Apart from being able to draft adequate server security policies for the Isobar webserver, other important tasks need to be taking into consideration. This paper will focus on the pros and cons of using cookies for the Isobar website, using encryption to serve the web pages, and the use of dedicated apps to access the site rather than websites.

The Use of Cookies for the Isobar website

Cookies are small pieces of data that will be created by the Isobar website and stored on a user's computer by their browser when they visit the website.

Pros:

1. Personalization
   Cookies can assist Isobar to "personalize" or individualize a user's browsing experience when they visit our website. For example, it can be used to store the user's language preference or store data about the user's recent shopping pattern. If a member visits the website and attempts to book a table or space at Isobar but the member mistakenly closes the browsing page, cookies can be used to allow the member to return to where they stopped before the page closed.
2. Suggested Content
   Cookies can be used to store data regarding an Isobar user's browsing activities so that Isobar can display targeted advertisements to the user that are relevant to them. These ads will be displayed on the Isobar website under a section titled "Related Searches". The cookies will collect user data, cross-reference it with other users that have a similar profile, then make recommendations to the user (Kyrnin, 2019). This, in turn, could be used to generate ads revenue as an additional source of income for Isobar.
3. Security Authentication
   Security authentication is one of the basic importance of using cookies for the website because it eases the user's experience on the website. When a user logs into the Isobar website, session cookies are stored in the user's web browser so that if the user closes the browser and reopens it, they will already be signed in. For example, some dedicated Isobar users might have really long passwords that they would not like to enter into the website multiple times a day. Cookies will help such users to maintain their "logged in" status until the cookies expire.

Cons:

1. Limited Local Storage
   There is a limitation in the size of the cookies that can be stored by Isobar on a user's local storage. According to Kyrnin (2019), running a "Browser Cookie Limit test" shows that the most popular desktop browsers, Chrome and Firefox, have a cookie storage limit of 4096 bytes and 4097 bytes respectively. This will be an issue to take into consideration if the Isobar website will heavily rely on cookies. Also, although 4000 bytes of storage is small compare to the storage size of most devices to today, extensive use of cookies will contribute to the accumulation of cookies stored in a user's local storage from Isobar and

other websites. Mobile devices with 2 – 4 GB memory will be most affected by the accumulation of cookies as well as cached images.

2. User Control
   The users of our website have control over cookies storage. The user can disable Isobar from storing cookies on their computer through their browser settings. The user can also delete the cookies by themselves which will make it difficult for Isobar to personalize ads and in turn earn revenue from advertising.

Using Encryption to Serve Web Pages

Encryption involves making sensitive data secure and difficult to be intercepted by an unauthorized third party. This is done using OpenSSL to create a certificate for the Isobar website.

Pros:

1. Improves Trust
   If the Isobar website has the padlock symbol on a user's browser, the users would be more likely to use their credit cards to make online payments on the website because they trust us.
2. Verification
   Encryption using SSL certificates will help to establish the legal ownership of the Isobar website. For example, a fraudulent third party could make a website that looks just like the Isobar website in order to steal sensitive information from deceived users. Encryption will give the users assurance that the website is secure and owned by the organization written in the certificate. This will reduce the probability of a user becoming victims of phishing.
3. Ensures Data Integrity
   Using encryption to serve the Isobar webpages guarantees the integrity of data. SSL prevents data from being intercepted by an unauthorized third party and prevents sensitive information from being stolen.
4. Boosts SEO ranking
   As was mentioned in TME7, Google is cracking down on websites that do not use HTTPS. So, Google introduced HTTPS as a search engine ranking signal in order to cultivate a web culture where the data security of users is vital (Patel, n.d.). So, it makes sense to encrypt Isobar web pages in order to acquire preferential treatment over competitive websites that are unsecured.

Cons:

1. Cost of Certificate
   Although it is possible to acquire a free SSL certificate, it is not recommended for an organization like Isobar. Free SSL certificates only have Domain Validation (DV) certificates which are used for providing a basic level of authentication (SSL Renewals, n.d.). So, it would cost money to acquire an SSL that provides Organization Validation (OV) and Extended Validation (EV) certificates.

2. Technical Complications
   Configuring the SSL in TME5 was a complex process. Initially, I could view the certificate as a file but I could not view it from my browser through the www.isobar.org domain until I "forced HTTPS" on the domain through the "httpd-vhosts.conf" file. The HTTPS tag has to be applied across all web pages so that users do not get a warning message that their data is not protected.
3. Mobile Configuration is difficult
   Isobar will make use of dedicated apps to access the site so that we are available on multiple platforms. One such platform is on mobile phones. Unfortunately, it is difficult to implement SSL on mobile (SSL Renewals, n.d.). This is because, when SSL was created, it was primarily intended for security on web-based applications (Patel, n.d.). Ensuring such security will require using third-party applications or building in-house applications to keep websites functioning the same way as mobile devices (SSL Renewals, n.d.).

The Use of Dedicated Apps to Access Site

Isobar will make use of mobile apps to access the internet content of its website.

Pros:

1. Convenience
   Studies show that people prefer to use applications where an equivalent website exists because such applications are usually more convenient than the website (Tania, 2019). Mobile apps provide better user experience, load content faster, and are easier to use (Tania, 2019). Unlike web browsers, mobile apps have push notifications of which the alternatives would be to spam a customer's email or SMS messages assuming they subscribed to such. Also, mobile apps gracefully fit different screen sizes better than websites.
2. Offline Use
   Some apps can keep providing access to content and features even without an internet connection. The Isobar app can be designed in such a way that it will not require a user to sign in before they can view certain things such as the user's settings or the different Isobar memberships available.
3. It Increases Our Reach
   Some users discover new apps that they like by simply scrolling through random apps on a mobile app store. Having such presence ensures that we do not miss out on such a demographic of users.

Cons:

1. Local Storage
   Depending on how we design the Isobar app, if it has a lot of functions, it may require large storage space. It would not be wise for Isobar to design an app that takes up large

storage space because users that have low mobile storage space might contemplate deleting our app especially if they do not use it much or have not even used it yet since it was first downloaded.

2. Compatibility
   In order to increase our reach and ensure the proper functioning of our mobile platform, we would have to create multiple of the same mobile apps to meet the requirements of different Operating systems such as iOS and Android. It is possible to develop a cross-platform solution that will work on the different Operating Systems. However, such a solution may not support every feature of each Operating System. For example, a cross-platform framework may not support 3D graphics, which could limit some of the app's functions and designs (Tania, 2019)
3. Support and Maintenance
   Isobar would need to provide upgrades and fix bugs or compatibility issues from time to time. It would cost time and money to develop and undergo post-delivery maintenance of the app.

Overall, the advantages outweigh the disadvantage for a small organization such as Isobar. For instance, Isobar would not have to store so much data as cookies to the extent of exhausting them and paid SSL certificates are not too expensive to contemplate using a free one especially since paid SSL offers OV and EV.

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