Original Article

Customized Digital Mobile Case

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Abstract

Nowadays everyone uses smart phones and the Internet. With that, they are taking some precautions to keep theirmobile safe. For example, Everyone uses mobile cases to prevent their mobile phone from being damaged. But weare using plastic or transparent mobile cases, these plastic mobile cases are harmful to the environment and cause Global Warming, due to high temperatures mobile case color will be changed, and sometimes the mobile generates too much heat due to that mobile cases will be burned. Based on the current trend, design, and wallpaper of the mobile case we are changing from the old mobile case to the new mobile case.

So that we want to design a digital mobile case to prevent the mobile case from the damages also people can change the background wallpaper by their choice because we are introducing digital mobile case and also these digital mobile cases are not causing any Global Warming.

Keywords -- Mobile case, Environment, Global Warming, Transparent, Internet.

1. Introduction

The digital mobile case is very helpful for humans to save money to save the environment and to save time.People will be changing mobile cases because of new designs, damages and changing color of mobile cases, etc….

Fig.1. Damaged mobile case

In the 20th century, mobile phones are very essential for everyone for communication, entertainment, social media,and many other purposes. Even kids also carry mobiles andplay games mobile phone temperature increases, Figure1shows damaged mobile case because of high temperature , sometimes due to high-temperature mobile case color willbe changed show Figure2 you will get clear cut picture about color changed mobile case , Sometimes if a mobilephone generates too much heat daily then these mobile cases will be burned.

Fig.2.Color changing because of high-temperature

If the mobile phone is fully covered with a mobile case this

is also the reason for getting the mobile phone getting heat. In the market, different types of mobile cases arethere some are the plastic case, hybrid cases, silicon cases, rubber cases, flip cases, metal cases, fabric cases,leather cases, fiber cases, and bumper cases not only this,In the market so many types of mobile cases are there,These are all made by plastic, These Mobile cases willnot be recycled it cause global warming for this reasonsoil strength will be decreased. Sometimes animals willeat those un-recycled materials show figure3, These plastic materials are not digested and are harmful to theirhealth.

Fig.3. Plastic effect to animals

By using digital mobile cases we can change our background wallpaper and these are not changing theircolor if the mobile phone generates high temperature alsoand these are not causing any global warming, Becausewe are not using any plastic, instead of the plastic mobile case we are using polycarbonate mobile cases theses are hard and offer great protection from scratches, whereas TPU cases aresofter and smoother. A mix of these two materials offers better protection than regular plastic cases. To change the wallpaper of the digital mobile case we are using Bluetooth (Bluetooth is a hardware device that is used to transfer data from one electronic device to another electronic device). Here we transfer the image from mobile to mobile case it is a very short distance that's why we are using Bluetooth if the mobile node and corresponding node are too far then we use WI-FI (wireless fidelity). To display the transferred image data we are using flexible mobile display paper these display papers are

better viewing angles, the best color reproduction, and direct sunlight visibility. If the mobile generates too much heat also this digital mobile case is heat withstand.

Here we want to design a mobile case with apolycarbonate solar panel mobile case and we have attached a flexible display to it this will give you to visible wallpaper. If we are using this digital mobile case if the mobile generates too much heat also, Heat will be moved out of the mobile case, because the corner of the polycarbonate solar cover has holes to keep the mobile phone at normal temperature and reduce the damages like burning and color changing.

2. Survey

A. Normal Mobile Case User - Survey

In a survey, we are taken reviews from more than a hundred's normal mobile case users about the life span of a normal mobile case, damages of the mobilecase, Burning of the mobile case, if their mobile phone is safe when they use normal mobile case, what type of mobile cases they want, what are the features they want, we survey different age people (children, teenagers, adults, uncles) which design is most likely.

In these survey majority of people said that this normal mobile case losses its strength after a certain time(Because people are spending more time onmobiles used for Calls, Messages, Games, Browsing,Entertainment, and all. So mobile phones generate too much heat. Being mobiles with plastic mobile cases after certain temperatures they lose their color and also burn finally.

In a survey we asked them whenever you change the mobile case without any damage, Majority of the peoplesaid that based on the trend of wallpaper we are changing the mobile case and sometimes phone mobile case will get changing color and if we hold that color changed mobile case it will mold like a sponge. In Figure4 we mentioned different types of designs and models of different mobile cases.

Fig.4. Different designs mobile case

Based on this survey we find a majority of the people want which type of mobile case and what features theywant based on their reasons we designed a digitalmobile case with a solar polycarbonate case.

To overcome the disadvantages of the present marketing mobile case like no protection to the screen,only lighter protection, not to be used near hotter conditions, Can be slippery in hands, prone toscratches easily, can break heavyweight and all. We introduced a digital mobile case

3. Introducing Digital Mobile Case

Digital mobile cases are safe for human beings and theenvironment these mobile cases are color unchangeable cases, where the mobile phone has too much heat also they are not burned. These are fully designed with hardware components. Digital mobile cases are more life span when compared to normal mobile cases. When compared to normal mobile cases these are costly. Because we are using hardware components like Bluetooth, flexible digital screens,solar panels, and all others.

Instead of using plastic and transparent cases we are using polycarbonate mobile cases theses are hard and offer great protection from scratches,

whereas TPU cases are softer and smoother. Also, we can change the background wallpaper many times like phone wallpaper.

4. Hardware components Used for Digital Mobile Case

Bluetooth:

Bluetooth is a hardware component used for transferring data from one electronic device to another electronic device within a short-range data transfer (here data represent images, audio, videos, and files) in the form of encryption and decryption ofdata[1].

Fig.5. Bluetooth hardware component

In Figure5 you can see Bluetooth hardware device. Nowa day's everyone uses headsets for mobile phones, enabling hands-free phone use headsets, Smartphone,laptops, and portable speakers, Bluetooth allows short- range data transfer between electronic devices. Bluetooth also knows as PAN (personal area network) for communication.

It is a popular and very commonly used technology for transferring data between two devices. It allows the userto form ad hoc networks to transfer data among a wide variety of devices. Now a day's data transfer rate for Bluetooth is 1 Mbps (megabytes per second).

TPU mobile case:

A TPU (thermoplastic polyurethane) mobile case is made up of thermoplastic polyurethane that is designed to protect your cell phone from getting scratched. When compared to other plastic mobile cases the TPU is more eco-friendly. This TPU is an advanced material and environmentally friendly than an alternative such as PVC since TPU is recyclable and biodegradable in 3 - 5 years. The TPU mobile case is coated with fabrics to maintain their flexibility, waterproof and lightweight. We represent tpu mobile case in Figure6.

Fig.6. TPU mobile case

Beyond its flexibility, TPU mobile case will be very durable and hard to break. It can absorb impact well. TPU is a good material to use for mobile cases because it releases the heat out of the mobile case. When compared to other mobile case materials TPU isbetter in some instances. TPU properties are strength, high elasticity, and shock absorbency this is the reasonwe use TPU polycarbonate material to protect our mobile case safely from damage and scratches.

Flexible display

Fig.7. Flexible display

Technology will be growing very fast, In the early 1900's we are just using keypad mobiles, now we are using digital mobiles and companies are trying to make virtual mobile also, When we are using 1G, after that 2G now we are using 5G technology, Not only in the technology field, Every field new inventions and innovations will be implemented.

Fig.8. Flexible display

When coming to our innovative digital mobile case, Inour market flexible displays are available those are very flexible and if we make any damage also it will not be damaged and if we cut it with scissors also the flexible display will not affect total damage just where ever we cut the display that will be destroyed also these are light weight mobile displays[3], That is the reason for selecting the flexible paper display.
In Figure7&8 represent different types of flexible displays. By attaching these flexible displays and TPU solar panel mobile case with Bluetooth we can simply implement the digital mobile case.

Mobile case with solar-powered panel

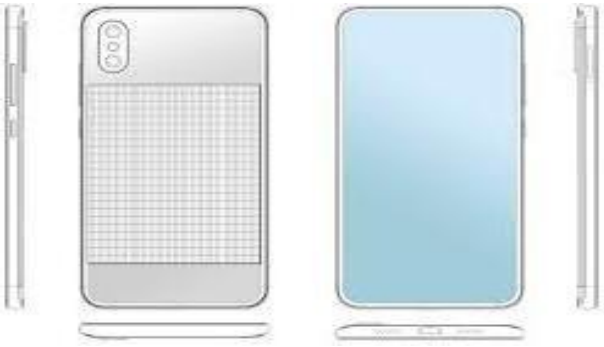

Fig.9. Solar pannel mobile case

If We want to display the transferred data we need power, For this reason, we are using solar panels. By using this solar panel we can store the power and we canvisualize transferred data in a TPU polycarbonate mobile case without any mistakes and make the mobile case effective and different. In market we have solar power wireless battery charger[4] like that we are using technology here.

Fig.10. Solar based mobile case

There are some companies like Samsung and HTC they already introduced solar-based mobile cases and chargers[7] which are helpful to charge mobile phones (for both IOS and android phones) you can see how the companies are developed solar based mobile case in Figure9&10. It is a great way to increase the life of your mobile battery, so you will be able to use it for more days when we replace it with a new one. Same technology (solar panel) we are using in smart home automation instead of using generators we are using solar panel which also stores the power and distribute that power When power is off.

By using solar panels we can reduce the cost of external wiring and get natural power from the sun also called a renewable energy source. The main advantage is reducing the maintenance cost and technology also developed.

Mobile app

Fig.11. Android applications

Android Application is Software that is designed torun on Android devices[6]. The term android applicationrefers to an APK file that stands for Android package. This file is a Zip archive containing app code, resources, and Meta information (Meta information is nothing but all details about stored data). Android apps can be written in Kotlin, Java, C++, dart, corona, HTML (hypertext markup language), CSS (cascading styles), and java script and are run inside virtual machine Figure11 shows different types of android applications programming languages[11]. Also we need to protect our mobile phones from cyber security issues[14].

If we want to transfer wallpaper (Image) from mobile to TPU solar panel mobile case we want one android app to transfer data. That's why we are mentioning theAndroid application here.

5.Manufacturing of Digital Mobile Case

Fig.5. Manufacturing

When coming to manufacturing here we are using hardware components, with that hardware components we are designing the digital mobile case.

Firstly we take TPU transparent mobile case, with that transparent mobile case we are attaching the flexible display to view the transferred wallpaper content, for transferring data we are using Bluetooth, because we aretransferring data from mobile to mobile case which is short distance that's why we are connecting Bluetooth with hardware chips to the flexible display. For display the content of wallpaper we need some electric power for that purpose we are using solar panels to the edges ofthe tpu transparent mobile case for using solar panels weneed not to any charger because solar panels gain power from sun which is free of cost and also some mobile companies are already using solar based mobile charges.Now the digital mobile case ready but we need oneandroid application for transferring the wallpaper data from mobile to the mobile case display that's why we are developing the android application.

6. Cost of Digital Mobile Case

Fig.6. Cost of Digital Mobile Case

When compared to the normal mobile case in this digitalmobile case we are using hardware components likebluetooth, flexible displays and solar pannel and all for that reason the cost of the digital mobile case is expensive when compared to the normal mobile cases.The approximately manufacturing cost is 500 INR. When it comes to the market the cost of the digitalmobile case increased because of transport and allother government taxes, it approximately 1000 INR.But the life span of the digital mobile case is morealso we need not to change the mobile case based onthe trend.

7. Digital Mobile Cases For Feature Generation

Make sure that these digital mobile cases are necessary for upcoming generation because everyone carrying mobile phones also they are using mobile cases.
People sometimes go to shop and choosing attractive mobile case sometimes time is not sufficient and sometimes we don't have suitable design etc.., But these digital mobile cases have more than 4 Years of life span and also we can change the background wallpaper of mobile case every time and many times within one minute. Make sure these digital mobilecases are very important for this century and upcoming centuries.

8. Conclusion

This research paper will give you a clear-cut picture, to make a digital mobile case by using hardware components and APK and advantages of the digital mobile case, and the disadvantages of normal mobile cases. With this digital mobile case, we can save the environment, money, time, and our health. These digital mobile cases are very important to today's world because every teenager and young people attracted to designs and new models. By using this digital mobile case we can make our mobile case moreattractive and effectively.

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