Material Design Lite:

Quoting from the Material Design Lite official website, “Material Design Lite lets you add a [Material Design](http://google.com/design/spec) look and feel to your websites. It doesn’t rely on any JavaScript frameworks and aims to optimize for cross-device use, gracefully degrade in older browsers, and offer an experience that is immediately accessible.”, we can easily see that Material Design Lite is a front-end component library that allows web folk to implement Google’s [Material Design specification](https://www.google.com/design/spec/material-design/introduction.html) using vanilla HTML, CSS, and JavaScript. It’s a lightweight implementation of the Material Design specification (few dependencies, low overhead, very focused) hence calling it “Lite”.

In releasing material design lite, Google have answered very obvious demand such that there have been efforts from the community to build Material Design-inspired frameworks, like [Bootstra](https://fezvrasta.github.io/bootstrap-material-design/#getting-started)p, etc. With MDL, the built in tight collaboration with the Chrome team, Google has laid down a standard for how Material Design should be implemented on websites.

Let’s starting with introducing the material design components.

Unlike the [Polymer](https://www.polymer-project.org/1.0/) Material Design Elements, also known as [Paper Elements](https://elements.polymer-project.org/browse?package=paper-elements), which are developed for highly interactive, data-driven websites and apps, MDL instead focuses primarily on websites with simpler content such as blogs, marketing and landing pages.

For the aspect of layout, Material Design Lite features a number of building blocks for constructing pages. For example, the grid: a fundamental feature of any front-end framework. MDL’s grid is built with Flexbox. It has twelve columns set out for large viewports, eight columns for what you might call tablet-sized viewports, and four columns for smaller viewports. The Layout component of Material Design Lite also comprises navigation, tabs, and footer with each of which have been optimized for varying viewport sizes.

For the aspect of buttons, there are several types of buttons:

First is the basic button, a basic rectangle button with a background distinct to the text color.

Second is the flat button, a button without the background.

Third is the float action button that is unique to Material Design Lite, a circular button which floats on the interface, usually carrying primary action of the current screen or page.

For aspect of cards, a card is a container for displaying content, like text and images, which usually promotes some sort of action. For example, an image with a “like” or “share” button, a list of music with the “play” button, or perhaps a note with a “Save” button. Basically, it is a combined container with images, letters, buttons and other components.

For the aspect of badges, A badge is a tiny circle, positioned near a UI element, typically containing a number (for instance, indicating that you have a unread message for a chatting app)or an icon. Nowadays, where information is endlessly flowing across our devices, a “badge” can be considered a very important UI element in any design.

Besides those provided component, Google also provides [a couple of templates](http://www.getmdl.io/templates/index.html) to help you get up and running quickly, with proper layout structure. Those includes A blog, An article, An app or marketing landing page, A dashboard, A text-heavy webpage

For the aspect of customization, MDL styles are structured with Sass and the BEM methodology. Styles can be customized in many ways, even before you download your framework package. One such way is with the color wheel on the [Customize page](http://www.getmdl.io/customize/index.html). The color wheel allows you to select color accents based on the primary color selection. The customizer will then generate the stylesheet, which you can download, or link to directly from Google CDN.

Most importantly, for the aspect of browser support, Since most of the components in MDL are built with the cutting-edge web techniques, MDL will only work perfectly in the modern evergreen browsers: Chrome, Firefox, Opera, Microsoft Edge. MDL will degrade gracefully in older browsers, such as IE9, by serving the CSS version only. The interactive elements will not be present.

Now we are going to have a run down comparison between boostrap and Material Design Lite in order to have a better picture of Material Design Lite.

First of all, the philosophy between boostrap and MDL:

* Bootstrap was originally built by Twitter with the purpose of making it easy to build responsive websites. It gives you a lot of components and customization options for making web apps.
* Material Design Lite is a way for Google to spread its material design concept to the web. It gives you only the base building blocks for building material apps. The rest is up to the developer.

the components:

* In Bootstrap, almost all built-in HTML elements are styled and can fit nicely together in a layout. It gives you a great number of additional components for any type of design.
* MDL gives you fewer components than Bootstrap, but they are all focused on building modern Material Design applications. They come with animations and beautiful default styles.

the design

* Bootstrap gives you a passable default design which we have grown tired of by now, but there are plenty of wonderful themes to chose from.
* MDL looks fresh and features bold colors and animations. It dictates exactly how your web app should look like and gives you a limited opportunity for customization by choosing [base and accent colors](http://www.getmdl.io/customize/index.html).

After laying out those key differences, we will be looking into other aspects:

The header navigation, Headers in Bootstrap are called Navbars. They begin collapsed in mobile views and become horizontal when there is enough space for them. Inside, you can nest an array of different elements that can be positioned with the help of classes. Similarly, MDL header navigations start off collapsed behind a hamburger menu and expand with the growth of the viewport. They too have different stylings and possible positions.

The footer, Bootstrap doesn’t actually have separate footer components, while Material Design Lite has two options, a mini and a mega footer. For this example, we’ve translated the default MDL design to Bootstrap, using the grid and a bit of extra CSS.

The tabs, both frameworks use pretty similar syntax to create selectable tabs with different content. A number of links for swapping between the tabs, and an array of divs, selectable by id, for storing the content. They also both require JavaScript to work.

To sum up, both bootstrap and MDL has its own benefits and it all depends on developers and the purpose of web development in order to choose the fittest library.