	Between	483.41	3	17.75***	2>1, 3>1, 4>1
	Within	4238.82	467		
	Total	4722.23	470		
functional	Between	11.84	3	.966	
	Within	1907.89	467		
	Total	1919.74	470		

\*\*\* $p < .001$

*Note.* 1: Less than 1 hour; 2: 1-3 hours; 3: 3-5 hours; 4: More than 5 hours.

Based on the findings from Tables 3-12 and compare with the literature reviews, the researchers give summaries as the following.

(1) Recreational cellphone use is prominently driven by activities such as gaming, chatting, watching videos, and listening to music, as noted by Chan et al. (2023) and Dlodlo and Mahlangu (2013). Younger individuals dominate this usage category, influenced by enjoyment, addiction, and dependency. The current study aligns with these findings, highlighting that younger age groups and females engage more in recreational cellphone use. Students are particularly inclined toward recreational use, except for those in agriculture, forestry, and fishing sectors. Additionally, individuals using cellphones for 3-5 hours daily show higher recreational activity. The study adds nuance by emphasizing gender differences, showing females engage in recreational use more than males.

(2) Mobile phones play a crucial role in fostering learning, critical thinking, and skill development, as noted by Ilci (2014), Sanga et al. (2016), and Abidin & Tho (2018). They enhance accessibility and enable global knowledge-sharing. The current study supports these findings, revealing that younger and middle-aged groups are more likely to use phones for informative purposes. Additionally, females, students, and individuals who enjoy using cellphones show higher engagement in activities like information-seeking and learning. Notably, those with 5-8 years of cellphone ownership demonstrate greater informative usage than long-term users. This study expands on prior research by detailing demographic influences, such as gender, age, and ownership duration, on informative use.

(3) Mobile phones are recognized as multifunctional tools for diverse tasks, including photo-taking, fitness tracking, online shopping, and banking, as highlighted by Freeman et al. (2020) and Chan et al. (2023). While older users focus more on family communication, younger users engage in a broader range of functions. The current study further identifies gender and occupational differences, showing that females and individuals in unspecified occupations are more likely to use phones for functional purposes, such as taking photos and tracking steps.

(4) Behavioral patterns in mobile phone usage, as noted by Chan et al. (2023) and Dar and Lone (2022), are shaped by accessibility and enjoyment. The current study aligns with these findings, revealing that enjoyment drives information-related activities. It also shows a strong correlation between recreational use and daily usage durations of 3-5 hours. This adds nuanced insights about how enjoyment and time thresholds influence behavioral patterns.

(5) Key differences between the current study and prior research include detailed demographic analyses of gender, age, and occupation in shaping cellphone usage patterns. Earlier studies provided general trends, whereas this study ties enjoyment to specific activities like learning and recreational use. It also highlights distinctions based on phone ownership duration and functional tool adoption, offering a more comprehensive understanding of mobile phone usage.

## 5. Conclusion

Based on the results, the researchers drew some conclusion as the following. First, females use cellphones as recreational tools more than males for activities like watching videos, playing games, chatting with friends, listening to music, and shopping online. Females are more likely than males to use cellphones as informative tools for finding information, learning, taking notes, and as an alarm. Females also use cellphones as functional tools more than males for taking photos and tracking steps.

Second, those who enjoyed using cellphones were more likely to use them for finding information, learning, and similar purposes. Third, younger age groups are more likely to use cellphones recreationally than older age groups. Moreover, younger and middle-aged groups are more likely to use cellphones as informative tools compared to older groups.

Fourth, students are the most likely to use cellphones recreationally, except for employees in agriculture, forestry, fishing, or animal husbandry. Service workers and those in unspecified occupations also have higher recreational cellphone use than government employees, educators, military personnel, business professionals, and retirees. Students are more likely to use cellphones for information compared to government employees, educators, military personnel, and retirees. Service workers also show higher informative cellphone use than these same groups. Moreover, individuals in unspecified occupations are more likely to use cellphones as functional tools compared to freelancers.

Fifth, individuals who have owned cellphones for over 10 years are the least likely to use them as recreational tools compared to other ownership groups. Individuals who have owned cellphones for 5-8 years are more likely to use them as informative tools than those who have owned cellphones for over 10 years.

Finally, individuals using cellphones for 3-5 hours daily are more likely to use them as recreational tools than those using them for less than 1 hour or 1-3 hours per day. Individuals using cellphones for less than 1 hour daily are less likely to use them as informative tools compared to those using them for 1-3 hours or more than 5 hours daily.

## **6. Implications, Limitations, and Future Research**

### *6.1 Implications*

The study offers actionable insights for businesses and service providers. First, targeted mobile content and services can focus on younger age groups and females, who show higher engagement with recreational apps like gaming, music, and shopping. Informative and educational content should cater to younger and middle-aged users, particularly those who enjoy using cellphones. Second, customized user experiences can enhance features such as note-taking, alarms, and step tracking to appeal to females, while functional tools can be marketed to students, service workers, and unspecified occupations. Third, digital literacy programs could support older users and long-term cellphone owners in engaging more effectively with recreational and informative tools. Lastly, for individuals using cellphones for 3-5 hours daily, balancing recreational usage with health-oriented interventions can optimize screen time.

### *6.2 Limitations*

The study has several limitations. Self-reported bias may affect the accuracy of data on daily cellphone use and activity categorization. Cultural and regional variability limits the generalizability of findings across diverse lifestyles and technological access. Occupational diversity is underexplored, particularly for groups like freelancers, restricting insights into their behaviors. Causal ambiguity remains, as it is unclear whether usage patterns stem from personal preferences, job demands, or external factors. Additionally, the study does not account for differences in device types (e.g., smartphones vs. feature phones) or the impact of internet quality and accessibility on cellphone usage behaviors.

### *6.3 Recommendations for Future Research*

Future research on cellphone usage could include longitudinal studies to examine how usage evolves with technological advancements and aging. Cross-cultural comparisons could explore variations across countries, cultures, and economic settings. A deeper occupational analysis might address unique needs and behaviors of groups like freelancers or agricultural workers. The role of digital literacy in shaping recreational, informative, and functional use is another area for investigation. Additionally, studies could focus on the mental and physical health impacts of high usage, particularly those spending 3-5 hours or more daily. Lastly, research could assess how emerging technologies like AI-driven apps influence user behavior.

## **Conflict of Interest**

There are no conflicts of interest, such as personal or professional relationships, academic competition, or any other factors that could impact the integrity and impartiality of our work. We assure the readers that this declaration of no conflict of interest is accurate and

comprehensive to our knowledge.

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The data that support the findings of this study are available on request.

### **Competing Interests Statement**

The authors declare that there are no competing or potential conflicts of interest.

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**Appendix**

1. Please select your gender: Male Female
2. Do you enjoy using a cellphone? Yes No
3. Please indicate your age: 10-15 years 15-20 years 20-30 years  
30-40 years 40-50 years 50-60 years Over 60 years
4. Please select your occupation: Student Government employee, educator, or military personnel  
Service worker Business professional Employee in agriculture, forestry, fishing, or animal husbandry  
Freelancer Retired  
Other
5. How long have you owned a cellphone? Less than 3 years 3-5 years 5-8 years 8-10 years  
Over 10 years
6. How many hours do you use your cellphone each day? Less than 1 hour  
1-3 hours 3-5 hours More than 5 hours

<b>Questionnaire on Cellphone Usage</b>	S A	A	N	D	S D
Recreational Purpose					
1. I primarily use my cellphone to watch videos.	5	4	3	2	1
2. I primarily use my cellphone to play games.	5	4	3	2	1
3. I primarily use my cellphone to chat with friends.	5	4	3	2	1
4. I primarily use my cellphone to listen to music.	5	4	3	2	1
5. I primarily use my cellphone for online shopping.	5	4	3	2	1
Informative Purpose					
6. I primarily use my cellphone to find information.	5	4	3	2	1
7. I primarily use my cellphone for learning.	5	4	3	2	1
8. I primarily use my cellphone as an alarm.	5	4	3	2	1
9. I primarily use my cellphone for taking notes.	5	4	3	2	1
Functional Purpose					
10. I primarily use my cellphone to take photos.	5	4	3	2	1
11. I primarily use my cellphone to track my steps.	5	4	3	2	1

Note: SA-strongly agree; A-agree; N-neutral; D-disagree; SD-strongly disagree



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