IPRPD
International Journal of Arts, Humanities and Social Sciences
ISSN 2693-2547 (Print), 2693-2555 (Online)
Volume 05; Issue no 04: April, 2024
DOI: 10.56734/ijahss.v5n4a8

RESEARCH ON THE PREFERENCE OF MOBILE PHONE PHOTOGRAPHY IN LEISURE LIFE

You-Ying Liu[1], Min-Min, Lin[2], Jiann-Sheng, Jiang[3], Ta-Hsiung, Cho[4]

[1]*Graduate Institute of Cultural and Creative Design, Tung-Fang Design University, Taiwan*

[2]*Department of Art and Design, Shaoguan University, Taiwan*

[3]*Graduate Institute of Cultural and Creative Design, Tung-Fang Design University, Taiwan*

[4]*Department of Optometry, Chung Hwa University of Medical Technology, Taiwan*

Abstract

The way of communication and thinking are reconstructed by mobile phone photography. Due to the advancement of technology and economy, mobile phone chips have become advanced and the quality of photography has improved. In addition to the communication function, the camera function of smartphones is more valued by consumers and mobile phone manufacturers. Apps with built-in cameras, photo editing and social websites are constantly being upgraded., and mobile phone photography and social media has been combined. The influence and interaction of digital images in social leisure makes mobile phone photography play an important role in people's communication on social websites. This research mainly analyzed the preferences of mobile phone photography in leisure, and the Evaluation Grid Method (EGM) of Miryoku Engineering was applied to extract the attractive attributes of mobile phone photography. William DuMouchel continuous Kano model was applied to summarize the evaluation factors of young users on the quality of mobile phone photography. SPSS.17 statistical software was applied for reliability analysis, and IPA satisfaction was applied as the weighted factor evaluation. Technique for Order Preference by Similarity to Ideal Solution (TOPSIS) was applied to evaluate preference factors. The purpose of this research is to analyze the preferences of mobile phone photography in leisure life through these research methods, and also to provide a reference for the future promotion of mobile phone photography.

Keywords

Mobile Phone Photography, EGM, William DuMouche Continuous Kano Model, TOPSIS, IPA

1. Introduction

Mobile photography has revolutionized the way we record life and share experiences during leisure activities. Since most people have their phones with them at all times, convenience is the biggest advantage of taking photos with a phone. It is convenient to capture moments during leisure activities. Almost everyone has a smartphone with a built-in camera so mobile phone photography has become a cost-effective option for capturing unforgettable moments. The direct viewing interface and automation of the mobile phone allow users to quickly capture high-quality images without learning esoteric techniques. Smartphones are often equipped with editing tools. Therefore, users can use photo editing software directly on their mobile phones to achieve effects on photos. Mobile photographers share their experiences through social networking sites to promote connection and participation.

Lifestyles have also changed due to the Internet. The Internet has profoundly affected the way of communication in leisure and entertainment. Mobile phones provide an online space that can be browsed anywhere. Therefore, people can take photos and sharing their life anytime and anywhere (Zhang, 2017).

Smartphones are equipped with a large amount of storage space for people to record, store and share photos. Smartphones become tools for sharing images and emotional with family and friends (Cui et al., 2013). Photo sharing services on Instagram, Snapchat, Facebook and X (Twitter) have been advancing (Hu et al., 2014). According to empirical research, the more photos posted on social networking sites, the more capable users felt (Jung & Sundar, 2021). Free editing and sharing of photos on mobile phones effectively allow photos to replace text messages in conversations. mobile phones have become tools for self-expression (Beldad & Hegner, 2017; Van House, 2009),

Mobile phones have become tools for initiating and strengthening relationships (Kindberg et al., 2005). Mobile phone Photography can enhance emotional connections and a sense of being together (Rivière, 2005). The age of this research subjects is 18-54 years old, excluding those over 55 years old (Ministry of Education Learning Network 2006). This research didn't discuss the brand of mobile phones, nor did it discuss dynamic images, because the functions of mobile phone lenses are constantly improving, which may affect the benefits experienced by users.

2. Literature Discussion

2.1 Brief history of cameras

The American Kodak Company produced a new type of photosensitive material "black and white film" in 1888. In the same year, Kodak also produced the first portable small camera with film installed in the world. It was put on sale in 1925. The success of the sales set off a revolution in the photography industry, taking photography from indoors to outdoors. In 1935, Kodak successfully developed color film, which can develop color photos similar to todays. This is the stage that photography entered the color photo era. American inventor Edwin Herbert Land produced the first Polaroid camera (Instant photography) in 1948. Kodak produced the "point-and-shoot camera (Instamatic)" in 1963. Steven Sasson (Eastma Kodak Company) used the function of CCD to invent the first digital camera in the world in 1975. This digital camera invented by Steve Sasson (American engineer at Eastman Kodak) led us to the small portable cameras and smartphones that we know and use today (Bellis, 2017).

2.2 History and Milestones of Smartphones

Photography has experienced two revolutions in this century: 1. Technological revolution, in which digital cameras replaced single-lens reflex (SLR) cameras. 2.Social revolution, in which combination of mobile phones with the Internet and social media is changing the purpose and meaning of photography. Photography has been combined with the functions of mobile phones for more than 20 years, and it has changed the way people take pictures in their life. The development of mobile phones with camera functions is stated as follows:(1) The Sharp company produced the first mobile phone with camera function(J-SH04) in the world in 2000. It had a built-in 110,000-pixel CMOS sensor, which was more power-saving than the CCD sensor module used in digital cameras, so that the battery of the mobile phone will not be quickly exhausted due to taking pictures. The J-SH04 had a storage capacity of 20 photos. (2) Nokia 7650 was the first Europe's mobile phone with camera function and the first color camera with a color display. Sanyo SPC-5300 was the first mobile phone with camera function in the US market in 2002. (3) Sony Ericsson Z1010 was the first mobile phone with a front-facing camera to support video calling in 2003. (4) The Apple iPhone with its seamless touch screen and one-button operation so the “smartphone” was produced in 2007. (5) In 2016, the rise of dual lenses emerged (the beginning of multi-lens systems) and the iPhone 7 Plus had hybrid zoom functions and portrait mode. (6) In 2019, Smartphone cameras begun to use multiple lenses with different focal lengths. Huawei P30 Pro was equipped with a periscope zoom lens, which achieved long-distance zoom. Nokia 9 PureView was the first smartphone with 5 lenses. (7) Smartphones are expected to have bigger and brighter screens, faster and more powerful processors, and better cameras and battery life (Shen Nao Life Magazine, 2023).

2.3 Leisure Attitude

The word "leisure" has two origins. One is related to the Latin word " licere", which means " to be allowed", and the other is related to the ancient Greek word " schole (or skole)", which means "enjoy leisurely", that is, a situation where there is no spiritual restraint and freedom (Ye Zhikui, 2006). Leisure is defined in three ways: as activities done in the remaining time after work; as a subjective perception and experience (Iso-Ahola, 1980).

Due to the diversity of leisure activities, Leisure has shown different aspects of development with the changes of the times. Mannell & Kleiber defined leisure in the article " A Social Psychology of Leisure" in 1999. According to the form of the phenomenon, it is divided into four dimensions: objective, subjective, external, and internal. The relevant definitions are as shown in Table 1.

Phenomenon	**Vantage point**	
	External	**Internal**
Objective	It is up to the " researcher" to define whether the activity, environment and time are leisure or not.	It is up to the " participants" to define whether the activity, environment and time are leisure or not.
Subjective	It is up to the " researcher" to define whether experience, satisfaction and meaning are leisure or not.	It is up to the " participants r" to define whether experience, satisfaction and meaning are leisure or not.

Table 1

Source: organized by this research with reference to Mannell & Kleiber 1999

For leisure "attitudes", possible behaviors can be predicted through the expression of attitudes; that is, an individual's clear views on the results of specific behaviors and their evaluation of these results. (Dongzhen Yang, Mingrui Gao,

Shengmin Guo, 2007). Blackwell et al., (2001) believed that when the positive or negative evaluation of an attitude was consistent with a person's view of something, it implies the person's behavioral intention. Kağıtçıbaşı (2010) stated that attitude was usually a tendency attributed to an individual.

3. Research Methods

This research first explores what factors can increase the preference of mobile phone photography among young users in their leisure activities. EGM and William DuMouchel continuous Kano quality model were applied to identify differences in quality requirements, satisfaction evaluations and quality classifications. SPSS.17 statistical software was applied for reliability analysis, IPA satisfaction was applied as the weighted factor evaluation, and Technique for Order Preference by Similarity to Ideal Solution (TOPSIS) was applied to evaluate preference factors.

3.1 Miryoku Engineering

Miryoku Engineering is related research initiated by Japanese scholar Masato Ujigawa with a number of scholars in 1991, and it is based on the concept of consumer preference (Preference-Based Design) for the purpose of creating attractive products, space technology and knowledge (Han-Yin Hsu,2016). Masato Ujigawa proposed the Evaluation Grid Method (EGM). It is mainly conducting personal interviews, comparing two pairwise objects to discuss the similarity and differences between objects, and then summarizing and clearly parse out the credible evaluation. After compiling all the answers of the interviewees in a list, extracting the attractive factors of the product, and finally sorting out the evaluation structure diagram.

3.2 William DuMouchel Continuous Kano Quality Analysis

Based on the Motivation-Hygiene Theory (proposed by psychologist Frederick Herzberg in 1959), Kano et al. (1984) first proposed Kano's Two-Dimension Model in the article " Motivator and Hygiene Factor in Quality" in October 1979. Kano et al. used Kano's Two-Dimension Model to analyze satisfaction and dissatisfaction in quality management as shown in Fig. 2. According to the Kano's Two-Dimension Model, the x-axis was regarded as the possession degree of quality factors. The further to the right, the more sufficient the quality factors were, and the further to the left, the more insufficient the quality factors were. The y-axis was regarded as the degree of consumer satisfaction. The higher the curve goes the more satisfied consumers were. The further down the curve, the more dissatisfied consumers were. The five different area curves were presented in the quadrant, representing the five quality relationships of the Kano model. Consumer satisfaction was not directly proportional to sufficient quality, which meant that satisfaction was affected by the adequacy of different qualities. The Kano's Two-Dimension Model was applied to analyze the relationships between different quality factors and satisfaction, to identify important quality factors that increase satisfaction. Through the Kano Model, quality attributes between consumer satisfaction and product quality were divided into five factors: "Attractive Quality" factors," One-Dimension Quality" factors, "Must-be Quality"factors,"Indifferent Quality" factors," Reverse Quality" factors. Through the continuous variable analysis method (proposed by William DuMouchel), data from the positive and negative questionnaires were collected as follows. Full function (positive correlation): -2 " I hate this", -1 "Tolerable", 0 " Indifferent", 2 " Must be", 4 " I like this". Dysfunction (negative correlation): -2 " I like this", -1 " Must be", 0 " Indifferent", 2 " Tolerable", 4 "I hate this". Then the average score of the positive and negative questions were calculated. We compared them to the range of quality attributes on the table to obtain what the functional attributes were and drew a two-dimensional diagram. In William DuMouchel 's classification table of quality attributes and two-dimensional diagram, Must-be type (M), One-Dimension type (O), Attractive type (A), Indifferent type (I), Reverse type (R), Question type (Q) were also included (Fig. 2). DuMouchel strengthened the proportion of positive functions and increased the effect of positive functions.

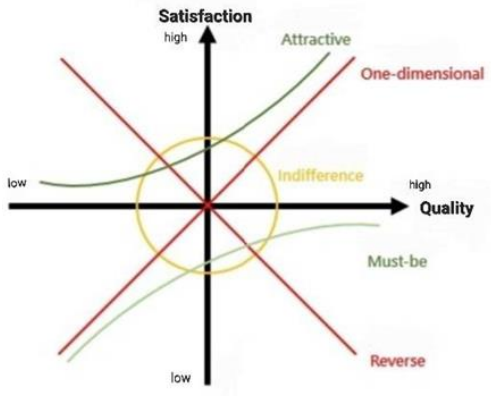

Fig. 1 Kano quality model

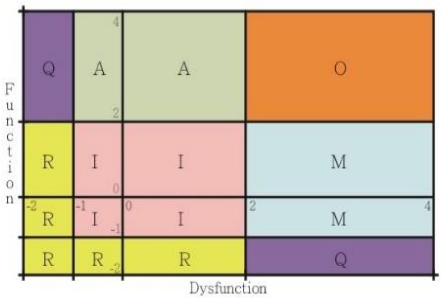

Fig. 2 decision matrix for quality attribute determination

3.3 Important Performance Analysis (IPA)

The Important Performance Analysis (IPA) was first proposed by Martilla and James in 1977. This method can be used to analyze customers' evaluation (expectations) and satisfaction (actual feelings) of goods or services. Through IPA, the above two subjective degrees of the interviewees were drawn into a two-dimensional matrix, divided into four quadrants, and the priorities for improvement were obtained (JA Martilla, JC James, 1977). The advantages of IPA are simple, effective, easy to understand and use, So, it provided management units with resource allocation decisions that improved efficiency. IPA has been widely used in the field of marketing management. (Chu, 2015). In this research, IPA questionnaire was designed to investigate the preference and satisfaction of mobile phone photography in leisure life.

3.4 Technique for Order Preference by Similarity to Ideal Solution (TOPSIS)

The TOPSIS method was applied to evaluate the relative merits based on how close an object was to an Ideal Solution". The best idealized object was called "Positive Ideal Solution", and the worst idealized object was called "Negative Ideal Solution", and Euclidean distance was used to calculate distance. Due to conflicts between quality attributes, decision makers couldn't smoothly make decisions on multi-attribute problems. In order to solve this kind of decision problems, many decision-making methods had been proposed one after another. Hwang and Yoon proposed this method in 1981, and the calculation steps are summarized as follows.

Step 1: Based on IPA and golden ratio scale semantics, standardized evaluation matrix (v_{ij}) was established.

Step 2: To find the Positive Ideal Solution $A^{+}=(v^{*}_{1},\cdots,v^{*}_{m})$, and the Negative Ideal Solution $A^{-}=(v^{-}_{1},\cdots,v^{-}_{m})$, $v_j^{-}=\min_i v_{ij}$.

Step 3: To calculate the distance scale, that is, to calculate the distance of each object to the Positive Ideal Solution and the Negative Ideal Solution. The distance scale can be calculated through Euclidean distance, and the distance function was defined as

$$S_i^{+}=\sqrt{\sum_{j=1}^{m}(v_{ij}-v_j^{*})^2}\ ,\ S_i^{-}=\sqrt{\sum_{j=1}^{m}(v_{ij}-v_j^{-})^2}$$

Step 4: To arrange the priorities and calculate the closeness to the Ideal Solution CC_i , where $0\le CC_i\le 1$. When $CC_i=0$, it means that the object was the best object, and when $CC_i=1$, it means that the object was the worst object. In actual multi-objective decision-making, where $CC_i=\dfrac{S_i^{+}}{S_i^{-}+S_i^{+}}$.

The TOPSIS and AHP were both Multi-Criteria Decision Making (MCDM), and commonly used for selecting and evaluating projects. Decision makers evaluated projects under several evaluation criteria (Wang, 2009).

4. Research Results

4.1 Attraction Factors Network Diagram of Miryoku Engineering

First, designers or scholars (highly involved) with backgrounds in art creation and design were invited to discuss in Focus Group. Through in-depth interviews and quantitative questionnaires, the Evaluation Grid Method of Miryoku Engineering was applied to extract five Original Factors, such as " easy to use", " sharing and uploading", " recording", " leisure and entertainment", " creative materials", five Specific Matters and six Abstract Reasons. The attraction factors network diagram as shown in Fig. 3, which served as the basis for the attractive attributes.

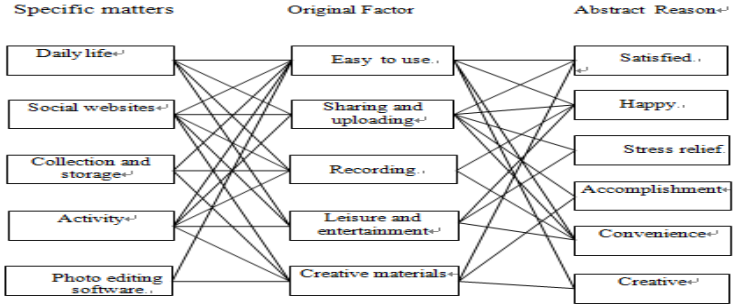

Fig.3 mobile phone photography benefit evaluation structure diagram Source: organized by this research

4.2 William DuMouchel Continuous Kano Quality Analysis

Through EGM, the preference factors of young mobile phone users are summarized and analyzed as follows: " recording life", " instant uploading", " convenience", " photography software and editing applications" , " software providing teaching and editing tools", " cost-effectiveness and high CP value", " post-production software", " image stabilization HDR and various shooting modes", " Bluetooth remote shutter function"," higher storage capacity in mobile phone to back up large amounts of high-quality photos ". Based on these 10 preference factors, Kano model quality analysis was conducted. In order to comply with the Kano Two-dimension Model, the questionnaire was designed as a two-way inquiry method with positive and negative items, using the five-point level of Likert Scale, such as " like", " must-be", " indifferent", " tolerable " and "dislike", to evaluate positive and negative questions. There are 131 valid questionnaires. According to the continuous variable analysis (Fig. 2), the results shown that the William DuMouchel Continuous Kano Quality Analysis has 4 " One-Dimension" quality factors, 4 " Must-Be" quality factors, and 2 " Attractive" quality factors as shown in Table 2.

Factor	Full Function	Dysfunction	Classification attributes
Recording life	2.843	3.132	O
Instant uploading	2.654	3.258	O
Convenience	1.981	2.214	M
Photography software and editing applications	1.943	2.830	M
Software providing teaching and editing tools	2.189	1.226	A
Cost-effectiveness, cost-performance ratio	1.692	3.346	M
Post-production software	1.541	2.107	M
Image stabilization HDR, various shooting modes	2.025	2.868	O
Bluetooth remote shutter function	2.252	1.887	A
Higher storage capacity in mobile phone to back up large amounts of high-quality photos	2.201	2.686	O

Table 2 Kano Quality Analysis

According to the two-way analysis of DuMouchel's continuous Kano quality model (Table 1), the results shown that "recording life", " instant upload", " image stabilization, HDR and various shooting modes", " Higher storage capacity in mobile phone to back up large amounts of high-quality photos" were " One- Demsional" quality factors. When the functional requirements were met, users felt very satisfied; when functional requirements were not met, users were very dissatisfied. This kind of requirements were what products should have and were usually the focus of comparisons between products. "Convenience", "photography software and editing applications", "cost-effectiveness, cost-performance ratio", and "post-production software" are "Must-Be" quality factors. When the functional requirements were met, users felt satisfied. When functional requirements were not met, users were very dissatisfied. Basic requirements were the core requirements that products must have, and they were also the requirements that the product must meet and continuously improve. The "software provides teaching and editing tools" and the "Bluetooth remote shutter function" were the " Attractive" quality factors of the product. This function had exceeded the user's original expectations for the products, resulting in a significant increase in user satisfaction, which led to greater user loyalty.

4.3 Result of TOPSIS-IPA Analysis

There are 131 valid IPA questionnaires returned. SPSS.17 statistical software was applied for reliability analysis. The questionnaires were organized as follows: the Cronbach's Alpha value of the importance questionnaire was 0.839, and the Cronbach's Alpha value of the satisfaction questionnaire was 0.917. Both are greater than 0.7, which were credible levels. The evaluation matrix based on the importance and satisfaction of IPA is shown in Table 3.

Factor	Importance	Satisfaction
Recording life	4.410	4.302
Instant uploading	4.302	4.158
Convenience	4.022	4.000
Photography software and editing applications	4.194	4.000
Software providing teaching and editing tools	4.050	4.036
Cost-effectiveness, cost-performance ratio	3.741	3.712
Post-production software	3.669	3.403
Image stabilization HDR, various shooting modes	3.942	3.576
Bluetooth remote shutter function	4.094	3.863
Higher storage capacity in mobile phone to back up large amounts of high-quality photos	4.072	3.647

Table 3. IPA evaluation matrix (v_{ij})

According to Table 2, Positive Ideal Solution $A^+ = (4.410, 4.302)$ and Negative Ideal Solution $A^- = (3.669, 3.576)$ were obtained. The distance from the preference factors to the Positive Ideal Solution and the Negative Ideal Solution were obtained (Section 3.4), as shown in Table 4.

Factor	Distance to the Positive Ideal Solution S_i^+	Distance to the Negative Ideal Solution S_i^-
Recording life	0	1.165
Instant uploading	0.180	0.986
Convenience	0.492	0.693
Photography software and editing applications	0.371	0.759
Software providing teaching and editing tools	0.447	0.739
Cost-effectiveness, cost-performance ratio	0.892	0.318
Post-production software	1.165	0
Image stabilization HDR, various shooting modes	0.864	0.323
Bluetooth remote shutter function	0.541	0.626
Higher storage capacity in mobile phone to back up large amounts of high-quality photos	0.737	0.471

Table 4. Distance from preference factors to Positive and Negative Ideal Solutions

According to Table 3 and Table 4, the coefficient close to the Negative Ideal Solution can be obtained, as shown in Table 5.

Factor	Proximity Coefficient	Sequence
Recording life	0	1
Instant uploading	0.154	2
Convenience	0.415	5
Photography software and editing applications	0.318	3
Software providing teaching and editing tools	0.377	4
Cost-effectiveness, cost-performance ratio	0.737	9
Post-production software	1	10
Image stabilization HDR, various shooting modes	0.728	8
Bluetooth remote shutter function	0.463	6
Higher storage capacity in mobile phone to back up large amounts of high-quality photos	0.610	7

Table 5. the coefficient close to the positive ideal solution

Based on Table 5, the results show that the preference factors for taking pictures with mobile phones were ranked as follows: 1. "Recording life", 2. " Instant uploading", 3. " Photography software and editing applications", 4. " Software providing teaching and editing tools", 5. " Convenience", 6. "Bluetooth remote shutter function", 7. " Higher storage capacity in mobile phone to back up large amounts of high-quality photos", 8. " Image stabilization HDR and various shooting modes", 9. " Cost-effectiveness, cost-performance ratio ", 10. " Post-production software".

5. Conclusion and Suggestions

Based on this research, mobile phone photography users (excluding those over 55 years old) use mobile phones to take pictures in daily life, prefer to record life through images, and like to use photography software and editing software to edit photos. They prefer to use the internet to upload and share life. Therefore, Mobile phones have become image storage and media tools for social life. Mobile phone photography users like to use photo software to design their own images. The Bluetooth remote shutter function allows users to conveniently take selfies and capture images through remote sensing, showing themselves and sharing professional skills in the social websites. Therefore, many bloggers and Youtubers appeared. Due to the progress of Technology, People rely on mobile phones, and mobile phones have become necessary tools in life. Daily life is closely related to the Internet. It is impossible to imagine daily life without mobile phones or the Internet. Thus, mobile phone photography not only creates a world of images, but also creates unlimited business opportunities.

Based on the research results, the preferences of mobile phone photography were analyzed. The suggestions for mobile phone manufacturers were summarized as follows.: (1) We suggest to popularize the face recognition function of mobile phones and improving voice control recognition. Because using your fingers to operate the phone panel it will affect the clarity of the photos. Mobile phone graphyer can use voice control to operate the shutter button

to avoid finger vibration when taking photos (2) Complementary Metal-Oxide Semiconductor (CMOS) must continue to be improved and strengthened to reduce the "Noise" in nighttime photos and the magnification of photos. (3) We look forward to the design of integrating AI chips into the camera functions of mobile phones to improve high-resolution image quality, image magnification, wide angle image quality. (4) We look forward to provide free larger cloud drives for users to facilitate streaming and sharing.

References

Ajzen, I., & Fishbein, M. (1980). Understanding attitudes and predicting social behavior. Englewood-Cliffs, NJ; Prentice Hall.

Beldad & Hegner (2017), More Photos From Me to Thee: Factors Influencing the Intention to Continue Sharing Personal Photos on an Online Social Networking (OSN) Site among Young Adults in the Netherlands。DOI:10.1080/10447318.2016.1254890.

Bellis, M. (2021): A Comprehensive Look at the History of Photography. from: https://www.thoughtco.com/history-of-photography-and-the-camera-1992331

Blackwell, D. R., Miniard, P. W. & Engel, J. F. (2001). Consumer Behavior,9th ed., Harcourt, Inc.

Chun-Hsiao. (2015). Decision-Making for Resource Allocation to Enhance Overall Service Performance. Research Project Report Supported by the Ministry of Science and Technology. Unpublished manuscript, Ministry of Science and Technology, 2015.

Cui Y, Kangas J, Holm J, Grassel G. Front-camera video recordings as emotion responses to mobile photos shared within close-knit groups. In: Proceedings of the SIGCHI conference on human factors in computing systems ACM. 2013 p. 981–90.

Definition of senior citizens (2006): Senior Learning - Senior Learning Network of the Ministry of Education: https://moe.senioredu.moe.gov.tw/Home/Senior?side_nav=ContentAbout_1

Dong-Jenn Yang, Ming-Rea Kao, Sheng-Min Guo（2007）：Behavior Intention of Citizens to Participate in Forest Ecosystem Management at the Liukuei Experimental Forest in Kaohsiung, Taiwan, Taiwan Forestry Science 22（4）, 381-398.

Eun Hwa Jung, S. Shyam Sundar Eon (2021). "Older Adults" Activities on Facebook: Can Affordances Predict Intrinsic Motivation and Well-Being? Pages 597-607 | Published online: 04 Jan 2021。Taylor & Francis Online. https://doi.org/10.1080/10410236.2020.1859722.

Han-Yin Hsu, Li-Shu Lu, Shing-Sheng Guan, (2016). A Study of Shop Window Design on the Consumer Kansei Image, 50 Design Journal, Volume 1, Issue 1, June 2016/06.

Hu Y, Manikonda L, Kambhampati S. What We instagram: a first analysis of instagram photo content and user types. In: ICWSM. 2014.

Iso-Ahola S. (1980). The Social Psychology of Leisure and Recreation. Dubuque, IA: Wm. C. Brown.

JA Martilla, JC James (1997), Important Performance Analysis, Journal of Marketing, Vol. 39 Issue 1, p. 77-79.

Kano, N., Seraku, N., Takahashi, F. and Tsuji, S., 1984. Attractive quality and must-bequality. Journal of the Japanese Society for Quality Control, 1(4), 39-48.

Kindberg et al., (2005) I saw this and thought of you: some social uses of camera phones, Conference: Extended Abstracts Proceedings of the 2005 Conference on Human Factors in Computing Systems, CHI 2005, DOI:10.1145/1056808.1056962.

Mannell, R. C., & Kleiber, D. A. (1999). A social psychology of leisure. State College, PA: Venture.

Rivière, C., 2005. Mobile camera phones: a new form of "being together" in daily interpersonal communication. In R. Ling & P. E. Pedersen, eds. Mobile Communications. Re-negotiation of the Social Sphere. London: Springer, pp. 167–185.

Sens online: iPhone (2023) https://online.senao.com.tw/Article/detail/1941.

Sümer, N., & Kağitçibaşi, Ç. (2010). Culturally relevant parenting predictors of attachment security: Perspectives from Turkey. In P. Erdman & K.-M. Ng (Eds.), Attachment: Expanding the cultural connections (pp. 157–179).

Van House, N. A. (2009). Collocated photo sharing, story-telling, and the performance of self. International Journal of Human-Computer Studies, 67(12), 1073–1086. https://doi.org/10.1016/j.ijhcs.2009.09.003.

Wang, Chia-Wen. (2009). Fuzzy Hierarchical TOPSIS for Software Project Selection. Editor: Unknown. Published by the National Science Council, Executive Yuan, 2009.

Ye Zhikui (2006), "Leisure Research—Leisure Concept and Leisure Monograph", Taipei: Pindo Co., Ltd.

Zhang W. (2017). Smartphone photography in urban China. International Journal of Social, Behavioral Educational, Economic, Business and Industrial Engineering, 11(1), 231–239.