

# Measuring User Satisfaction through Website Evaluation Framework



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**ABSTRACT:** *Designing usable websites has become more important for usability experts due to the immense growth of an online community. Particularly, reaching potential customers and retaining them for a longer period of time is one of the major challenges for website owners and designers. Likewise, when a customer is adequately satisfied with his website interaction, the likelihood his retention becomes higher too. Customer satisfaction is therefore one of the criteria for measuring performance of a website. Researchers have given models to evaluate the overall performance of websites and one such evaluation framework is by Shanshan Qi. The said model has three aspects to evaluate performance of a website, (1) Service Performance, (2) Technique Performance, and (3) Special Service to Disabled People. The Service Performance aspect of model emphasizes on the parameters of customization, responsiveness, customer satisfaction, trust and security. However, customer satisfaction can be measured with the help of certain metrics. And we have seen that these metrics are useful as an improvement factor for the website to make the design process iterative. In this paper, we highlighted those metrics of customer satisfaction and we are presenting them as a model extension.*

**Keywords:** Website Usability, Website Evaluation Framework, Measuring Customer Satisfaction

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## 1. Introduction

The popularity of Internet and efficient use of Information Communication Technologies (ICTs) has motivated millions of businessmen to sell their products and services through websites [1]. People are obsessed to spend much of time over the Internet due to the invention of social networking websites, such as, Facebook and micro blogging twitter. This addiction has forced the internet users to use internet from their mobile devices. This is why; internet access through mobile devices has been increased over the years [2].

In 2009<sup>1</sup>, “the global time spend by the users over the internet has increased by 82% than the year before” [3]. This captures the interest of businessmen to grasp the user attention over the internet to market their products or services. In order to provide online services or to sell products online, one need to have a good website [4]. Furthermore, to remain competitive in the internet

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<sup>1</sup><http://goo.gl/RoCZ7>

world, it is necessary to adopt latest web trends and web technologies while designing a website [4], [5]. It is also noticed that rapid change in the web trends and technologies has made usability difficult to achieve. The functionality and user interaction offered by web 1.0 (static document pages) is entirely different from web 2.0 (dynamic application oriented pages) [6]. Moreover Researchers [7] argued that “*rapid diffusion of the Internet and open standard technologies is producing a significant growth of the demand of web sites and web applications with more and more strict requirements of usability*”. Therefore making usable websites using latest web trends and technologies is an important concern at present [1], [8].

This gives an impression that upgrading websites using latest web trends and technologies is a need of today’s competitive business. However, this change should also contribute positively in terms of usability since the usability of a website helps in retaining the customers. Despite technology enhancement factor, reaching a potential customer over the internet is also a major challenge [9]. Here potential customer means that a customer who participates on a website; whereas “*customer participation is the degree to which a customer is involved in producing and delivering the service*” [9]. On the other side if a customer is not participating on a website it means that a customer does not feel satisfied with the website [10]. It affects company’s effort in terms of time and money [11], [12].

In addition, once a potential customer is reached, how to retain him/her for a longer period of time is another difficult job [13] [14]. However, researchers [13] argued that customer retention involves fulfilling different aspects of satisfaction through a website. Furthermore, researchers [5], [15], [16] define satisfaction as “*a website’s communication ability in understanding consumers needs*”. Hence, the loyalty of an online customer cannot be extended without considering the satisfaction. It has been proven by the researchers [17] that customers satisfaction can be achieved by maintaining continuous interaction with the customers. Customer’s feedback can be used to define their needs and hence websites designed based on the needs defined by the customers themselves will help to maintain their satisfaction [17].

In this paper, we have proposed certain metric parameters, which can be used to evaluate websites and to measure customers satisfaction of website [5].

## 2. Literature Review

Million of websites are coming into service, as with the increase of user involvement over the web. This motivated many business men to get an online presence and become equally competitive [1]. Despite this motivation, it creates strict requirements of usability to follow for the website owners. However, the literature suggests that designing usable website has a close relation to the user satisfaction. This satisfaction can be achieved through website’s communication ability in understanding the user’s needs [5]. It means that if a website is designed according to the user’s needs, it can for sure appeal and retain the customer in visiting the website again. Customer retention makes website in profit but it requires measuring website overall performance with time to time.

The researchers argued that there is no such common standard to evaluate the overall performance of the website. To perform a real website evaluation, Shanshan Qi presented a framework for evaluating the overall performance of the website as shown in figure-1 [5]. The said framework is based on evaluating two types of performance. One is the technical performance, which is useful to evaluate the technical aspects (that is structure, usability, layout & design and effective navigation) of the website whereas service performance is used to evaluate the effectiveness of the service (that is customer satisfaction, trust, response to customers) provided by the organization to their customers. Moreover, the framework highlights the key factors necessary to keep in mind while designing/ developing a website.

The said framework is helpful in identifying the detail problems based on three major aspects i.e. Usefulness, Service Quality, Website physical accessibility. Usefulness symbolizes functionality and usability, which both are technical aspects of a website. Functionality refers to the contents of a website whereas usability refers to the ease-of use [18], [5]. The second aspect of the website performance is based upon service quality of the website termed as Electronic-Service Quality. E-Service Quality is the “*extent to which a website facilitates effective shopping, purchasing and delivery*” [20]. Effective shopping, purchasing and delivery come in the online service. Particularly when consumers feel satisfied with the online service of a website, they will be happy to stay and use the website again [21]. According to Shanshan good E-Service quality is dependent upon how successful e-marketing strategies are.

E-marketing strategies cover website effectiveness in winning customers. E marketing can be measured with the help of

customization, responsiveness and customer satisfaction. Customization is defined as how a website attracts a customer by addressing their preferences. Responsiveness is how easily a customer can contact website's management and how efficiently the website responds to customer [22], [5]. Last parameter of e-marketing strategies is the customer satisfaction which is defined as website's communication ability in understanding consumer's needs [16], [15]. Website reliability is the second classification of e-service quality which can be measured with two sub-factors: trust and security. Trust signifies how fair the website is in terms of providing services and is loyal to customers. Whereas, security is how a customer is protected while performing any task online, such as sharing personal information and making online payments [5], [22]. Last but not least is the aspect of physical accessibility which is based on W3C/WAI web content guidelines. Very few studies have been found in the literature on physical accessibility.

However, the website evaluation framework has, its foundation based on the theoretical concepts and unable to measure the user satisfaction based on some key metrics. As there is no data available so that facts can be derived and applied to improvements in website technical and service performance. Finally yet importantly, if some extensions will be added to the framework of Shanshan Qi, it will be able to measure the website performance and makes a website successful. It is important to notice why the new extensions are proposed? In designing a usable website, the following attributes are important to be considered in order to maintain good website performance [23]:

- **Structure:** This defines the information organization handled by the application and its relationships.
- **Navigation:** Represents how information can be accessed
- **Presentation:** Describes how information is presented to the user (layout and design)

However, the website structure if not managed effectively can affect the website's size, complexity and page loading speed. In short, website's structure affects both technical and service performance in a long run [19]. For this reason, it is important to measure how a website is performing. Therefore the new extensions will able to measure issues related to structure, navigation and presentation of the website. Furthermore, the new extensions will answer the following questions:

- How long user stays into your website home page?
- How many pages per visit, each time a single user is visiting?
- How many pages per visit are required to perform a certain task on a website? If the pages per visit are low then why users are unable to perform a certain task through a website?
- What pages of the website are exit points?
- How many new visitors are with respect to returning visitors?
- Are the returning visitors not low and high new visitors? If this is so then why returning, visitors are not retained into a website?

It is a well-known marketing prospect that recruits a new customer is far more expensive than retaining an existing one [24]. Thus measuring the customer satisfaction (with the help of new extensions/metrics) will able to retain customers on a website [19]. Therefore this paper emphasizes on proposing key metrics/framework extensions to help in building customer loyalty, encouraging repeated purchases and maintaining long term relationships with customers [4]. The level of satisfaction experienced by buyers can be quantified with the help of metric parameters with the help of proposed metrics.

Figure 2 shows the evaluation framework presented by the author Shanshan Qi. Along with authors work, we proposed certain metric parameters, which are useful in measuring customer satisfaction for a website. These metric parameters act as a model extension of the framework presented by Author Shanshan Qi.

Google has provided web analytics tool, which is used for a website evaluation by checking required metrics for a website. These metrics must be analyzed against certain goals of a website. Therefore, it is far more important to first determine the website conversion goals. An online conversion goal is an action that website owners want visitors to take on the website [25]. To determine the website conversion goals, website owners can ask themselves "*What they ultimately want visitors to do on their website?*". Here are a few examples of website goals when achieved called a conversion for a website:

1. Signup for a news letter of a fashion magazine website.

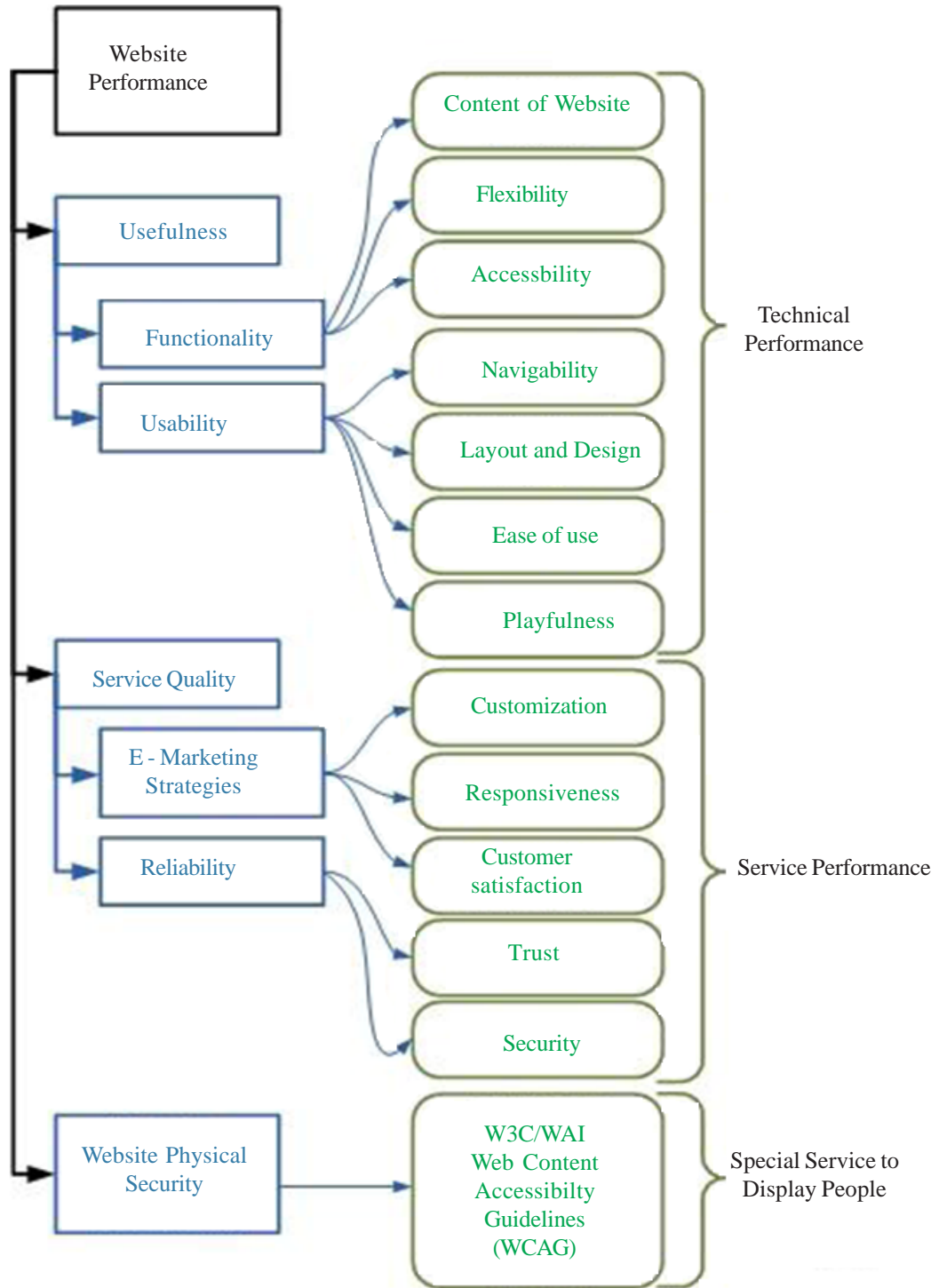


Figure 1. A New Framework on Website Evaluation by [5]

2. Filling out a contact us form of a website
3. Make a sale on an ecommerce website
4. Read 2/3 blog posts on a blog
5. Download an e-book on a website

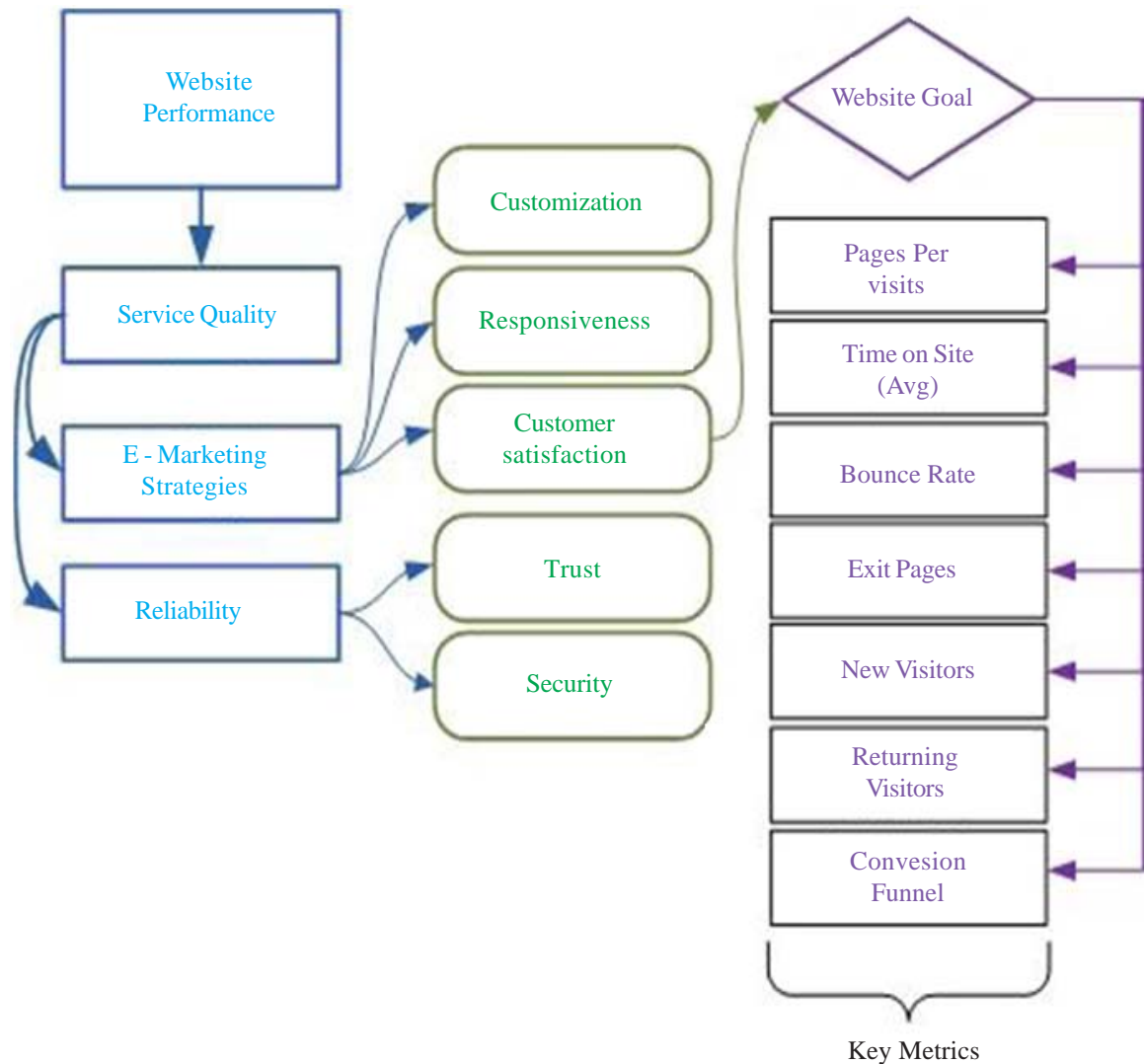


Figure 1. A New Framework on Website Evaluation by [5]

In this paper, certain metrics (of Google) are proposed to evaluate the website with some specific conversion goal. With these metrics up to some extent “*Customer Satisfaction*” can be measured which is an important aspect of usability.

**Pages Per visit:** Google defines pages per visit is “*the average number of pages viewed per visit to the website. Repeated views of a single page are counted in this calculation*” [26].

**Visit-Duration / Time-on-Site (Avg):** Google explains “*average visit duration*”. “*It can be calculated by dividing the total time on site by the number of sessions for the selected time frame*” [27]

**Bounce Rate:** “*Bounce Rate is the percentage of bounced visits to the website*”. How bounce visits happens? Basically a visitor lands on a home page, looks around for a min or two and immediately leaves [28] .

**Exit Pages:** This metric identifies the number of exits from website pages, as with entrances. Using this metric in combination with a particular content pages in order to determine the number of times that particular page was the last one viewed by visitors [29].

**New Visitors:** When someone visits a website for the first time, the visit is categorized as “*Visit from a new visitor*” [30].

**Returning Visitors:** If the visitor has browsed the website before, the visit is categorized as “*Visit from a returning visitor*” [30].  
**Conversion Funnel:** Most important is a funnel conversion analysis, which can give a detailed overview of all the problematic areas of a website. Conversion funnels can give a lot of valuable information that can help increase time spent on site, bounce rates, conversions and sales. Moreover examining the customer behavior like how they navigate through the website can determine what changes website owners need to make it easier for a customer to purchase. [31]

**Example Case: Goal-Purchasing Items from an Ecommerce Website**

In order to better understand the usage of these metrics for any website, assume the specific goal: purchasing items from an ecommerce website. There are the following defined steps, which are performed by the visitors:

1. A person visits an ecommerce website
2. That visitor start putting an item into their shopping basket
3. The visitor clicks “checkout”
4. The visitor enters shipping/ billing address and selects secure payment method
5. Enter all of his credit information and clicks “Buy”.

Steps 1-4 are all micro conversions and step 5 clicking “Buy” is a macro conversion.

**Conversion Funnel:** Consider the simplified tracking data (visitors details) for conversion funnel as shown in Figure 3.

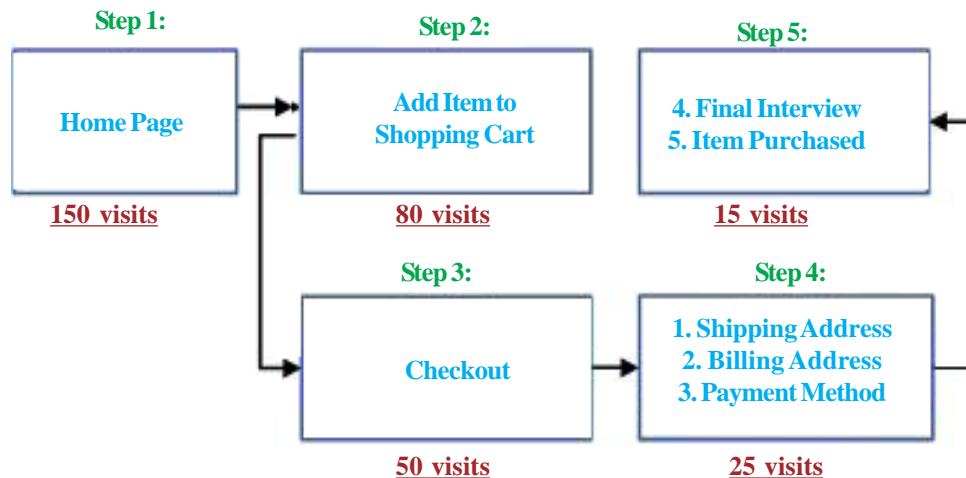


Figure 3. Standard Purchase Process Overview [32]

From the conversion funnel, website owners can determine why visitors drop out at micro-conversions. Therefore, website owners need to look at these sections and find out why visitors leave from these pages.

**1. 150 visits on home page**

- Where the traffic is coming from (PPC ads, email promotion, social media (facebook, twitter etc..))
- Is the page relevant to the visitors? On the ads if it’s written “*Men Suits*” and visitors are directed to a page containing blue jeans and T-shirts.
- See the metric “*Bounce Rate*” if the bounce rate is significantly high 70- 80 % then it means the page is not relevant to the visitor.

**2. 80 visits put an item on their online shopping basket**

- Find out why 70 visits are bounced back from the home page? Here one reason could be non relevant information displayed to the customer as mentioned in the first point.

Metrics		Evaluation
1	Pages Per visit	Usually product ordering pages of an ecommerce website is about 5 layers deep as shown in diagram A. Checking “ <i>Pages per visit</i> ” can inform website owners about the issues with the website pages if visitors leave website in between the process . For example average 2/3 Pages per visits is probably a bad sign for an ecommerce website.
2	Exit Pages	An exit page shows the unnatural exit points of a website. In order to check the “ <i>exit pages</i> ” of an ecommerce website, if for example a large number of users are dropping out at the second page of an ecommerce shopping cart then it may have a usability problem. However finding and fixing these problem points/ exit pages can have a major impact on the bottom line of a website.
3	New Visitors Vs. Returning visitors (%)	The difference of “ <i>New Visitors</i> ” Vs “ <i>Returning visitors</i> ” can be checked for the ecommerce website. For example if from about 3 months the new visitors are about 90 % but returning visitors are 10% it means the website is not capable to retain the old visitors (returning visitors). The reasons may the website is not appealing to the visitors or may have issues with usability of the website.
4	Bounce Rate	By checking the bounce rate of the website, the percentage can be know for total bounced visitors from the website. In addition, what steps you need to take in order to reduce the website bounce rate?
5	Average time on site	Evaluating the metric “ <i>Average time on site</i> ” for an ecommerce website does not have useful impact on measuring customer satisfaction. Because of the reason, lower time may indicate better customer experience and smoother checkout. Also if average time on an ecommerce website is greater it may be possible that a website is difficult to navigate and find product. But this metric can be effective parameter for a blog website where higher average time on site represents the good content on a site.

Table 1. Stats/metrics

- Why only 80 visits put an item to the shopping basket. Is there a clear call to action such as “*Buy now*” button for a visitor. Don’t system specific terms like “*Add to Cart*”.
- Is the location of this button “*Buy now*” is at visible to the user?

### 3. 50 visitors click checkout button

- Again Is your checkout button can easily be seen by the visitor?
- Can visitors easily access the shopping cart and checkout process from the product pages?

### 4. 25 Enters all the shipping/ billing information and clicks on secure payment page

- “*Less is more*”; Are there any unnecessary steps in the shopping cart process?
- Is the status of the whole shopping cart process is displayed to the visitor?
- Are the input fields, drop down are appropriate for the type of data required?
- Are expert users can use shortcuts while filling the information form?

### 5. 15 visitors enter all of their credit card information and click “Buy”

- Are shipping and taxes calculated? So visitors know exactly what they pay before they reach the final payment stage?
- Is there a preview available to the summary i-e products, taxes, shipping and billing address, total cost on the final step.
- Is the final step clear, such as “*Complete purchase*” button ?

Further stats/metrics can be checked for the shopping cart website are as mentioned in Table 1.

## 4. Discussion

The evaluation framework given by author [s], behaves as a conceptual structure for building a website [5]. Referring figure 3, at present the framework is providing a way to evaluate a website’s performance on the basis of three aspects, website usefulness, service quality and website physical accessibility. Website usefulness is based upon website’s functionality and usability of the website, which is categorized as technical performance of the website. And service quality is categorized as service performance of the website which is the extent to which a website facilities quality online service. An example of quality online service is website’s facilitation to effective shopping purchasing and delivery [5].

Conceptually service performance is based upon the technical performance. That is if there is something wrong with the technical aspect of the website for example navigation, design and layout or usability etc, then it may definitely affect the service performance of the website. This can be judged with the help of customer satisfaction attribute of the service performance. When consumers feel satisfied, they will be happy to stay and use the website again [21]. How to judge either customers are willing to come back to the website or not? It can be measured with the help of metric “*returning visitor*” vs “*new visitors*”. See the difference between the “*returning visitors*” and “*new visitors*”. If there is much percentage of returning, visitors (suppose 90%) as compare to the new visitor (10 %) then it seems pretty much fine with the wiliness to come back to your website. Indirectly the above-mentioned metrics “*returning visitors*” Vs “*new visitors*” are measuring the customer satisfaction attribute, which is the part of service performance.

Attaining customer’s attention is the first important criterion for an online channel [5], [33]. Specifically customer’s satisfaction behavior (based on his attention) can be judged with the help of “*bounce rate*”. And consumer’s attention can only be grasped, if the website is successful in catching consumer’s preferences (Customization concept of framework [5]). It is also obvious that service performance can only be measured when the website is fully operational. It is then helpful to get the feedback of the user. With the help of user feedback changes can be made to a website by making the design process iterative.

Take another metric “*Pages Per visit*”. In order to judge the customer satisfaction of the blog is different to an e-commerce website. Average 2/3 “*pages per visit*” is acceptable for a blog but not good indication for an e-commerce website, which is 5 pages deep process to purchase an item. In order to check what is wrong with your e-commerce process based on multiple pages, then “*exit pages*” is the best metric to check within your pages. In the following example with can easily get to know that there is problem while customer is browsing products and 50 % exits occur over here. Either you need to revise your product pricing or check issues with the effectiveness of the shopping process. Also an attribute “*Time on Site (avg)*” is good metric to judge the satisfaction of the customer while user is reading blog posts. However 3-4 min “*avg time on site*” on a blog is a good indication but not at all good for the following shopping cart process, because it might be the case that customer is stuck with the purchase process. After presenting the model extension, it have become possible now to measure the customer satisfaction aspect of the website performance to make the website design process iterative.

## 5. Conclusion

Measuring user satisfaction for a particular website is an important aspect of usability. If the data values about metrics such as pages per visit, average duration of a user on the website, bounce rate, new vs returning visitor are known then it can be easy to predict the user behavior of a website. Thus with these stats not only user behavior can be predicted but also website design can be modified in multiple iterations. These stats can be observed on a regular basis for any website, which is helpful to keep updated about the user behavior.



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