Research Article

Development of Motorcycle Side Stand Retractor

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Abstract: As we all know that today’s life is very fast and the rider kick the motorcycle and move forward without removing the side stand because of hurry and this may cause accidents. To avoid such accidents, cause due to uplift the side stand, we may produce the new advancement in motorcycle that as we press the gear lever, the cable wire gets stretched due to the hook catch lock get de-locked to lift the side stand automatically. The need of prevention of the rider on this type of condition, which is happened many times, hence, it is important to create something or one mechanism, which prevents the rider from the accidents cause due to unfolded side stand. The mechanism should be such that it should neither affect the original mechanism nor create problems. In additional it should not increase the price of the bike. It is just a small mechanism, which operate the stand and operation should so easy. Therefore, it is necessary to have a separate attachment in a bike to lift up the side stand automatically.

An experimental method was used in this study through the different test conducted.

Keywords: Alamata district; Erythrocyte; Evaluation; Local; chicken; Mean.

Chapter 1

Introduction

The side stand plays major role while the vehicle is in rest position. The side stand is used for supporting a parked motorcycle, some disadvantages takes place as while the driver is starting the motorcycle, there may be a possibility they forget to release the side stand that will caused to unwanted troubles. Then the undistracted stand hitting the ground, affected the riders control during the turn.

While the two-wheelers is concerned accidents occurs due to riding the vehicle in high speed, ignores to use helmets, does not maintains the speed limit and forgets to lift the side stand while riding the vehicles. These are the major source for accidents. Forgetting to lift the side stand causes huge accidents in rural areas partly in urban areas too, because all the other source of accident has preventive measure, but accident due to side stand do not have proper preventive measure. Most of our daily activities take place outside our home. Because of this, transportation affects every aspect of our lives specially in doing our daily routines such as going to work, school, market, mall, bank, gym, etc., and even back to our home. Without transportation, there are many activities we could not take part in.

Transportation has contributed much to the development of economic, social, political and cultural fields by uplifting their condition. In the Philippines, one of the easy transportation today is the motorcycle and it has increasingly becoming the most common means of transportation. Motorcycle is one of the least expensive and a convenient mode of transportation but unfortunately, as motorcycle industry went boom, motorcycle accidents happened. According to the figures released by the PNP-HPG, it showed that from January to end of June this year there was a total record of 11,285 accidents all over the country. (11,000 accidents kill 567 people during the first semester of 2015-PNP-HPG, the Manila Times 2015)

Motorcycle death and accident statistics doesn’t show inexperience or careless action. According to 2008 CDC statistics, almost third of rider death is involved drinking and unfortunately forgetting to pull over the side stand.

If a motorcycle runs with its kickstand down, it can cause accidents. Accidents caused by such
carelessness can prove dangerous (thehindu.com).

As a motorcycle user we cannot predict the incident and accidents that we will encounter on the road. Frequently, most accident happens while driving is of being unaware of taking off motorcycle side stand. In order to help those motorcycle user in engaging in this type of accident we develop automatic side stand retractor.

Motorcycle is generally provided with a side stand to support when they are not in used. The side stand usually comprises of a bar or rod which is attached to the lower portion of a motorcycle frame and movable to a laterally down widely extending portion so that the motorcycle can be tilted against and rest upon the bar. When the motorcycle is in use the bar is swing upwardly and along the frame so that it will not interfere with the running of the motorcycle.

A lot of people are confused by motorcycle “stands”, what are they designed for and how they are intended to be used. What follows are my unsolicited thoughts on “stand use”. A center stand is intended primarily for maintenance work, not for routine parking of a motorcycle. It allows you to get one (or both) of the wheels off the ground to enable chain maintenance or removing one or both of the wheels.

The side stand is the one intended to be used for parking. It is considerably more stable laterally than a center stand. It takes much more effect to high side a bike (push over to the right)from the left side stand than it is to tip it sideways off of the relatively narrow footing od a center-stand and it is completely stable to the left against the stands wide leg, so as long as the bike doesn’t roll forward.

Both stands are devices that only lock into place by the gravity of the bike being “over centered”, i.e. past the highest point of the stands deployment are; In both cases the stand fold to the rear so that if the bike is pointing downhill (even a small amount) it is more likely that it will want to come off the stand. If the bike is pointing uphill it is actually less likely that it will want to come off the stand than it is on the level ground and in fact it can be difficult to get a bigger bike off the center stand if the hill is to steep (Dean, Jeff BMW MOA and Rider Training” Proceedings: Great Educator and Administrator Roundllp (1993) : Motorcycle Safety Foundation).

You can’t put it in on cruise and lean the seat back riding takes all of your attention (Engstrom; Alex Causes and Consequences of Maped and motorcycle Accidents” Scandinavian Journal of Social Medicine 15 (1980): 1-88” Moped and Motorcycle Accidents; A Follow up ;” Leerkartidningen, 7.9 (1982); 2109-2110).

A motorcycle user can’t predict that accident will happen while on the road. Frequently, most accident happens while driving is of being unaware of taking off motorcycle side stand. It is on this premise that the researchers were urge to design and develop a motorcycle side stand retractor in order to spare motorcycle users from meeting accidents.

**Objectives of the Study**

This study was an attempt to design, develop, and test a side stand retractor. Specifically, the study intends to:

1. Design a motorcycle side stand retractor;
2. Develop a motorcycle side stand retractor;
3. Conduct testing of the motorcycle side stand retractor; and
4. Determine the significant differences of the three test conducted.

**Significance of the Study**

This study proved very important to the Eastern Samar State University as an institution as well as the College of Engineering and Technology in particular.

Generally, the results of this study will provide information on how side stand was developed. This will also provide information on the general acceptability of the side stand retractor as a product. In particular, this study will be of importance to the following:

To The Institution: This study benefits the institution by developing an automatic side stand of a motorcycle which can help reduce accident of the vehicle and riders.

To The Automotive Industry. This study will encourage the automotive side stand motorcycle for the safety of the vehicles of clients.

To The Automotive Professors/Instructor. This study will give automotive professors and instructor an additional technological information that would be useful for the transfer of knowledge to the student taking the same specialization.

To The Automotive Students. This research would help students to make ideas in venturing into process that would allow to practice basic knowledge in automotive technology at the same time develop or modify parts of vehicle in order to be more productive and be more user friendly.

To The Future Researchers. This study will serve as reference material for research enthusiasts and for further studies.

**Scope and Limitation of the Study**

The study seeks to develop a motorcycle side stand retractor. The study was conducted by the students of the Industrial Technology of ESSU- Guiuan.
Campus. The respondents of the benchmark test are the 7 researchers themselves and 1 automotive instructor. This will be followed by pilot testing of 30 respondents from Bachelor of Science in Industrial Technology Major in Automotive.

Definition of Terms

The following words and phrases were conceptually and operationally used in this study for clearer understanding of the readers.

Side Stand. A device on a bicycle or motorcycle that allows the bike to be kept upright without leaning against another object or the aid of a person. In this study, it refers to the piece of metal that flips down from the frame and makes contact with the ground. It is generally located in the middle of the bike or towards the rear.

Cable Wire. The main use of this wire is to attach gear lever and hook catch lock with its both ends. Also de-lock the lock is main purpose of this wire.

Spring. Spring is usually made out of hardened steel. Small spring can be wound from pre-hardened stock, while larger one are made from annealed steel and hardened after fabrication.

Chapter II

Review Of Related Literature

This Chapter presents various literature and studies which are relevant to the present study. The following related literature and studies written by local and foreign authors gave the information needed by the researchers of this study.

Related Literature

Side stands on motorcycles fell out of fashion in the 1970s, as the motorcycles became lighter, and many riders were concerned about extra weight. We may have witnessed motorcycle accidents because of the surface hindrance of retracted positioned side stand. One of the most common problems that are encountered in using the side stand is negligence or carelessness to kick back the side stand. The negligence maybe due to absence of mind, urgency, divergence in concentration, and few other released position failure to kick back the side stand for any of the reasons stated above may hit the accident of the vehicle and riders involve in the accident, sometimes fatal. To ensure safety of the rider, during absence of mind, negligence, carelessness the side stand lock link helps in knowing the state of side stand prior to movement of vehicle. A side stand is a device on a motorcycle that allows it to be kept upright without learning against another object or the aid of a person. A side stand is usually a piece of metal that clips down from the frame and makes contact with the ground. It is generally located at the middle of the motorcycle or towards the rear. The earliest known kickstand was designed by Alberto Berruyer in (1869) and since then kickstand have been independently reinvented many times it was mounted below the handlebars so was mush a kickstand is a device on a bicycle or motorcycle that allows the bike to be kept upright without learning against another object, or the aid of a person. A shorter model was patented by Eldon Henderson in the (1930), a smaller more convent, Kickstand was developed by Joseph Paul Treen in (1891), Pardon W.Tillinghast patented designed for a stand which was mounted on the pedal, but folded up flat under the pedal when not in use.

A side stand style kickstand is a single leg that simply flips out of one side, usually the left side, and the bike then leans against its side stands can be mounted to the chain stays right behind to bottom bracket or to a chain and seat stay near the rear hub side.

Related Studies

Vishal Srivastava et.al (2014), studied about Automatic Side Stand. In their study, they presented mechanism consist of D.C. motor powered by motorcycle battery which is connected to the worm and worm gear mechanism for reduction of speed of motor and multiply the torque. Then the motor is actuated by rotation sensor which is mounted on the front of the wheel. We observe that from the design and analysis D.C. motor and other components like as Micro-controller and speed sensor, switch are occupies less space and this space is easily available into the mechanical frame of the motorcycle. After analysis of torque the required torque to raise the side stand is 6076 Nm and the power required to raise the side stand which is 19.078 Watt.

Pintoo Prjapati, Vipul kr. Srivastav, Rahul kr. Yadav, Ramapukar Gon, Pintu Singh, Mr. Sandeep (2016) has worked on Sprocket Side stand Retrieve System. It is based on the Working Principle of Two Wheelers. In Motor Bike power is transmitted from engine's pinion to rear wheel (i.e Rotary motion of the pinion makes the linear motion of the chain). That linear motion of the chain is absorbed by rear wheel's sprocket and converted into rotary motion. That rotary motion of the rear wheel makes the bike to move. This system could be used in all type of two Wheeler (TvS-XL, all front, back and geared) for retrieving side stand and to control accident due to side stand problem and protect the
careless rider.

Bharaneedharan Muralidharan, Ranjeet Pokharel (2016) has worked on automatic side stand retrieve system. This system is based on working principle of two wheeler (i.e the power is generated in the engine's and it transmit power to the pinion and make it to rotate the pinion transmits power to the rear wheel pinion and makes the vehicle to move. The objective of this system is to provide a device responsive to an operating condition of the engines of the motorcycle for moving the stand to its raised position when motorcycle is in its running position. Mr. V.V.R. Murthy, Mr. T. Seetharam, Mr. V. Prudhvi Raj (2016) has worked on Fabrication and Analysis of Sprocket Side Stand Retrieve System. It is based on working principle of two wheelers (i.e the power is generated in the engine's and it transmit power to the pinion and make it to rotate the pinion transmits power to the rear wheel pinion and makes the vehicle to move. This system could be used in all type of two wheelers (Tvs-XL, all front, back and geared) for retrieving side stand and to control accident due to side stand problem and protect the careless rider.

K. Sudershn Kumar, Dr. Tirupathi Reddy, Syed Altaf Hussain (2016) Reported on Modeling and analysis of two wheeler connecting rod. In this the connecting rod is replaced by aluminium reinforced with boron carbide for Suzuki GS150R motor bike. A parametric model of connecting rod is modeled using PRO/E Wildfire 4.0. Analysis is carried out by using ANSYS Software. They presented the result of material and reported that the working factor of safety is nearer to theoretical factor of safety in aluminium boron carbide.

Sanjeev N. K. (2014) studied on Bike Side Stand Unfolded Side Lock Link. In this system the side stand lock link makes the contact with the gear lever thereby indicating the person handling the vehicle about the unreleased side stand when the rider tries to apply the gear in unreleased state of stand and prevent him from being endangered or to have unsafe ride of motorcycle. The side stand unfolded side lock link for two wheeler is one of the lifesaving mechanism which prevents the ride from riding the bike in unreleased position of the ride stand. This prevent rider as well the vehicle to lose the centre of gravity by imbalance or surface hindrance due to retracted position of side stand and thereby saves life of the rider. The developed side stand lock link can be fitted to any motorcycle with slight dimensional changes in the link.

Sudaer, (2004) witnessed a harrowing motorcycle accident involving and entire family. The accident happened because the motorcycle side-stand have not been pushed back after riding on the vehicle. It stuck again an obstruction on the ground while the vehicle was moving. This small family was on the motorcycle and all of them got badly injured. This forced him to think immediately about making an effective device which could prevent such accident in future. He decided to develop a sample low cost book, which can be retrofitted to a two-wheeler so that the user is unable to move his vehicle unless the side stand is pushed upward and is made free from the ground that day, he came back purposefully and as his family was away, he had all the time for himself. It took him just one night thinking about solutions and by next afternoon he is ready with the side-stand gear locking system made from available material, which he refined later into a functional model and tested successfully the retrofit table kit consists of a clam which restricts engagement of gears when the side-stand is not pushed back.

The gear lock clamp consist of an angular rod welded to the base washer, which achieves locking of the gear. The interlocking mechanism is simple with minimum complexity and is easy to assemble and disassemble currently this kit has been configured for some model of bajaj and bero-honda bikes, it is being developed for other model of bikes and being made durable.

Many two wheelers come with built in side stand locking system with indicator ad alarm system. Sudheers (2004) system is a simple low coast gear lock clamp just R’s 20 %. The innovator has successfully tested this product. Patent has been filed and commercial possibilities of the product. They are being explored 1 side stand cut of systems indicators have available with few bike vis. The LML freedom was provided with specially designed side stand that did not allow the rider to put the motorcycle into gear unless the side stand is lifted. Neeraj R and Sangeeth P. S(2014) developed a mechanical device that avert accidents caused by careless motorcycle riders who forget to disengage the side kickstand before riding the vehicle.

Chapter III

Methodology

This chapter contains the investigative process of the research. It includes the materials, development cost and description of the design, developmental process and developmental procedure of the product.

Research Design

The study used the experimental method to develop the product. This method involves manipulating one
variable to determine change in one variable that cause change in other variable.

Research Locale
This study was conducted in two places in Eastern Samar. The 1st one is in ESSU Guiuan Campus especially in the Technology Department. The researchers also choose Integrated Guiuan Terminal, Guiuan Eastern samar to conduct the final test in the said municipality.

Respondents of the Study
The respondents of the study were the researchers themselves composed of seven (7), twenty (30) 2nd year and 3rd year of BIT Students Major in Automotive Technology, and 30 motorcycle users from Guiuan Eastern Samar.

Research Instrument
In this study, a modified score card was used as an instrument. The score card has 4 major part introduction instruction rating and criteria. The criteria have the following items functionally, user friendly, durability, construction, general acceptability, the rating have been following descriptions with a corresponding scale, excellent 5, very god 4, good 3, fair 2, and poor 1.

Data Gathering Procedure
Data were collected through the score card and was treated using the weighted arithmetic mean. Every test was conducted the researchers has demonstrated switchable side-stand procedure. Then the subject tried to operate the product themselves and then after the testing of the product a score card was filled up by the subject to rate the product whether it is excellent, very good, good, fair and poor.

Statistical Treatment of Data
In analysing the result of the study, the researchers used the weighted result mean to determine the acceptability of the motorcycle automatic side stand.

<table>
<thead>
<tr>
<th>MEAN</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.50-5.00</td>
<td>Excellent</td>
</tr>
<tr>
<td>3.50-4.49</td>
<td>Very Good</td>
</tr>
<tr>
<td>2.50-3.49</td>
<td>Good</td>
</tr>
<tr>
<td>1.50-2.49</td>
<td>Fair</td>
</tr>
<tr>
<td>1.00-1.49</td>
<td>Poor</td>
</tr>
</tbody>
</table>

Chapter IV
Results and Discussion
This chapter presents, analyses and interprets the data gathered through the use of the score card. Thus the tabular presentations and discussions were organized based on the objectives of the study.

Developmental Process
In the development of the motorcycle a side stand, the researchers produced the materials needed in assembling the side stand. In the conduct of the pilot test, it garnered a very satisfactory rating which prompted the researchers to modify the product more to meet all the criteria.
In developing of the product the researcher’s gathered all the materials assembled and subject the final output to different test. The following were the procedures that were being followed by the researchers in the product.

1. Attach the flat bar to the side stand with the used of bolts and nuts.
2. Attach the flat bar to the shifting gear with the used of bolts and nuts.
3. Connect the cable wire to the flat bar that attached in the shifting gear and in the side stand.
4. The actual product testing.
5. Final product.

Developmental Cost

The following materials were used in developing the motorcycle automatic side stand retractor.

**Table 1.** shows the quantity, description and price of the materials used.

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>side stand</td>
<td>230</td>
</tr>
<tr>
<td>1</td>
<td>cable wire</td>
<td>50</td>
</tr>
<tr>
<td>4”</td>
<td>flat bar</td>
<td>45</td>
</tr>
<tr>
<td>1 set</td>
<td>bolts and nuts</td>
<td>15</td>
</tr>
</tbody>
</table>

Pilot Test

There were thirty (30) students from the Automotive Technology of ESSU-Guiuan Campus identified as respondents who evaluated the output of the study.

**Table 4** showed the subject mean of pilot test where all criteria earned a weighted mean of 5 which is interpreted as very satisfactory.

**Testing the motorcycle side stand retraction**

<table>
<thead>
<tr>
<th>CRITERIA</th>
<th>MEAN RATING</th>
<th>INTERPRETATION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FUNCTIONALITY</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Retract the side stand immediately once the motorcycle is in the first gear.</td>
<td>4.7</td>
<td>Excellent</td>
</tr>
<tr>
<td>The product manifest avoidance of accident.</td>
<td>4.63</td>
<td>Excellent</td>
</tr>
<tr>
<td>SUB-TOTAL</td>
<td>4.66</td>
<td>Excellent</td>
</tr>
<tr>
<td><strong>USER FRIENDLY</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It works right away once the motorcycle is in the right gear.</td>
<td>4.66</td>
<td>Excellent</td>
</tr>
<tr>
<td>Does not pose harm/danger to use.</td>
<td>3.4</td>
<td>Good</td>
</tr>
<tr>
<td>SUB-TOTAL</td>
<td>4.03</td>
<td>Very Good</td>
</tr>
<tr>
<td><strong>DURABILITY</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quality and strength of materials used are available.</td>
<td>4.23</td>
<td>Very Good</td>
</tr>
<tr>
<td>Can’t easily be tear down.</td>
<td>4.53</td>
<td>Excellent</td>
</tr>
<tr>
<td>SUB-TOTAL</td>
<td>4.38</td>
<td>Very Good</td>
</tr>
<tr>
<td><strong>CONSTRUCTION</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Easy to assemble.</td>
<td>4.2</td>
<td>Very Good</td>
</tr>
<tr>
<td>There is originality of the product.</td>
<td>4.23</td>
<td>Very Good</td>
</tr>
<tr>
<td>Materials for the product are available in locality.</td>
<td>4.4</td>
<td>Very Good</td>
</tr>
<tr>
<td>SUB-TOTAL</td>
<td>4.27</td>
<td>Very Good</td>
</tr>
<tr>
<td><strong>GENERAL ACCEPTABILITY</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accepted by the public due to the reasonable manufacturing cost.</td>
<td>2.96</td>
<td>Good</td>
</tr>
<tr>
<td>Accepted by the public because it can be operated at any time and any place.</td>
<td>4.4</td>
<td>Very Good</td>
</tr>
<tr>
<td>SUB-TOTAL</td>
<td>3.68</td>
<td>Very Good</td>
</tr>
</tbody>
</table>

**Benchmark Test**

There were seven (7) respondents in the benchmark test who were the researchers themselves. As shown in table 3, all the criteria under effectiveness, user friendliness were rated with 4 which was interpreted as very satisfactory. This means that the motorcycle automatic side stand retractor under criteria of effectiveness can retract the side stand. The user friendliness criteria earned a rating of 4 was which was interpreted very satisfactory meaning it takes one (1) step to operate the motorcycle automatic side stand retractor, it does not pose danger to the user.
### CRITERIA

<table>
<thead>
<tr>
<th>CRITERIA</th>
<th>MAEN RATING</th>
<th>INTERPRETATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revert the side stand immediately once the motorcycle is in the first gear.</td>
<td>4.85</td>
<td>Excellent</td>
</tr>
<tr>
<td>The product manifest avoidance of accident.</td>
<td>5.0</td>
<td>Excellent</td>
</tr>
<tr>
<td><strong>SUB-TOTAL</strong></td>
<td><strong>4.92</strong></td>
<td><strong>Excellent</strong></td>
</tr>
<tr>
<td>It works right away once the motorcycle is in the right gear.</td>
<td>5.0</td>
<td>Excellent</td>
</tr>
<tr>
<td>Does not pose harm/danger to use.</td>
<td>5.0</td>
<td>Excellent</td>
</tr>
<tr>
<td><strong>SUB-TOTAL</strong></td>
<td><strong>5.0</strong></td>
<td><strong>Excellent</strong></td>
</tr>
<tr>
<td>Quality and strength of materials used are available.</td>
<td>5.0</td>
<td>Excellent</td>
</tr>
<tr>
<td>Can’t easily be tear down.</td>
<td>5.0</td>
<td>Excellent</td>
</tr>
<tr>
<td><strong>SUB-TOTAL</strong></td>
<td><strong>5.0</strong></td>
<td><strong>Excellent</strong></td>
</tr>
<tr>
<td>Easy to assemble.</td>
<td>5.0</td>
<td>Excellent</td>
</tr>
<tr>
<td>There is originality of the product.</td>
<td>5.0</td>
<td>Excellent</td>
</tr>
<tr>
<td>Materials for the product are available in locality.</td>
<td>5.0</td>
<td>Excellent</td>
</tr>
<tr>
<td><strong>SUB-TOTAL</strong></td>
<td><strong>5.0</strong></td>
<td><strong>Excellent</strong></td>
</tr>
<tr>
<td>Accepted by the public due to the reasonable manufacturing cost.</td>
<td>5.0</td>
<td>Excellent</td>
</tr>
<tr>
<td>Accepted by the public because it can be operated at any time and any place.</td>
<td>5.0</td>
<td>Excellent</td>
</tr>
<tr>
<td><strong>SUB-TOTAL</strong></td>
<td><strong>5.0</strong></td>
<td><strong>Excellent</strong></td>
</tr>
</tbody>
</table>

### Final Test

There were thirty (30) persons who participated in the final test, all were people of Guiuan integrated Terminal Poblacion, Guiuan, Eastern Samar were expected to the end user of the motorcycle side stand retractor as the output of the study.

Table 5 showed the summary of the weighted mean for the final test result where two criteria were constantly rated with the highest rating of five (5) which is excellent which means that the people rates strongly agree that the output can satisfy the said requirement.
Chapter 5

Summary, Conclusions, Recommendations

This chapter presents the summary of the findings, conclusions, and recommendations of the study.

Summary of Findings

The objectives of the study served as a frame of reference in presenting the salient findings of this project study. The study aimed to develop a motorcycle side stand retractor. Specifically, this study focused on the following objectives:

1. Designed and developed a motorcycle side stand retractor;
2. Test the motorcycle side stand retractor; and
3. Determine the acceptability of motorcycle side stand retractor using the following:
   - Functionality
   - User friendly
   - Durability
   - Construction
   - General Acceptability

The major thrusts of the study were to design, develop, test, and determine the significant differences of responses between the three (3) tests conducted. The motorcycle side stand retractor as the output had been modified in order to access side stand from the motorcycle.

Conclusions

In the light of essential findings of this study the following conclusions were drawn it is evident that through the gathered analysed and interpreted data of this study was responded by 67 respondents. The first evaluator of the benchmark testing are 7 individuals whom, the researcher’s themselves followed by pilot testing which had been evaluated by (30) individuals from Barangay Matarinao, Salcedo Eastern Samar each respondents are requested to share their views regarding to the motorcycle automatic side stand using the corresponding type of test for the respondents.

In correlation of variables there is clean evidence to prove that the motorcycle automatic side stand has a unique purpose for the users demands especially nowadays that the use of motorcycle in the country is very in demand due to its flexibility and cheap expense compare to a four wheel drive. The overall result of this study can inferred that using motorcycle automatic side stand has an advantage in every motorcycle rider in averting unattended accidents caused by mischief of the side stand due to some circumstances.

Recommendations

In the light of the significant findings of the study, the following recommendations are offered:

1. Motorcycle company should add safety features of every motorcycle that is manufactured for the benefit of the rider.
2. Future researchers should conduct further research on innovating the motorcycle side stand retractor in terms of easy retraction and advancement of the product.

References


