

Targeted Marketing by Location from e-Commerce Website Using Web Analytics Data

Zulazeze Sahri*, Roslan Sadjirin, Roger Canda

Faculty of Computer Science and Mathematics, Universiti Teknologi MARA, Cawangan Pahang,
Kampus Raub, Malaysia
azeze@pahang.uitm.edu.my

Abstract— Targeted marketing location is important in any business to drive business leads. However, selecting the strategic targeted location for sales and marketing is a crucial decision for business owner. As most of today's business has invested in developing e-commerce website, it can help the business owner to get insights in understanding visitor's location and behavior using Big 'Digital Analytics' Data. This paper proposed a conceptual model on how e-commerce website's visitor data can help in selecting targeted sales location using Digital Analytics tools. The aims of this paper are to help businesses to utilize their website's visitor data to make decision for targeted sales location using data analytics technology. Google Analytics tool is used in collecting and evaluating visitor's location in form of Acquisition and Behavior parameters. The data has been collected for twelve months from an e-commerce websites. The result from this research will show the number of visitors from different locations for each website that can be used by business owner in making decision for future marketing and sales plan.

Keywords— *web analytics, google analytics, sales location, internet marketing, e-commerce*

I. INTRODUCTION

Today's businesses have to be creative in selling and marketing their products. Business owner have to be proactive than waiting for the customers to their premises or to see the impact of their pamphlet distribution. In addition, local businesses or bricks-and-mortars based business must think of how to reach more customers outside the radius of their premises and shop lots. In the era of globalization, internet plays a vital roles in satisfying people from various services in many different fields [1]. It is a very cost effective, freely available, reliable and convenience facility in completing many tasks easily and conveniently with a few clicks. Therefore, traditional business has to look for any opportunities in utilizing the internet especially for marketing purposes to expand and reach more targeted customers. In the current scenario, it is undeniable that today's businesses have relied on the internet in marketing and selling their products.

Internet marketing is the newly talked term in the area of marketing strategy. According to Nosrati, Karimi, Mohammadi, & Malekian (2013), internet marketing also known as online marketing and online advertising that refers to advertising and marketing efforts that use the web and e-mail as the medium to gain direct sales via e-commerce as well as sales leads from website and emails. The example of internet marketing available till date are display advertising, search engine marketing, search

engine optimization, social media marketing, email marketing, referral marketing, affiliate marketing, content marketing, inbound marketing and marketing communication [2]. In addition, internet marketing strategy is always supported by traditional types of advertising like radio, television, newspaper, magazine and other means of distribution. Hence, the research found that the first step in implementing an internet marketing, each business is required to have an e-commerce website setup and available before any of the internet marketing strategy can be applied.

E-commerce is a web based platform of website marketing that allows business owner to sell their products with a set of additional buying and selling modules such as *add to cart, compare price or products specification, create selection for quantity, size and colors, checkout, add shipping and billings details and make payment via online banking system*. It is a complete platform that can provide buying and selling transaction from product searching and selection till purchasing and makes online payment in a few clicks. There are numbers of off the shelves and open source (available for free) e-commerce platform that ready to be deployed as an e-commerce website, namely *OpenCart, Magento, ZenCart, WooCommerce (for Wordpress), AgoraCart, OSCommerce, PrestaShop and TomatoCart*. All the features listed above can be seen in most of these ecommerce platforms. As the ecommerce can be gained with free of any charges, the number of ecommerce website and online transaction has increase in recent years. The Department of Statistics Malaysia reported that the Information and Communication Technology (ICT) contribution to economy increased by 17.8% in 2015 [3]. The value added of e-commerce amounted to RM68.3 billion and grew by 7.3% and e-commerce accounted for 5.9% of the GDP. Although it is undeniable fact that e-commerce and ICT have bring a positive impact on the current business's value, business owner and e-commerce player must keep up with the latest convergence technology and challenges that could impact current e-commerce technology such as the booming of Big Data and Data Science technology. In fact, the Malaysian government has taken numerous steps towards the challenges to enter the digital age through the implementation of Malaysia Government Open Data Initiative [4], [5]. Therefore, this paper explores the advantages of big data analytics technology and its usage to increase the business value in e-commerce landscape. These two key terms will explain further in the next section.

II. LITERATURE REVIEW

This section review some of the most important key terms in this research. The first literature review will cover a component of big data which is Web Analytics and its relation to e-commerce (as e-commerce in the form of web platform). Then, the review continues with the study of target marketing and how e-commerce web analytics could help in determine a targeted marketing location for a business through it available e-commerce data.

A. Web Analytics and e-Commerce

The study of big data analytics (BDA) has become one of the popular interest fields of study among academia and industry. This explosion is due to the application of big data in many fields especially e-commerce can bring significant positive impacts such as can increase value chain experience by 5% – 6% higher productivity than the competitor as reported by Akter & Wamba (2016). As the emergence of internet-based technology provides e-commerce firms with transformative benefits such as real-time customer service, dynamic pricing, personalized offers or improve interaction [6], BDA also can help in making decision by enabling informed decisions based on critical insights [7]. The impact of BDA to e-commerce can improve every aspect of the business from marketing and advertising, to merchandising, operations and customer retention. In the context of e-commerce, the big data enables merchants to track each user's behavior and connect the dots to the determine the most effective ways to convert an existing customers into repeat buyers [7]. Based on this argument, the research motivation to study and propose on how to help merchants or e-commerce website owner to get insights of its user's behavior, to identify the most suitable location (targeted location) for their marketing campaign. The user's behavior data can be collected and analyzed by using web analytics tools which is a part of the BDA.

Web Analytics involves the process of collecting, measuring, monitoring, analyzing and reporting web usage data to understand visitor's *behavior* such as number of visits, pages visited, exit page, and *attributes* such as demographic and devices uses. Analytics can help to optimize web sites in order to accomplish business [8]. There are two ways used by web analytics tools to collect web data; the first involve the use of server-based logs-files, and the second requires client-based page-tagging. There are numerous number of web analytics tools available for free or with a fee namely Google Analytics, Yahoo Web Analytics, Crazy Egg, Compete.com, Google Website Optimizer, Optimizely.com, Kissinsights from Kiss Metrics, 4Q by iPerceptions, ClickTale, Facebook Insights, Twitalyzer as detailed out in table 1.

TABLE I. LIST OF WEB ANALYTICS

Provider / Publisher	Source	Free / Charges
Google Analytic	Google.com/analytics	Free
Yahoo Web Analytics	Web.analytics.yahoo.com	Free
Crazy Egg	Crazyegg.com	\$9 - \$99/m
Compete	Compete.com	Privacy Vary

Provider / Publisher	Source	Free / Charges
Google Web Optimizer	Google.com/websitioptimizer	Free
Optimizely	Optimizely.com	\$19 - \$399/m
Kissinsights	Kissinsights.com	Free - \$29/m
4Q by iPerceptions	4qsurvey.com	Free
ClickTale	Clicktale.com	Free - \$990
Facebook Insights	Facebook.com	Free
Twitalyzer	Twitalyzer.com	Free

^a (Source: [9])

Based on the review, the research employed Google Analytics as the web analytics tools because it is completely free service and be able to generate detailed statistics and report of our website visitor's behaviors and attributes. In addition, it is a widely use web analytics by most top websites around the world due to its reliability and performance. According to [10], 62.4% of the top 10 000 websites use the service. Meanwhile, in order to receive data from the web, the research used client-based page tagging technique that require us to technically install the Google's JavaScript code into each web page that need to be monitored.

B. Targeted Marketing by Location

Targeted Marketing is a tool used to specifically identify the buying power of one group by tailoring a campaign or promotion specifically toward that group's needs and wants [11]. Meanwhile, Location Targeting marketing allows advertiser to identify the ads to appear in the geographic location and helps business owner to focus on the areas where they find the right customers and restrict it in areas where they won't in their marketing campaign [12]. This method is very important to advertisers and business owners while spending their marketing budget in order to increase their return on investment (ROI) as result. The question is; how to know the right location to market our product and where is our right target group? These are the questions that advertisers and business owners need to understand before the plan to launch their marketing campaign or to sell their products at a specific location.

This paper proposes the uses of web analytics data gathered from e-commerce website to get insights and meaningful information to answer those questions such as the right location of website customers and other demographic information. This method can be implemented by using client-based page tagging on web page using Google Analytics to collect visitor's data such as their location and time visits for further analysis. Based on this result, it can help advertiser and business owner to better understand their customer's location and behavior eventually can helps in making decision for targeted marketing campaign of the products in the future.

III. RESEARCH METHODOLOGY

This section describes the methodology in implementing web analytics in e-commerce in order to get the targeted marketing location by understanding the website users' behaviour. Firstly, based on the research review, the researchers learnt that in today's internet marketing, there are lots of

marketing channel that business owners and advertisers can use as per discussed in the early section. The most important channel is by using e-commerce platform. E-commerce website can be developed by using free and open source platform such as OpenCart, WooCommerce, Magento, ZenCart and many more as per our discussion. In this research, we use a sample of ecommerce website that run WooCommerce platform as a plugin in Wordpress Website platform. The website called Site A is a cosmetic and health care business website based in Kuala Lumpur, Malaysia and has run the ecommerce website since 2014.

Next, the research has selected Google Analytics as the web analytics tools to capture the website's users' data and behavior to be analyzed. Google analytics is a well-known free service web analytics among the top business website. It has a vast number of monitoring and analysis features in understanding website user's behavior such as number of website visitors by day, traffics source, visitor's demographics and interest, visitor's geo-location and languages used, browsers and mobile devices uses and many more. In order to allow Google Analytics to capture and analyze website user's data and behavior, the research needs to setup and install analytics tracking code into the sample website. The overview of Google analytics setup process is as follows:

1. Visit google.com/analytics and sign in using your google account (Create account if you don't have one)
2. Setup a property in your Analytics account. A property represents the two sample website, and is the collection point in Analytics for the data from the site. [13]
3. Adding the Analytics tracking code to collect data in Analytics property that we have setup. [14]

After successfully setup the Google Analytics account, setup website property and adding analytics code in the sample website. The research continuously monitor to ensure that the analytics be able to read the website user's activities and other required information. The time frames of data collection and analysis for these websites have been divided into two phases where each phase takes a period of six months for that year. The first phase was from Jan 1, 2016 to June 31, 2016, and the second phase was from July 1, 2016 to December 30, 2016. The traffics data from the websites were analyzed and modeled to determine the website visitor's valuable insights that can help in determination of targeted marketing location for future marketing plan for the sample website. The website user's data parameters that the research focuses are:

- *Geo Location (Number of Visitors, Avg Session Duration)*

Geo Location data in Google Analytics be able to provide the data of website user's location by country, state and city which the session (per user visit) originated. The research will look at the highest number of visitors and average session duration for each location. Based on this information, it can help advertiser to create ads campaign, pamphlet distribution, banner and billboard advertising for a specific location.

IV. RESULT AND DISCUSSION

This section describes the results of this research. The overall process of implementing web analytics into the ecommerce sample websites to understand user location for future marketing campaign can be illustrated as in Fig. 1.

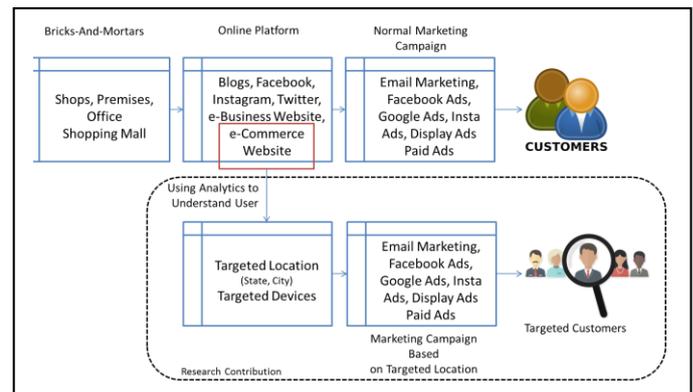


Fig. 1. Targeted Marketing by Location Model Using e-Commerce Web Analytics Data

Traditional bricks and mortar businesses transformed their business into online platform like create a shop blog, post items in social site like Facebook, Instagram and twitter or creating e-business website or e-commerce website, they eventually try to make a free or paid marketing campaign to all of their customers. This research proposes to adopt a Big Data technology called web analytics that can capture, monitor and analyze website user's behavior and attributes. The research was focusing on understanding users location that can be used in the marketing campaign, for example to create Facebook ads or any display ads to our visitor's location only. The result also can help advertiser to create offline marketing campaign like distribution of pamphlet, banner and billboard or open new branches at the location of their website visitors. This method can help to reach targeted customer and save marketing costs.

The second part of result and discussion section describes the analysis result based on the data captured and analyzed by Google Analytics. Google Analytics be able to capture and analyzed the geo location and visitor's behavior for Site A throughout the research duration between Jan 1, 2016 to Dec 30, 2016. The sample of analytics results view that show Geo Location of the monitored website as show in fig 2.

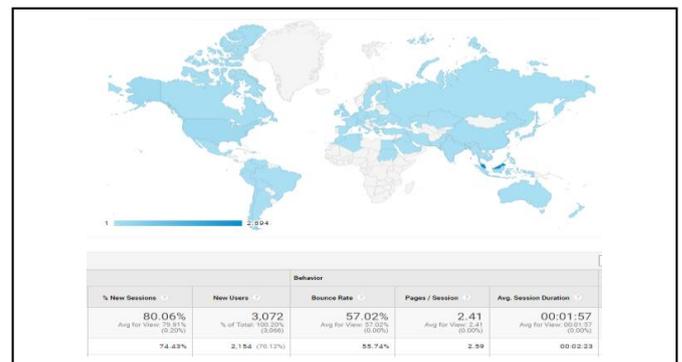


Fig.2. An overview of Geo Location Analysis Result in Google Analytics

Based on the result analyzed by Google Analytics, Site A recorded country Malaysia has the highest number of visit with total of 2894 session, with the average session duration per visit was 2 minutes 23 seconds, this is followed by United States with the number of visit was 184 session and average time per visit was 43 seconds. Table II and Table III shows the details of the top five visitor's location for Site A along its average session duration.

TABLE II. RESULT OF VISITOR'S LOCATION BY COUNTRY FOR SITE A

Country	Total Visitors (3837) % of Total 100%	% of Total Visitor	Average Session Duration
Malaysia	2894	75.42%	00:02:23
United State	184	4.80%	00:00:43
United Kingdom	109	2.84%	00:00:01
China	82	2.14%	00:00:03
Indonesia	66	1.72%	00:00:47
Others	502	17.88	00:50:04

Table II indicate that Site A has a total number of visitors of 3837 with majority of the visitors are from Malaysia with 75.42% and they spent an average of 2:23 minutes. The other country like United State, United Kingdom and China have a small number of visitors with a touch down time only 1-43 seconds, due to the traffics may not be genuine visitors instead, it can be search engine robots that visit website to be indexed in their search engine like Google, Yahoo or Bing. This result shows that the owner of website A now understand that they need to focus their marketing plan in Malaysia compare to other countries. Google analytics also is able to drive details result of which city, continent and sub-continent of our visitor's location. As Site A businesses are based in Malaysia, the research generate and analyze the detail result of visitor's city in Malaysia as detailed out in Table III.

TABLE III. RESULT OF VISITOR'S LOCATION BY CITY OF MALAYSIA FOR SITE A

Country	Total Visitors (2894) % of Total 75.42%	% of Total Visitor	Average Session Duration
Kuala Lumpur	1593	55.04%	00:02:05
Selangor	406	14.03%	00:02:36
Sabah	188	6.50%	00:01:58
Sarawak	171	5.91%	00:02:01

Country	Total Visitors (2894) % of Total 75.42%	% of Total Visitor	Average Session Duration
Johor	98	3.39%	00:03:12
Putrajaya	94	3.25%	00:07:40
Perak	67	2.32%	00:02:14
Kedah	64	2.21%	00:01:48
Penang	51	1.76%	00:02:44
Pahang	50	1.73%	00:02:26

Table III shows the insights of available data from e-commerce website for Site A. The analytics was successfully capture, correlate, analyze and present data for Site A as the highest number of visitors in Malaysia was come from Kuala Lumpur with 55.04% out of 2894 visitors for the year 2016. It is followed by Selangor with 406 visitors, Sabah 188 visitors, Sarawak 171 visitors, Johor 98 visitors and Putrajaya with 94 visitors. Others state represent 1% - 2% of total visitors. Based on this result, business owner for Site A now understand that most of their customer are from the above states and it can helps the owner of the business to plan for advertising and marketing campaign for that targeted location, for example, running a Facebook or Google advertising that only publish in Kuala Lumpur and Selangor or Distribute pamphlet, Banner and Billboard advertising in Sabah and Sarawak and so forth.

V. CONCLUSION

This research proposes the use of Big Data Analytics (BDA) technology to help e-commerce website owner to understand their visitor's attributes. The research focus on capturing and analyzing visitor's location that can be used in future marketing plan. A sample of e-commerce website has been used to apply the proposed model. Google analytics was used in this research as the web analytics tools in BDA and the implementing of analytics in the sample website has been discuss research methodology. The analytics was continuously captured and analyzed the website's data for a period of one year from January – December 2016. The results was successfully captured, analyzed and presented by analytics that shows for Site A, the highest number of visitors if from Malaysia compared to other country. Meanwhile, in Malaysia, the highest number of visitors for Site A was come from Kuala Lumpur followed by Selangor, Sabah and Sarawak. Based on this result, the research successfully identified the targeted location for Site A for their future marketing campaign decision.

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