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Van Nhat Nguyen

# SMARTPHONE PHOTOGRAPHY: THE USE OF SMARTPHONE CAMERA IN 2018

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## SMARTPHONE PHOTOGRAPHY: THE USE OF SMARTPHONE CAMERA IN 2018

The thesis explores the new perception and photographic uses of smartphone cameras in photography in 2018. The target group of the study are adults from the age of 20 and above. The research was conducted using literature review and online questionnaire.

Photography is a form of art that involves capturing images and showcasing them to the viewers. With the constant improvement of technology, it has been advanced in execution and reformed as an art, especially with the modern smartphones. Smartphone cameras while being continuously bettered over time, have minimized the technical difficulty in photography and made it a much friendlier art to the regular public. As traditional cameras have also been blessed with high technology, smartphones have a place in photography for themselves. With the obvious accessibility and ease to operate, they are being used more and more for photos and videos.

However, as vastly used as smartphones are today, the quality that they provide is still not considered as high as dedicated cameras. While both of the devices have their own markets to develop in, the existence of smartphones sparks a different genre of photography. This research aimed to find out the way smartphone cameras and the content created by them are used in photography nowadays. In addition, it also provided an insight of the value that consumers associate with their smartphone's camera.

### KEYWORDS:

Smartphone, Camera phone, Photography, Smartphone photography, Camera, Social media

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## **LIST OF ABBREVIATIONS (OR) SYMBOLS**

# 1 INTRODUCTION

## 1.1 Background

While the art of photography has always served the same purpose that is to capture a moment in time and present it to an audience, the way that it is viewed and executed nowadays has significantly changed over the years. With the rise of social media and the demand of image sharing (via Facebook, Instagram, Twitter, etc.), the simplicity of taking a photo has also remarkably enhanced, all thanks to the fast-paced development of technology. Photography has now become more casual and user-friendlier than ever when every person who has access to a smartphone has the power to make it happen. Taking selfies for instant, while there were estimatedly a million selfies taken every day across the world in 2016, an average millennial was expected to take over 25.000 selfies in his or her lifetime (Godart, 2016). As smartphones are considered a necessity for any professional adult in the modern world (Smith, 2015), so is the ability of making and sharing a picture whenever needed. With the minimized technical difficulties that a smartphone offers, the average person is now much more comfortable to rely on themselves in taking photos in most occasions of their life (Cakebread, 2017). Although it may be argued that smartphones are not competitors of other dedicated photo cameras when it comes to picture quality, mobile phone technology has been doing an excellent job in closing this gap.

## 1.2 The evolution of photography

Prior to the first camera ever invented, the concept of the "camera obscura" had been around since the 13th-14th centuries. The term Camera Obscura is Latin for the Dark Room, a tool which projects light onto a surface. Before photography, this principle had been applied in multiple ways to aid the art of drawing. Despite people knowing how to project pictures so early on, the technique of preserving those images remained unknown until 1835, when the first photo of history was taken by a French inventor, Joseph Niepce (Ivan Tolmachev, 2010). After years being viewed as no more than a technical innovation, photography finally became common when George Eastman, founder of Kodak, launched the first Kodak camera in 1888. Photography was mostly limited in black and white until 1907 when the first practical color plate went onto the

market (Ivan Tolmachev, 2010). The consumption of cameras grew bigger over time with a series of births of big brands such as Fujifilm (earlier known as Fuji Photo Film) in 1934, Polaroid Corporation in 1937, and the first multi-layered color film, the Kodachrome. The birth of the world first single-lens reflex camera in 1936, the Kine-Exakta, also became a quantum leap in photographic technology. (Ivan Tolmachev, 2010)

An SLR (Single-lens reflex) camera is designed to let light through the lens and hit a mirror inside the camera body, the mirror then reflects the image through a pentaprism onto a glass screen, where the photographer can look into and see the same image that will be exposed later on the film. When the shutter button is pressed, the mirror flips out of the way and let the film behind it catch the light that comes in and preserve it. (<http://www.mediacollege.com/photography/camera/slr/>) Later on when digital SLR (DSLR) cameras were developed, the film was replaced by a semiconductor device that records light electronically.

In 2000, the world first cell-phone with a built-in camera came out in Korea, the Samsung SCH-V200, followed closely by the J-SH04 produced by Sharp in the same year. The success of camera phone was carried on by a number of new releases from brands such as Sanyo, Audiovox, Nokia, Sony, etc. in the following years. (Simon Hill, 2013)

### 1.3 Personal motivation

Photography has been a big part of my life since I was 17 years old. I was fortunate enough to have shortly lived in the time when film cameras (SLRs) were still popular, therefore, my learning began with how to take a photo selectively, because unlike digital files, films costed a fair amount of money and had to undergo a longer process to be printed out as final photos. My interest in photography grew from taking pictures of my family, to the flower on the front lawn, the sunset on the beach, and so on. Up until I got my first own camera, one of the Fujifilm Finepix series, I did not realize this could be the thing that I would enjoy doing for the rest of my life. During the course of my learning journey, I have tried out several different kinds of photography, for instance, landscape, macro, animals, architecture, portraiture and fashion, etc., until I decided to stay with the last two. Portraiture and fashion photography to me are like making paintings, where I get to be in control of my content from the visual to the meaning. They are also the genres in which I had to learn how to pick and combine colors, as well as direct the models towards certain themes and goals. In late 2016, I purchased an advanced camera, the



Sony SLT-A77, together with a set of lenses and studio lights, hoping to bring this hobby to the next level. After months of self-educating and practice, I began to use my skills for multiple voluntary and paid projects, as well as two of my internships as a photographer for a local enterprise.

Photography practice, to me, could happen anywhere at any time regardless whether or not I have my camera in my backpack. Because in times it is not there, my phone could definitely come in handy. I chose this topic not only because I take pictures with my phone on a daily basis, but also because I am a part-time photographer who aspires to become a professional one day. I have been fascinated about how small yet powerful a mobile device could be used in various aspects of life, including photography which I am specifically looking into. Although being equipped with advanced photography gear, strangely I find myself often using my phone instead of any of the cameras for most of the photos in regular daily situations, and save the rest of the equipment for more serious project work. Another worth-mentioning point is that while the average person perhaps already has a smartphone, a DSLR camera or professional photographic services would come with an extra cost. The price of a typical entry-level DSLR camera, including the camera body and a lens, normally would not fall under \$500 (Brad Jones, 2017), and paying for a professional photographer every time is not exactly a long-term investment.

#### 1.4 Research questions

1. When do people use their smartphone to take pictures and videos?
2. How do people use the pictures and videos captured by their phone?
3. Which factors of a smartphone camera affect consumers' buying decision?

#### 1.5 Research objectives

The first objective of this research is to give smartphone photography a newer reevaluation as technology has come a long way to better it. Secondly, it is to bring a better understanding to the way consumers make use of their smartphone camera in 2018. Last but not least, the study also aims to find out the real value of the smartphone camera in the eye of the consumers.

## 2 LITERATURE REVIEW

### 2.1 DSLRs vs. Smartphones

Smartphone is a device that has become very familiar with people in the modern world. It is no longer just a communicational tool but has also become a device serving multiple entertainment purposes, with most of the abilities that a computer does. (Ha, 2016, 4)

The one thing that a smartphone undeniably defeats any DSLR camera is that it fits in a pocket and can be easily accessed to whenever the user feels the need to. On the other hand, a DSLR is made for photography purpose precisely, therefore, it can have the advantage of functionality and picture quality comparing to any phone. While it is rather subjective to compare the two devices side by side due to their different natures, the key is to consider each individual's interest level in photography, as an average hobbyist can still create great images using a smartphone camera. (Jones, 2017)

Taking the iPhone X for example, the current price of it is EUR 1,101.00 (Amazon, 2018). An equivalent DSLR camera of this phone in terms of price would be the Canon EOS 80D with the Canon 18-55mm lens, costing EUR 1,129.00 in total (Amazon, 2018). Below are a few features from both devices put side by side for comparison:

	iPhone X	Canon EOS 80D + 18-55mm lens
Resolution	Dual 12MP cameras	24MP
Aperture	f/1.8 – f/2.4	f/3.5 – f/5.6
Zoom	Optical zoom, digital zoom 10x	18-55mm
Stabilization	Dual optical image stabilization	None
Touch screen	Yes	Yes
Body and face detection	Yes	Yes
Panorama	Yes	Yes
Exposure control	Yes	Yes
Noise reduction	Yes	Yes
Burst mode	Yes	Yes
Timer mode	Yes	Yes
Price	EUR 1,101.00	EUR 1,129.00

Table 1. iPhone X and Canon EOS 80D comparison

(<https://www.apple.com/lae/iphone-x/specs/>  
<http://cameradecision.com/review/Sony-Alpha-7>)

As it is clear to be seen from the table, most of the features are shared by the two devices such as touch screen, body and face detection, panorama, exposure control, noise reduction, burst mode and timer mode. However, while the iPhone X's aperture can go up to f/2.4 and f/1.8 which means it can separate the object better from the blur background, the Canon EOS 80D with a 18-55mm lens is not able to reach the same level, meaning it cannot achieve a certain look that the iPhone X can. In addition to that, the iPhone X is equipped with a dual optical image stabilization that is helpful in handheld situation as the Canon EOS 80D is not. The lack of stabilization can cause difficulty in finding focus and unexpected blurry details.

While the specs may make it look like the iPhone X is no less of a camera than the Canon EOS 80D, it is still a phone that is designed to serve many other purposes apart from photography. This factor may negatively impact its use as a camera, for instance, the iPhone's storage space would most likely contain apps, podcasts, music and so on in it rather than being solely dedicated for photos. Meanwhile, the Canon EOS 80D uses SD cards, they are cheap and easily stored extra. (Brad Jones, 2017) In addition to the limited storage space, battery life is also a disadvantage for the iPhone X in comparison to its DSLR opponent. Similar to storage, Canon batteries can be pre-charged and stored extra while as the iPhone X's battery would more likely be spent on other uses of a phone than the Canon.

## 2.2 The photographic uses of early camera phones

The evolution of the smartphones' camera has come a long way from regular camera phones of their first forms. At the beginning of the camera phones' popularity, they were expected by mobile phone operators to bring a huge change into the way people exchange text messages, particularly switching from traditional messaging to "picture messaging" (also known as MMSing or multimedia messaging services), especially with the new picture capability. Camera phone sales indeed experienced a huge leap at the time, in Japan for instance, it took up 50% of the mobile phone market in 2004, as J-Phone, a large mobile phone operator announced more than 70% of their customers subscribing to MMS (Kindberg et al., 2004). It was estimated that the worldwide sales

would reach nearly 150 million units in the same year (Kindberg et al., 2004). In spite of the great amount of sales made, it did not exactly indicate whether or not people were using their camera phones for sending picture messages as much as expected. However, media reports at that time showed rather disappointing results regarding MMS revenues. It was believed to be caused by many possible reasons, such as cost, or the lack of ease of using a camera phone's MMS capabilities, or phone users simply did not associate their phone cameras' value with image-sharing but something else. (Kindberg et al., 2004; House and Davis, 2005)

In the early stage of camera phones' era, conventional (film) cameras and digital cameras were still very commonly owned, although only a few people used them with a high frequency (more than once a month) (Kindberg et al., 2004). It was reported that both digital and conventional cameras only came into use in special events of some sort, or generally situations which required pictures at a higher quality. In the meantime, a camera phone was mostly used for spontaneous moments of the casual daily life, and the fact that it enabled users to send the captured photos from one device to another helped it stand out from the rest of the photographic instruments. (Kindberg et al., 2004; House and Davis, 2005) See figure 1:

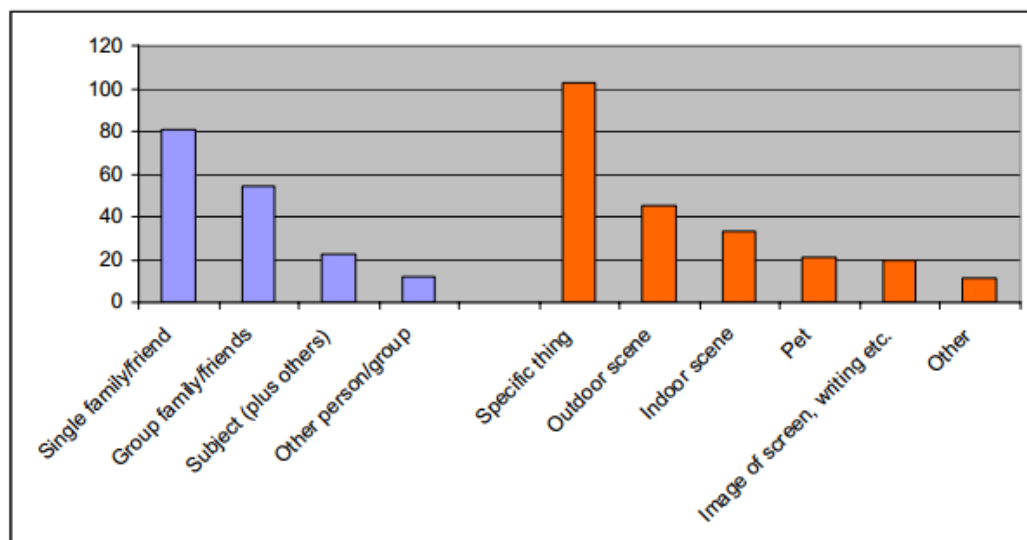


Figure 1. Number of images by category of subject depicted (Kindberg et al., 2014)

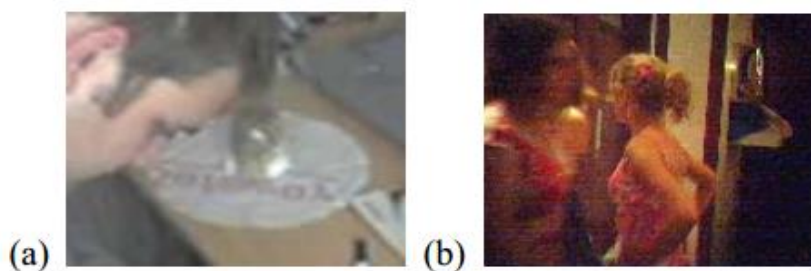
There were two main dimensions of motives when it comes to capturing photos with camera phones. People either did it for the “affective” versus “functional” purposes, meaning images with a sentimental versus practical value, or “social” versus “individual”

purposes, meaning images that are meant to be shared with others versus images that are meant to be kept personally. The next table shows how different categories of pictures particularly align with the intentions behind them based on the finding of Tim Kindberg's study.

	Social			Individual		
<b>Affective</b>	<b>Mutual Experience.</b> Images used to enrich a shared, co-present experience (either in the moment or later as a memento).	103 (35%)	<b>Absent Friends or Family.</b> Images used to communicate with absent friends or family (either in the moment or later).	63 (21%)	<b>Personal Reflection.</b> Images used for personal reflection or reminiscing.	120 (41%)
<b>Functional</b>	<b>Mutual Task.</b> Images shared with people co-present in support of a task (either in the moment or after the event).	11 (4%)	<b>Remote Task.</b> Images used to help accomplish a task by sharing with remote family, friends or colleagues (either in the moment or later).	23 (8%)	<b>Personal Task.</b> Images used to support some future task not involving sharing.	29 (10%)

Table 2. A taxonomy of image capture, showing numbers and proportion of images by category (Kindberg et al. 2004)

In the "Affective" category, mutual experience means moments that were shared within multiple people together at a time. The images created for this type of purpose mostly were of individual user if not a group, occasionally it could be an object which was associated with the event. Most of the mutual experiences happened at public places like a restaurant or a pub, or at a party at a friend's house, etc. It can also be a vacation or a trip involving companions. (Kindberg et al., 2004)



Picture 1. Images taken for teasing (a) and as a party memento (b) (Kindberg et al., 2004)

In addition to mutual experience, camera phone images were often made to be shared or communicate an experience with absent friends or family, where the photographer most of the time would photograph sights that he or she thought someone else may like

to see. This could happen at the moment the image was taken, where the event had a momentary value that needed to be shared instantly, or it could happen long after the occurrence. (Kindberg et al., 2004, House and Davis, 2005)



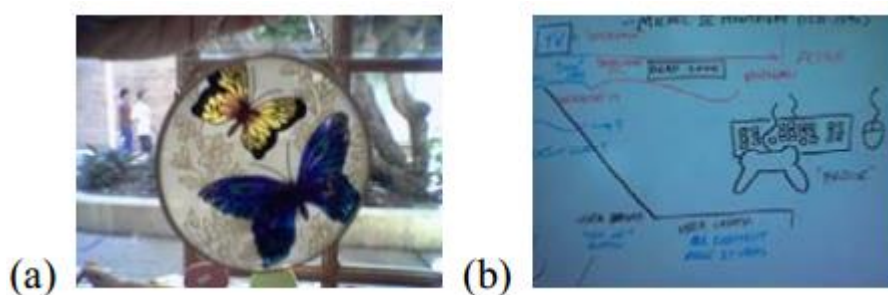
Picture 2. Images shared with those who were absent: muddy conditions at Glastonbury Festival (a), completed building work (b); testing about a desired object (c); and riddling (d) (Kindberg et al., 2004)

Interestingly, out of the 6 categories which were mentioned in Figure 2., personal reflection was the biggest of all. Personal reflection (also known as self-reflection) is a process of reflecting about one's personal past as well as the future (Davies et al., 2013). Pictures of this sort were taken so that the subject could later use to reminisce or to reflect themselves. The fact that the camera phones enabled everyone to point and shoot almost anywhere at any time they want was highly appreciated by the users. Images then were saved digitally and often treated as a portable digital photo album. Many were kept and carried at all time by the phone users to treasure and honour the memories, most were of family, friends, pets, or gifts sentimental value. (Kindberg et al., 2004)



Picture 3. Images showing personal aspiration (a) and signifying a personal achievement in having entered a subway station despite earlier panic attacks (b) (Kindberg et al., 2004)

Remote task (photos captured to be shared with people who were absent at the time concerning a task) and mutual task (photos captured to be shared with people co-present in support of a task) are both proportionately small categories. Meanwhile, personal task is a fairly large category that includes a variety of practical reasons why people use their camera phone to assist their personal, individual tasks. Many of the images captured in this kind were just experiments that people practiced with their phones. However, another common purpose that this is used for is to preserve images of situations, information for later reference and consideration. In this particular category, pictures usually require a good amount of details as they are made to be informative. In spite of the initial intention for personal tasks, most of the pictures taken ended up being shared with other people in reality, as they could also serve well in storytelling. (Kindberg et al., 2004)



Picture 4. Images captured for individual, functional reasons such as a gift idea (a) and a whiteboard (b) (Kindberg et al., 2004)

Regarding personal photographic practices with camera phones, a study identified 4 ways that people went about to use their phones for it, including managing social relationships, constructing memory, self-presentation, and self-expression. Together with this finding, the study also showed 3 ways that camera phones were interpreted by their users, such as a personal memory storage, a communicative device, and an expressive device. (House and Davis, 2005)

In comparison with digital and conventional cameras, camera phones have a higher mobility, therefore, was more often present when needed. Thus, images especially from camera phones, were not only made to capture the momentary memories, but also to be kept and built as a sort of visual diary of one's life. Due to this very factor, personal photography using camera phone also helped users reflect and enhance their relationships by providing images of their loved ones and a platform to share these photos. It was the lack of quality in these pictures that made picture-sharing a much more mundane activity and encouraged people to engage in their daily photography all while socializing. Another very important use of the camera phone in photography was self-presentation, often known as "selfies" in today's language. This particular use was surprisingly found very early and commonly before smartphones took it to another level. As camera phones were not taken seriously by society as a photo capture device, pictures that people took of themselves were perceived as funny and silly, therefore, very acceptable. Last but not least, the camera phones were used by the photographers to express themselves, via making images that are "artistic", expressive, etc. Although those people very much represented the regular public rather than professional artists, and these photos may not necessarily always be presented to an audience, most of them thought photography is a great way to express their own view of the world, and using the camera phone as a tool was much easier and less intimidating to themselves and people around them. (House and Davis, 2005)

### 2.3 The Photographic Uses of Smartphones on Social Media

The incredible portability of a smartphone directly contributed to its rapid rise in ownership and has created a mutual stage for photo and video sharing in the modern day. A Pew research found that 58% of Americans own a smartphone (while generally 92% own a cell phone). Mobile applications such as Instagram and Snapchat had been made to tap into the users' demand to capture and share visual content on social media.



It was reported that 18% of smartphone users were active on Instagram, and another 9% on Snapchat. (Duggan, 2013) Here is a closer look at these two applications.

### 2.3.1 Instagram

Instagram is a mobile phone application that provides a platform where users can share their photos and videos instantly after capturing them with their smartphones. The app was launched in October 2010, and has attracted over 800 million of active users monthly by the end of 2017 (Aslam, 2018). According to a Pew report in September 2012, pictures and videos had become the “key social currencies” online, with 46% of users at the adult age posting content in the form of pictures and videos made by themselves, and 41% of people who take these same types of content online and repost them on other online image sharing platforms (Rainie et al., 2012). In the same research, it was shown that Instagram was dominated by young adults, and 27% of the internet users at the age ranging from 18 to 29 used the app (Rainie et al., 2012).

All cell phone owners (n=941)		18%
a	Men (n=451)	16
b	Women (n=490)	20
<b>Ethnicity</b>		
a	White (n=695)	14
b	African-American (n=97)	20
<b>Age</b>		
a	18-29 (n=133)	43 <sup>bcd</sup>
b	30-49 (n=227)	18 <sup>cd</sup>
c	50-64 (n=296)	6 <sup>d</sup>
d	65+ (n=261)	2
<b>Education attainment</b>		
a	High school grad or less (n=261)	15
b	Some College (n=277)	23 <sup>a</sup>
c	College + (n=400)	18
<b>Household income</b>		
a	Less than \$30,000/yr (n=224)	19
b	\$30,000-\$49,999 (n=161)	16
c	\$50,000-\$74,999 (n=153)	15
d	\$75,000+ (n=301)	21

Table 3. The % among cell phone users who use the mobile app Instagram (Duggan, 2013)

Users who use Instagram are also very active on the app. Over a third of the user community claimed to use the app on a daily basis, and a quarter of them used it several times a day. (Duggan, 2013)

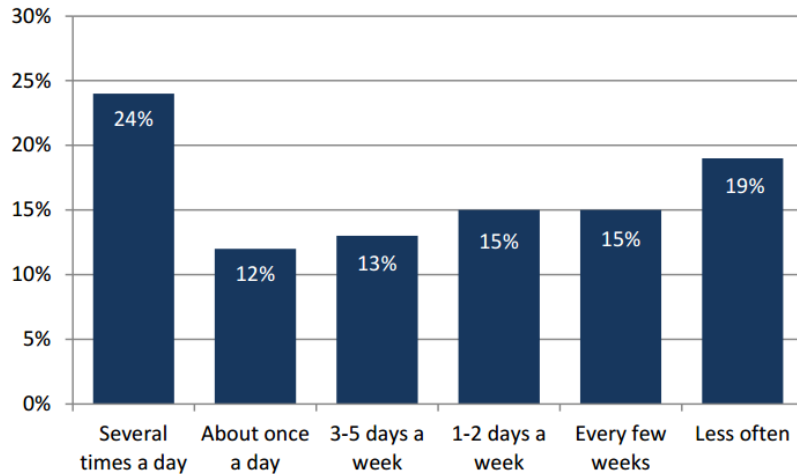


Figure 2. Among Instagram users, the % who say they use the app with the above frequency (Duggan, 2013)

The uniqueness of Instagram is that it lets people create their own content with their smartphones. It offers the users multiple manipulation tools (more than 40 filters and the option to tweak brightness, contrast, saturation, sharpness, etc.) to freely edit the photos and videos before they go to officially post and share them instantly not only on Instagram page itself but many other platforms. Instagram encourages its audience to create content using the smartphone cameras as the pictures and videos are supposed to be uploaded directly from the same mobile device that captured them (smartphones, tablets, etc.), there is no direct way to do it on a PC (personal computer). In addition, the app also allows users to add captions to their content, tag a location associated with it, add hashtags using the # symbol to categorize the pictures and videos into trends, or tag other users by using the @ symbol. (Hu et al., 2014)



Picture 5. Interfaces of Instagram. (a) Instagram app homepage, (b) Transforming a photo using filters (Hu et al., 2014)

At the beginning of Instagram's establishment, the content which users created was limited only in still photography form, until the video function was introduced to the app in 2013 (McGarry, 2013). Instagram allows a user to follow as many other user accounts as he or she wishes to, they can also set the privacy preferences such as to private mode which helps to selectively control the followers instead of the default setting, which initially lets every page's content be visible to the public. Users can easily show support to one another's content by liking and leaving comments on the pictures and videos, and every user is enabled to keep track with their favourite posts and comments. (Hu et al., 2014)

Another feature that has been majorly participated by the app users is Instagram Stories. This feature was launched in August 2016, allowing users to update and share ephemeral photo and video content which automatically delete itself after 24 hours. Similar to another platform called Snapchat, Instagram Stories encourages people to share the moment as it is captured, instead of the regular way where too much thoughts and retouching have to be considered before publishing. Instagram Stories presents itself in a slideshow format, and offers multiple unique filters, text, stickers and other fun editing tools made to be applied very quickly. (UM Social Media, 2017)

A study conducted in 2014 by Hu et al. showed that there were different certain types of photographic content being shared on Instagram which can be divided into 8 categories,

including pictures with the subject’s friends, pictures of food, gadget, images with embed text, pet, activity, selfie, and fashion. (Hu et al., 2014)

Category	Exemplary Photos
Friends (users posing with others friends; At least two human faces are in the photo)	
Food (food, recipes, cakes, drinks, etc.)	
Gadget (electronic goods, tools, motorbikes, cars, etc.)	
Captioned Photo (pictures with embed text, memes, and so on)	
Pet (animals like cats and dogs which are the main objects in the picture)	
Activity (both outdoor & indoor activities, places where activities happen, e.g., concert, landmarks)	
Selfie (self-portraits; only one human face is present in the photo)	
Fashion (shoes, costumes, makeup, personal belongings, etc.)	

Table 4. 8 Photo categories on Instagram (Hu et al., 2014)

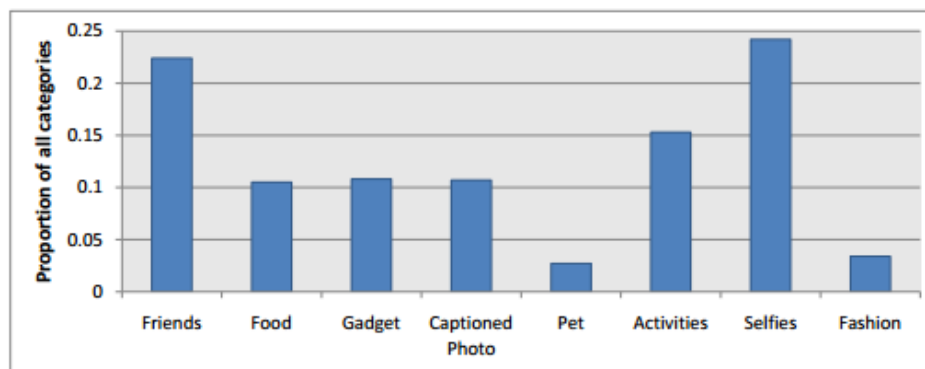


Figure 3. Proportion of 8 photo categories on Instagram (Hu et al., 2014)

It can be seen from the chart above that almost half of the photos of the total sample lied in the two categories Selfies and Friends (24.2% and 22.4%), while the least engaged photo genres were Pet and Fashion (less than 5% combined). This result could also be

understood as Instagram is mainly used for social networking and self-promotion rather than the other purposes mentioned on the list. (Hu et al., 2014)

### 2.3.2 Snapchat

Snapchat is a mobile application that allows its user to communicate by sharing text, ephemeral photos and videos which disappear once they are opened and seen. Senders determine the amount of time that a recipient can view the image, after that period ends the content goes unavailable. (Duggan, 2013)

The app was launched in September 2011, and in over a year, December 2012, its user base had grown to 10 million. By 2013, Snapchat users were generating 60 million Snaps on the daily basis. (Blaney et al., 2016) Recently in 2017, the network had attracted over 150 million users and moreover, a long list of companies and brands (Johnson, 2017).

In 2013, it was reported that 9% of cell phone owners, and 12% of smartphone owners in America were part of Snapchat's user base. The app is popular especially to the audience between the age of 18 and 29., 26% of whom use the app. (Duggan, 2013)

All cell phone owners (n=941)		9%
a	Men (n=451)	9
b	Women (n=490)	10
<b>Ethnicity</b>		
a	White (n=695)	8
b	African-American (n=97)	7
<b>Age</b>		
a	18-29 (n=133)	26 <sup>bcd</sup>
b	30-49 (n=227)	5 <sup>d</sup>
c	50-64 (n=296)	3
d	65+ (n=261)	2
<b>Education attainment</b>		
a	High school grad or less (n=261)	10
b	Some College (n=277)	9
c	College + (n=400)	8
<b>Household income</b>		
a	Less than \$30,000/yr (n=224)	12 <sup>b</sup>
b	\$30,000-\$49,999 (n=161)	5
c	\$50,000-\$74,999 (n=153)	7
d	\$75,000+ (n=301)	9

Table 5. The % of cell phone users who use the mobile app Snapchat (Duggan, 2013)

Another research in 2016 showed that in the year of 2015, Snapchat’s user demographic revealed 76% of the age 18-24, with 46% being between 18 and 24 (Kamleitner, 2016)

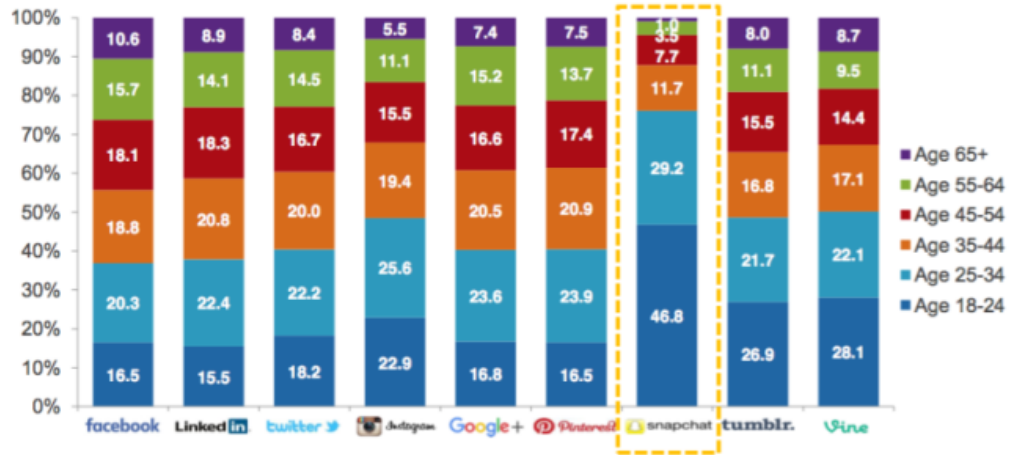


Figure 4. Demographic Composition % of Major Social Networks (Kamleitner, 2016)

A “Snap” is a capture which could either be a photo or a video that is taken through Snapchat to one or multiple recipients. Similar to Instagram, Snapchat offers a wide range of fun filters for its users to explore with, including graphic, animation, distortion, or themes that are relevant to different holidays, seasons, locations, etc. (Johnson, 2017)



Picture 6. Interfaces of Snapchat (Johnson, 2017)

One of the interesting things that a lot of people did not realize when Snapchat came out was that it operates very similarly to how people communicate in person. In reality, interactions and moments vanish after they happen. Unlike in any other traditional social platform since the beginning of the internet, data in Snapchat is not stored and archived (Kamleitner, 2016)

One of the many reasons why people love using Snapchat while there is a good variety of other competing social networks is because it creates artificial scarcity. The fact that a snap can only be viewed for up to 10 seconds and Snapchat Stories for 24 hours makes the recipients pay more attention to each message that they get, knowing that it was made privately only for them and will disappear shortly. Comparing to other social media platforms such as Instagram, Facebook, Twitter, etc., Snapchat's users are not required to invest so much thoughts into what they capture and how to express themselves, as the content is sent selectively and will not be stored anywhere. This takes away the pressure and anxiety that the senders might have had with other platforms. It also enhances the feeling of security when users are most likely free from any responsibility or embarrassment for what they sent after they send it. Furthermore, Snapchat does a great job in simplifying its features, therefore, it is not much of multitasking for people when they want to take a snap and share it while going about their daily routine. (Kamleitner, 2016)

## 3 RESEARCH METHODOLOGY

Research is a collection of information, conducted in a systematic way on its own and with a clear purpose. A research is not only about reassembling and reordering facts but also interpreting them systematically. (Saunders et al., 2008) This chapter specifies the methods used to collected data for this particular research.

### 3.1 Research approach

The deductive approach was selected for this study. As the research aims to create a better understanding on smart phone users' view on their phone camera and how it affects photography as an art, data will be collected from those who are actively using the camera of their smartphones, and those who are active in photography as creators. Both quantitative and qualitative methods were used in the process of data gathering for this research.

Quantitative method includes collecting raw, numeric data and analysing them to bring out their meaning and turn them into information. The quantitative approach is usually used with charts, graphs and statistic to help researchers find out the relationships and trends within the data. (Saunders et al., 2008) The target group for this approach was initially students in high school, university and new bachelor graduates from Finland and Vietnam. This group was chosen because they range from the age of 18 to 24, the age group that are more likely to be active on social media platforms like Snapchat, Instagram, and Twitter comparing to people in their mid- or late 20s (Smith and Anderson, 2018)

Qualitative method is often meant to used when there is (non-numeric) data that have not been quantified involved. Qualitative data analysis procedures allow the researchers develop theories from their data, using conceptualisation. (Saunders et al., 2008) This approach was chosen in one question of the survey, aiming to reach a more in-depth and specific answer from the respondents.



### 3.2 Survey Design

The beginning of the survey includes two questions about the demography, such as age group and employment status, followed by a question asking if the respondent owns a smartphone in order to filter the reliable responses. These 3 questions were made multiple-choice to keep all answers within expectation.

The following part of the questionnaire consists questions concerning the respondents' use of their smartphone camera, for instance, the occasions, purposes, and the social media platforms that they use it on. In the questions of this part, the respondent was asked to rate the categories from 1 to 5 according to how often they use the phone camera for each category, with 1 being *Almost never* and 5 being *All the time*.

The next section of the questionnaire was made using both multiple-choice and rating scale formats. This section aimed to answer the questions of how important to consumers certain features of the smartphone camera are, and whether the front or the rear camera is used more often. Finally, in the last 2 questions, the respondents were asked to pick why they would choose their smartphone camera over a dedicated camera and on the flip side, give their personal opinions on when and where they would alternate their smartphone with a more advanced photographing option.

### 3.3 Sampling and data collection

Data collection through survey is a method that is commonly used with the deductive approach for certain reasons, such as the access to a larger sample size with a lower cost (Saunders et al., 2008). After completion, the survey was initially shared within a group of 80 of the author's peers who were of the age from 18 to 30, then published on the author's personal Facebook wall and 3 other public Facebook groups, consisting mostly university undergraduates and postgraduates. Beside reaching out to the regular public, this survey was also shared with a photographer online community in Vietnam via WhatsApp, this action was chosen to add more professional perspective into the responses and enhance the reliability of the final data. Most of the participants in this survey were based in Finland, Vietnam and the United States, as these are the countries the author has the most social access to. The respondents were given 5 days to answer

the questionnaire, all information related to the respondents' identity was kept anonymous during this survey.

#### 3.4 Survey limitation, reliability and validity

The data sampling method and data collection of this research may have a few limitations. First of all, convenient sampling method was used in this survey, as the questionnaire was posted and shared to only those whom the author has accessibility to. Moreover, due to the limited amount of time during the conduction of the survey, only 74 responses were received by the end of it, which was considered a small sample. This factor may result in a certain lack of reliability of the data since it cannot be applied on a larger scale. In addition, as a large part of the sample group is from Finland and Vietnam, the questionnaire being only in English might have limited itself from reaching more participants than it could have if it was also translated in these countries' national language. Some of the questions during the designing stage were tricky to be worded, although this issue was sorted shortly after, some respondents may still have understood the questions in an incorrect way.

On the other hand, to minimize the flaws of this research, the survey underwent a test round within a small group of people before being further sent to the sample group and shared online. The questions of the survey were also made as easy to answer as possible with simple wording and clear choices. The survey as a whole was also very brief, consisting of 10 key questions and only took up one page.

## 4 DATA ANALYSIS

### 4.1 Research findings

The findings of the survey are presented and analysed following the same order of the questions in the survey.

#### **Question 1:** What age group do you belong to?

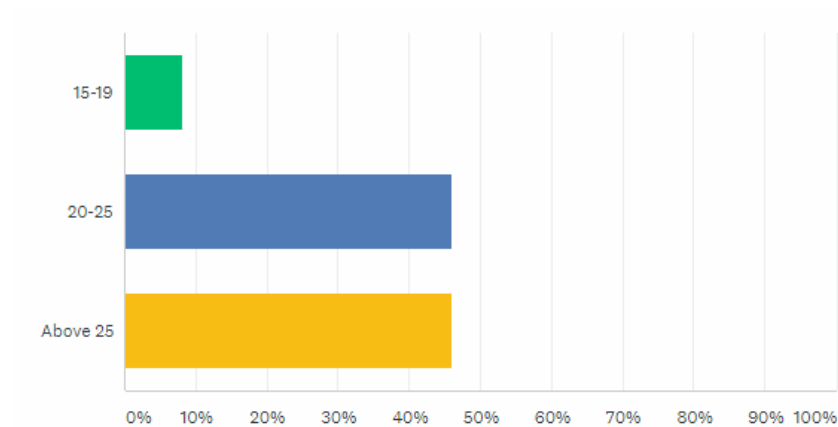


Figure 5. Question 1: Age group

While 45.95% (34 out of 74) of the respondents were at the age of 20-25 and another 45.95% were above 25 years old, only 8.11% (6 out of 74) of them were from 15 to 19. This shows the major demography of this survey is from 20 and above.

#### **Question 2:** What is your employment status?

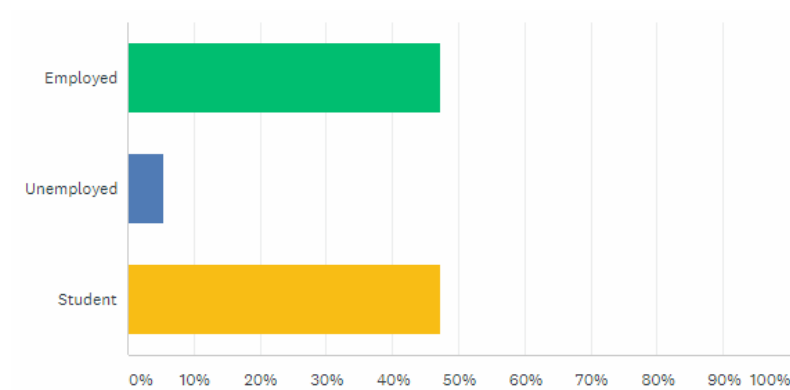


Figure 6. Question 2: Employment status

Only 5.41% (4 out of 74) of the respondents were unemployed, the rest was split into 2 equal halves with 47.3% (35 out of 74) of respondents who are employed, and the same amount of students.

**Question 3:** Do you own a smartphone?

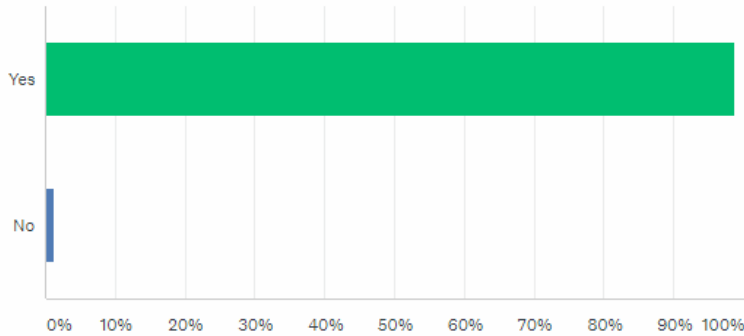


Figure 7. Question 3: Smartphone ownership

As can be seen in the chart, most of the respondents (73 out of 74, meaning 98.65%) owned a smartphone when only 1 of them (1.35%) did not. This ensures the high reliability of the data as most respondents could answer from their own experience.

**Question 4:** How often do you use your phone camera for these occasions?

	ALMOST NEVER	OCCASIONALLY	QUITE OFTEN	VERY OFTEN	ALL THE TIME	TOTAL	WEIGHTED AVERAGE
Selfies	15.49% 11	35.21% 25	12.68% 9	15.49% 11	21.13% 15	71	2.92
Casual events (daily objects, funny sights, pets, friends, etc.)	1.35% 1	24.32% 18	29.73% 22	22.97% 17	21.62% 16	74	3.39
Special events (weddings, concerts, family trips, etc.)	10.81% 8	27.03% 20	16.22% 12	25.68% 19	20.27% 15	74	3.18
Professional projects (official wedding photos, corporate headshots, product advertisement, etc.)	51.35% 38	25.68% 19	10.81% 8	6.76% 5	5.41% 4	74	1.89

Table 6. Question 4: Occasions that smartphone cameras are used on

As shown in the table above, very few respondents use their smartphone camera for professional work since more than half of them (51.35%) chose *Almost never*, and 25.68% of them only *Occasionally* do. Whereas the majority of the group's use was fairly evenly divided into the other 3 categories (casual events, special events and selfies).

**Question 5:** What do you do with the photos and videos captured by your phone?

	ALMOST NEVER	OCCASIONALLY	QUITE OFTEN	VERY OFTEN	ALL THE TIME	TOTAL	WEIGHTED AVERAGE
Keep them offline for yourself	4.05% 3	20.27% 15	25.68% 19	29.73% 22	20.27% 15	74	3.01
Share on social media	9.46% 7	44.59% 33	13.51% 10	17.57% 13	14.86% 11	74	1.95
Publish as professional work	77.03% 57	16.22% 12	4.05% 3	1.35% 1	1.35% 1	74	1.01

Table 7. Question 5: Purposes of photos and videos captured on smartphone

According to the weight average, the largest use of photos and videos after captured was to be kept privately offline, and once again, the majority of the respondents (57 out of 74, meaning 77.03%) chose *Almost never* in publishing their photos and videos as professional work.

**Question 6:** How often do you use your phone camera for these social media platforms?

	ALMOST NEVER	OCCASIONALLY	QUITE OFTEN	VERY OFTEN	ALL THE TIME	TOTAL	WEIGHTED AVERAGE
Facebook	27.03% 20	27.03% 20	18.92% 14	13.51% 10	13.51% 10	74	2.59
Instagram	18.92% 14	16.22% 12	21.62% 16	25.68% 19	17.57% 13	74	3.07
Snapchat	55.41% 41	16.22% 12	1.35% 1	8.11% 6	18.92% 14	74	2.19
Twitter	87.84% 65	8.11% 6	1.35% 1	2.70% 2	0.00% 0	74	1.19

Table 8. Question 6: Smartphone camera usage on social media

Out of the 4 social media platforms listed in the question, Instagram seems to be the most common channel for smartphone photography. Snapchat and Twitter do not appear to be as popular when 55.41% (41 out of 74) of the sample group *Almost never* used their smartphone camera for Snapchat, and 87.94% (65 out of 74) of them *Almost never* did for Twitter.

**Question 7:** How often do you use the two cameras on your smartphone?

	ALMOST NEVER	OCCASIONALLY	QUITE OFTEN	VERY OFTEN	ALL THE TIME	TOTAL	WEIGHTED AVERAGE
Front camera	8.22% 6	31.51% 23	23.29% 17	23.29% 17	13.70% 10	73	3.03
Rear camera	2.74% 2	20.55% 15	21.92% 16	28.77% 21	26.03% 19	73	3.55

Table 9. Question 7: Usage of the front and rear camera of a smartphone

According to the table, the usages of both cameras were not significantly different, although the rear camera was more often used comparing to the front camera. It can clearly be seen that a lot more people chose *All the time* in the rear camera category (19 out of 73, meaning 26.03%) than in the front camera category (10 out of 73, meaning 13.70%)

**Question 8:** How important are these camera features to you when purchasing a smartphone?

	NOT AT ALL	JUST A LITTLE	MAYBE I COULD STILL LIVE WITHOUT IT	QUITE IMPORTANT	I BREATHE FOR IT	TOTAL	WEIGHTED AVERAGE
Resolution	2.74% 2	10.96% 8	19.18% 14	42.47% 31	24.66% 18	73	3.75
Color profile	16.67% 12	19.44% 14	20.83% 15	34.72% 25	8.33% 6	72	2.99
Duo lens technology	21.13% 15	22.54% 16	36.62% 26	16.90% 12	2.82% 2	71	2.58
Sharpness	8.22% 6	10.96% 8	10.96% 8	56.16% 41	13.70% 10	73	3.56
Slow-motion capability	25.00% 18	29.17% 21	29.17% 21	15.28% 11	1.39% 1	72	2.39
Filters and other retouching capability	19.18% 14	21.92% 16	26.03% 19	21.92% 16	10.96% 8	73	2.84
Durability	2.74% 2	10.96% 8	10.96% 8	54.79% 40	20.55% 15	73	3.79

Table 10. Question 8: Important features of the smartphone camera to buyers

Based on the table above, it is clear to see that while the other categories are in a quite similar range of weight averages, the 3 most favoured features are durability, resolution and sharpness. Durability took the top position as the most important feature to buyers, followed by resolution and sharpness.

**Question 9:** What is the biggest reason you would choose your phone camera over a dedicated camera when taking pictures and videos?

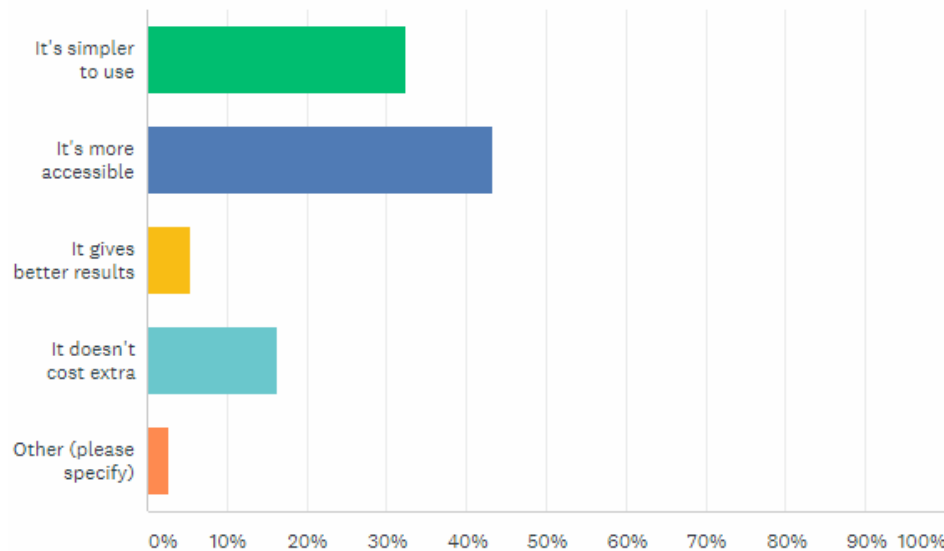


Figure 8. Question 9: Reasons why smartphones are preferred to dedicated cameras

The result of this question depicts that most people in the sample group (32 out of 74, meaning 43.24%) prefer their smartphone camera to a dedicated camera because it is more accessible, and quite many other (24 out of 74, meaning 32.43%) thought because it is also simpler to use. These 2 reasons combined (chosen by 75.67% of the participants) are considered the main advantages that a smartphone has over a regular dedicated camera.

**Question 10:** On what occasions do you think you would need to use an advanced camera or hire a professional photographer instead of using your phone camera?

This was an open question for the respondents to freely name all the answers they had in mind. 72 participated in this question as 2 skipped, and each respondent could give more than one answer.

51 out of 72 (70.83%) participants said they would need more advanced gear than a smartphone in important life events. Within these 51 respondents, 33 of them mentioned weddings as an example, 5 mentioned graduation parties.

19 (26.39%) respondents mentioned paid projects and photos that require to be printed or published. A minority of the group also mentioned sports, professional portrait (passport, licence, etc.), traveling and photography as a hobby.

#### 4.2 Data analysis

The collected data from the survey delivers a great understanding upon consumers' perception of smartphone photography. Despite the big improvement in technology between the early camera phones and the modern smartphones, the way that people perceive and use a phone camera has not significantly changed as can be seen in the data.

In the era before smartphones, the old camera phones were used mainly for daily life spontaneous moments, whereas the film and digital cameras were saved for more special events, situations that required a higher quality in result. (Kindberg et al., 2004; House and Davis, 2005) This behaviour seems to remain the same with smartphones in 2018, as the answer to question 10 revealed, majority of people agreed they would need a more advanced tool than their phones to capture images and videos when it comes to important life events and professional situations. Considering how much more advanced phone cameras are in 2018 comparing to early 2000s, it is interesting that their photographic value to consumers has not gone near DSLR cameras.

Although the smartphone camera does not seem to be held in the same regard as DSLRs in photography, it is still vastly used, as nearly 99% of the survey's respondents owns and uses one. While people think the special events of their lives should be captured in higher-quality photos by better cameras, they also use their smartphones to take pictures and videos at the same time. According to the finding of question 4, the frequency at which people use their smartphones to document important events is almost as high as daily situations, and even higher than selfies. This means no matter if the users think their smartphone camera is good enough, they use it anyway due its instant availability. Besides the obvious accessibility of a smartphone to its owner, the second biggest reason why smartphone cameras are so frequently used is their simplicity. In comparison with a dedicated camera and the technical knowledge it requires to be handled, the smartphone is extremely easy to use since it takes only one touch on the screen and the rest of the setting is done automatically.



Another interesting finding of the research is that despite the great capability of internet surfing on the smartphone, people do not share their photographic content online as often as they keep offline for themselves. This shows that the internet surfing advantage of the smartphone did not entirely change the existing way that people had been using their phone cameras, it only added a new segment to it. In addition, when it comes to social media platforms, the survey showed Instagram is the most commonly associated with the phone camera, as it is mainly made for mobile phone photography. However, it was surprising to see the smartphone camera is used more often for Facebook than Snapchat within the sample group. With Snapchat being designed to only be used with mobile phone camera, this could mean that Snapchat is not very popular among the participants of this survey (which mainly includes adults above 20 years old who are employed or students in Finland, Vietnam and United States).

The data collected from question 7 depicts that both cameras on the smartphone are quite commonly used with the rear camera slightly more used than the front. The reason for this could vary due to the different purposes that the two cameras are meant for. In most cases, the front camera is used for selfies or generally objects that are placed in front of the phone, while the rear camera would be used mainly for objects behind the phone and its lens often offers higher resolution. Furthermore, question 8 also revealed that the 2 most important smartphone camera features to users after durability are resolution and sharpness. Both findings of these two questions could lead to one conclusion which is the consumers tend to focus on those elements of a camera that directly determine the image clearance, and put less value on other creative features such as duo-lens, editing capability, slow-motion, etc.

## 5 CONCLUSION

### 5.1 Answers to research questions

As mentioned in the introduction, this research aimed to answer these 3 questions:

1. When do people use their smartphone to take pictures and videos?
2. How do people use the pictures and videos captured by their phone?
3. Which factors of a smartphone camera affect consumers' buying decision?

The goal of the study was to give a better understanding about smartphone consumers' approach when choosing and using their phone camera to create photographic content. As the final findings of the research suggests, the perception of smartphone photography from phone consumers has been shaped and maintained since the era of the first camera phones until today. The vast majority of them view the phone camera as a device to capture quick and spontaneous content, as they are also aware of the certain lack of quality produced by it. The constant accessibility of a smartphone camera is the key reason why people would more often choose to use it over the big and heavy dedicated camera, another reason is because it is automatic and a lot simpler to work with. In spite of the great simplicity and convenience the smartphone camera offers, it does not seem to be associated with professionalism when it comes to fine photography. According to the survey, most people agreed that they would need an advanced camera or a professional photographer for occasions of which the photos really matter, for reasons such as important memories, publishing, professional projects, etc.

As the data collected from the survey showed, it is more common that the photos and videos after being captured with the smartphone are kept offline for personal uses than posted online. This was initially an unexpected result, considering the popularity of social media in the recent years. Within the social media platforms themselves, Instagram is the most associated with the smartphone camera.

Concerning the camera feature of the smartphone, consumers' buying decision is very much based on the durability of the camera and the image clearance it provides. Specifically, durability, resolution and sharpness are the top 3 features that consumers value the most in a smartphone camera.

## 5.2 Research limitations and suggestions for future works

There are three main limitations of this research that could be improved in future works, the first one being the lack of demographic data of the sample. Although data regarding the participants' gender, income, nationality, etc. may not directly affect the subject of this study, it could add a lot more depth to the end result of the survey. Secondly, there was no question in the questionnaire about DSLR camera (or other kinds of camera) ownership, therefore, the study could not provide any direct comparison between smartphone photography and traditional photography, which could have better presented the contrast between the two. Last but not least, at one point the survey only focused to find out whether smartphone consumers use their photos and videos online or offline, without exploring the 'picture messaging' function of the smartphone, which could be a great sub-category in smartphone photography. The author suggests that future researches may consider these factors into their survey and collect more in-depth data, therefore, more thorough findings.

Nonetheless, the research fulfils the initial objectives of the author, and gives an updated insight about smartphone photography among smartphone consumers. The findings of the study can help smartphone brands reevaluate their product features and marketing strategies in order to attract more customers in the future.

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## SURVEY

1. Which are group do you belong to?
  - 15-19
  - 20-25
  - Above 25
2. What is your employment status?
  - Employed
  - Unemployed
  - Student
3. Do you own a smartphone?
  - Yes
  - No
4. How often do you use your phone camera for these occasions?

	Almost never	Occasionalliy	Quite oten	Very often	All the time
Selfies					
Casual events (daily objects, funny sights, pets, friends, etc.)					
Special events (weddings, concerts, family trips, etc.)					
Professional projects (official wedding photos, corporate headshots, product advertisement, etc.)					



5. What do you do with the photos and videos captured by your phones?

	Almost never	Occasionally	Quite often	Very often	All the time
Keep them offline to yourself					
Share on social media					
Publish as professional work					

6. How often do you use your phone camera for these social media platforms?

	Almost never	Occasionally	Quite often	Very often	All the time
Facebook					
Instagram					
Snapchat					
Twitter					

7. How often do you use each camera on your smartphone?

	Almost never	Occasionally	Quite often	Very often	All the time
Front camera					
Rear camera					

8. How important are these camera features to you when purchasing a smartphone?

	Not at all	Just a little	Maybe I could still live without it	Quite important	I breathe for it
Resolution					
Color profile					
Duo lens technology					
Sharpness					
Slow-motion capability					
Filters and other retouching capability					
Durability					

9. What is the biggest reason you would choose your phone camera over a dedicated camera when taking pictures and videos?
- It's simpler to use
  - It's more accessible
  - It gives better results
  - It doesn't cost extra
  - Other (please specify)
10. On what occasions do you think you would need to use an advanced camera or hire a professional photographer instead of using your phone camera?