The Mechanism for Online Publishers to Monetize a Website and Manage the Contextual Advertising

by

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Dissertation submitted in partial fulfillment of

the requirements for the

Bachelor of Technology (Hons)

(Business Information System)

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CERTIFICATION OF APPROVAL

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Approved by,

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TRONOH, PERAK

MAY 2014

CERTIFICATION OF ORIGINALITY

This is to certify that I am responsible for the work submitted in this project, that the original work is my own except as specified in the references and acknowledgements, and that the original work contained herein have not been undertaken or done by unspecified sources or persons.

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NOR EDLINA BINTI MOHD ROSNI

ABSTRACT

The evolution of technology and internet (World Wide Web) has brought about many predictions of their possibilities to transform the businesses, education, economy, and social at bigger perspective. With the advent of the internet and ad server in early 1990s, internet has become one of the marketing channels that have been used for advertising purpose. Based on the article stated in *Digital Advertising Broke $100 Billion in 2012* it mentioned that "In 2012, web advertising approximately grew about 55.8% in the Middle East and Africa and 38.4% in Eastern Europe while 21.5% and 13.9% for North America and Western Europe". The latter shows that the users and the advertisers increasingly shift their attention on web applications that as well give the benefits to the publishers to maximize more revenue.

This project going to discuss further details the mechanism for online publishers to monetize a website and manage the contextual advertising. In the other words, the major scope of this project will be on maximizing the revenue for the publishers through display the relevant advertising. Providing these kinds of advertising will give challenges to the publishers to match the contents of the website and to display related advertisement that possibly to be clicked on by the users.

Two main objectives will be addressed in these research papers which are; to study the best approach for the publishers to maximize the revenues by displaying related advertisement with website contents through independent web publishing and to develop a website prototype that shows important connection between the function of publishers to maintain and manage the website contents and Contextual Ads.

Hence, the scope of the study will be discussing on the major player in online advertisement which is publisher; to learn, discover and analyze the theory and concept of online advertisement and contextual advertising from publisher's perspective.

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ABBREVIATIONS AND NOMENCLATURES

ADN	Ad Network
ADX	Ad Exchanges
CPA	Cost-Per Action
CPC	Cost-Per Click
CPI	Cost-Per Impression
CTR	Click-Through Rate
DSP	Demand Side Platform
IMC	Integrated Marketing Communication
RAD	Rapid Application Development
ROI	Return on Investment
SSP	Supply Side Platform

CHAPTER 1

INTRODUCTION

This chapter will describe the overview of the project that covers the following topics.

- Background of Study

- Problem Statements

- Objectives of Study

- Scope of Study

1.1   Background of Study

Marketing mix is a combination of price, product, place, and promotion; it is a business tools that widely used in marketing area by marketers to serve the needs and desires of the product's customers while generating optimum income. One of the marketing mix under promotion that has been used broadly in a business is advertising. Advertising has been used to persuade, influence or control the viewers to take additional action where drive the customers behavior with respect to marketable offering as well as increase businesses' sales and revenues. Literally there are lots of medium that can be used for advertising purpose. For example, billboards, printed flyers, television and radio advertisement, and online advertisement. In addition, advertising allows company to sell their ideas, products and services that are differentiated by the brand identity.

The existence of internet allows the organizations to advertise their products and services to the whole world at a lower cost rather than using traditional advertising and it has bring a new phenomenon in the advertising industry. Internet becomes a medium of communication that brings the greatest impact and important achievement of

humankind and managed to change both civilization and communication (Gates. C.F., 1995, Hahn & Stout, 1994, and Otte, 1994).
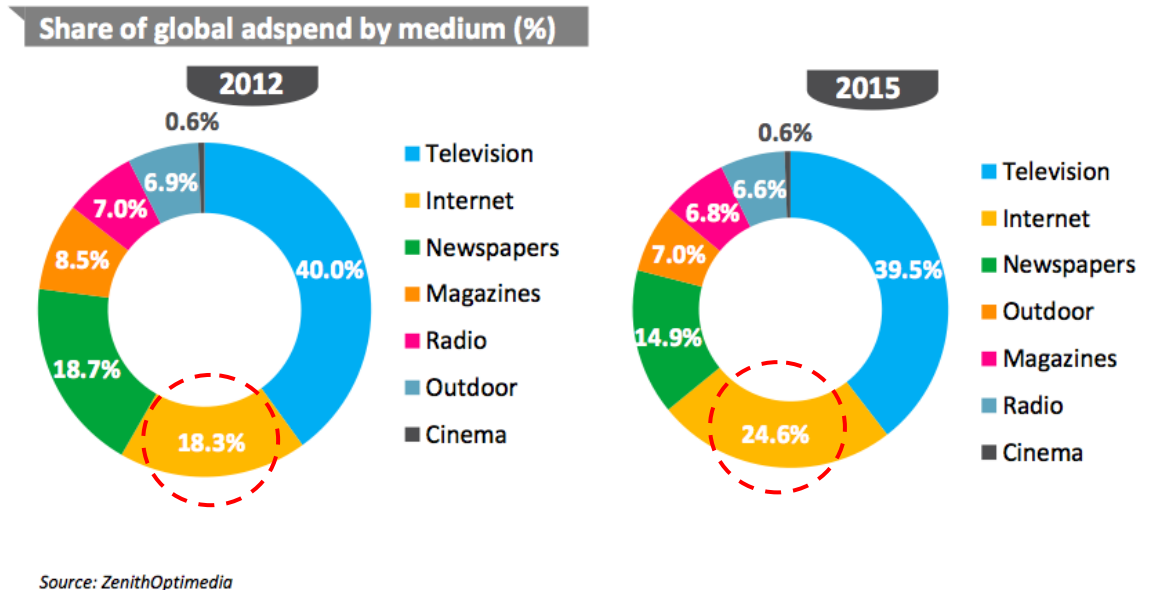
Figure 1: Share of Global Adspend by Medium (%)

Figure 1 shows the Share of Global Adspend by Medium. Therefore, it is proved that Internet Advertising (desktop internet) is continuing to take the dominant place in the advertising industry. In 2016, it is projected that the online advertising will start to overtake television.

Nowadays, internet advertising has embarked with excellent evolution. According to eMarketer CEO and co-founder Geoff Ramsey; they stated that the growth of online advertising has been robust and it already represents the second-biggest advertising after television. Besides that, it is forecasted that printed advertising (newspaper and magazine) will lose 9.3% of market share in 2015.

US Major Media Ad Spending, by Media, 2009-2015
billions

	2009	2010	2011	2012	2013	2014	2015
TV	$53.8	$59.0	$60.5	$64.5	$65.0	$67.0	$68.0
Internet	$22.7	$25.8	$28.5	$32.6	$36.0	$40.5	$44.5
Newspapers*	$24.8	$22.8	$21.4	$20.7	$20.2	$20.0	$19.8
Radio**	$14.3	$15.3	$15.7	$16.4	$16.7	$17.1	$17.2
Directories*	$10.3	$9.3	$8.2	$7.3	$6.5	$5.7	$5.0
Magazines*	$15.5	$14.7	$13.9	$13.2	$12.6	$12.1	$11.6
Outdoor	$5.9	$6.1	$6.4	$6.8	$7.1	$7.4	$7.6
Total	**$147.2**	**$153.0**	**$154.6**	**$161.5**	**$164.2**	**$169.8**	**$173.6**

*Note: *print only; **excludes off-air radio & digital*
Source: eMarketer, March 2011

125982   www.eMarketer.com

Figure 2: US Major Media Ad Spending by Media (2009 -2015)

These days, online advertising is a large and has grown rapidly in the market and online advertising become a significant role in today's internet ecosystem. Worldwide spending on internet advertising was total $65.2 billion in 2008, or nearly 10% of all advertisement spending across all media, and will grow 15- 20% a year to reach $106.6 billion in 2011, or 13.6% of total ad spending, according to Digital Marketplace Model and Forecast (Pak. A & Chin-Wan Chung, 2010).

Most of the online advertising consists of textual advertising where it takes mainly; contextual advertising and sponsored search. Contextual advertising is a textual advertising where advertisement is placed in the website contents while sponsored search is a placement of paid links as a response to the users' queries that displays the "best match" and relevant advertisement. Therefore with the context of this research paper that focusing on publisher's perspective, the publishers have to know the mechanisms to display the related advertisement that are linked with users' interest and with this approach it will help the online publishers to maximize their revenues from online advertising. Figure 3 below shows the ecosystem and major players involves in the internet advertising.
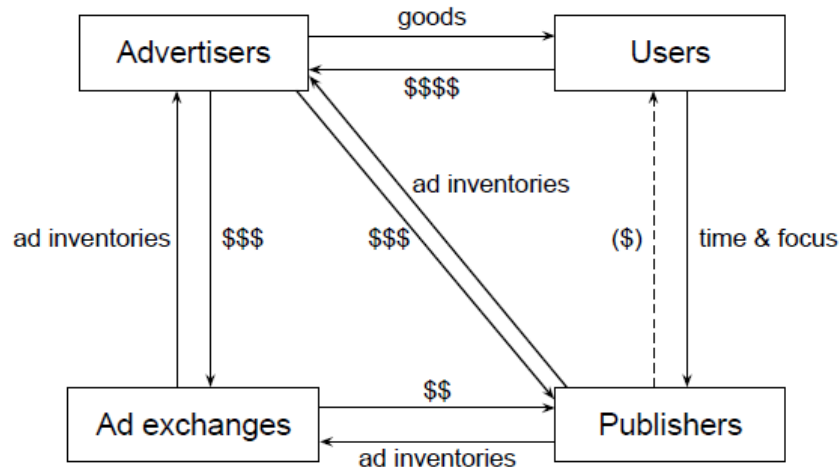
Figure 3: The basic system of Internet advertising. Advertisers spend budget to buy ad inventories from ad exchanges and publishers; ad exchanges serve as matchers for ads and inventories; publishers provide valuable information to satisfy and keep visitors; users read ads and purchase goods from the advertisers. Note that normally users would not receive cash from publishers.

As technology and internet becomes more significance in this new era of advertisement industry, publishers need to decide which elements of technology they has to learn, adapt and explore in order to engage in thriving two-ways communication with the users of the website to fulfill their satisfaction. Practically, website publishers will need to move forward with hybrid approaches that leverage both legacy publishing skills and new IT-oriented expertise (colt.net, 2010).

One of the publisher's goals is to maximize the revenue by displaying the advertising in the sponsored search. However, this objective is symbiotic with advertisers' need to attain better business results through advertising. There are many approaches for the publishers to gain more revenues from online advertisement. For instances CPI (cost-per-impression) where the advertiser pays the display advertisement on a website; CPA (cost-per-action) an advertiser pays to the publisher based on each users that was

brought by the advertisement and last but not least is CPC (cost-per-click) where the advertiser need to pay whenever the users click-on the advertisement which reflects the interest of users.

1.2 Problem Statements

Publishing industry is going through a massive transformation to meet advertisers' and users' demand for content in new online channels via web application and mobile devices. The challenge for the publishing industry is to develop new business models and to reengineer processes and workflows for a digital business while to retain and maximize the revenues (colt.net, 2010). Nevertheless, online advertisement and total number of website publishers are emerging and increasing throughout the day and this has give the biggest challenge to the website publishers to compete each other in order to satisfied both users and advertisers.

Based on the findings of the research, traditionally the advertisement that displays on the internet failed to provide the best way to advertise ads on the internet by selecting irrelevant ads. This problem has led to decrease the users' experience in matching the user queries as well as reducing the advertising revenues for online publishers.

Therefore, this study will mainly address on the stated challenges below:

1. Display relevant advertisement that match with website contents; publishers need to find the best approach to display the best match between the advertisement and content of the websites. An example of irrelevant display advertisement could be display ads related to "Diving in Malaysia" on website about "Boutique in Malaysia".

2. Maximizing advertising revenues for online publishers through online advertisement; where the publishers have to increase the possibilities that the users going to click on the advertisement when the users visit the website.

3. Establish a platform for small businesses to advertise their ideas, product and services; where publishers need to effectively and successfully display the advertisement in the website that match with website contents.

1.3   Objectives of Study

The objectives of this study are:

1. To study the best approach for the publishers to maximize the revenues by displaying related advertisement with website contents through independent web publishing.

2. To develop a website prototype that shows important connection between the function of publishers to maintain and manage the website contents and Contextual Ads.

1.4   Scope of Study

This project going to focus on two scopes as stated below:

1. Learn, discover and analyze more details the theory and concept of online advertisement and contextual advertising from publisher's perspective. In addition, explore the best approach to increase advertising revenues for online publishers.

2. Study the major player in online advertisement which is publisher.

CHAPTER 2

LITERATURE REVIEW

This chapter will be discussing on the general idea and some of the issues that has been discovered that related with this project. Theory, concept and views regarding online advertisement and contextual advertising will be defined and explained briefly in this chapter. In addition, the perspectives from main players (publisher and advertiser) of online advertisement also will be discussed in depth in this chapter.

2.1 Current Trends in Online Advertising

Online advertising is one of the marketing processes that use internet to promote the ideas, products and services to the consumers. Example of online advertising are search engine marketing, email marketing, and mobile advertising. Literally, online advertising will involve four major players which are publishers, advertisers, ad exchange and users.

Today, online advertising expenditures are rapidly increase and growing throughout the year and the total spend of online advertising in the worldwide reached $503 billion at the end of 2013. Based on the total spend of online advertising recorded in 2013, it shows that there are still much potential for the industry to grow in the coming year and the advertisers have lot of opportunity to be grabbed to reach more audience hence, increase the awareness of the customers towards the products and services that has been advertised on the internet. It shows that advertising that use internet or online approach to deliver and promote the business message is more attracting and could keep the new and existing customers.

Since its inception, the Internet has been a testing ground for different marketing approaches to online advertising (Shankar. V. & Hollinger. M. 2007). The advancement and innovation of internet has drive online advertising from text advertisement to interactive advertisement. Recently, Google declared that the company earns revenues on advertisement more than newspapers and magazines starting from year 2012 onwards. According to David (2013) he stated that almost all of Google's expected $60 billion in revenue will come from advertising this year. This news proves that traditional advertisement (printed advertisement) suffered declining in advertising revenue.

Figure 4: US Online Advertising Spending (billions) 2010-2015

Online advertising spending continued to grow throughout the year and predicted to continue into the foreseeable future. However, as projected US Online Ad Spending in figure 4, the percentage change of online advertising decreases over the year as the online advertising industry becomes more matured and many businesses start to use online advertising as part of the promotional campaign.

Hence, advertising industry has changed the dynamics of the business world from traditional advertising methods to online advertising due to the evolution of technology. According to Haque (2007), the developments of computer mediated communication technology, brings up the chances for the businesses to get direct feedback from the customers and website visitors with the ability to customize individual messages. It is believed that in the future online advertising will start to dominate the advertisement industry since online advertisement is in the edge of facing "explosive growth".

2.2 Theory of Contextual Advertising

Contextual Advertising is types of online advertising that will be adapted and implemented in this research paper which mainly focuses to "best match" the user queries with the relevant advertisement hence to increase advertising revenues for online publishers. According to Merle. (n.d); contextual advertising is the text of a web page that scanned for "keywords" or a theme, then ads will be shown related to the website content. In this context of advertising, the owner of the web page (web publisher) need to match the website contents with the related advertisement to be displayed in order to increase the users' satisfaction. For instance, if the users search for "Top Islands in Malaysia", the website must be able to display advertisement related with that particular island (such as hotels, resorts and holiday package ads). The advertisement normally will be displayed in the right hand side or the website or at the top and bottom of the website.

In the internet advertising, there are four major players involved: ad exchange, advertiser, publisher and user. Based on the internet advertising ecosystem, ad inventories are operated with the force of demand and supply from the advertisers. In this context, advertiser will demand his advertisement will be displayed in the ads inventories. Therefore, advertisers can achieve and matches their goals in the advertisement through find the available ad inventory in the market. Ad exchange will provide advertising service that allows the advertisers to display and promote their

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products and services to the targeted group of internet users. An ad exchange also manages contract negotiation between advertisers and content publishers that wish to sell ad spaces (Yuan et al, 2012). Advertisers and ad exchange will bid the keywords for the ads to be displayed and listed in a search result page (e.g: Google, Yahoo Search) or in the publisher's website at the auctioned price.

Website publishers provide a platform to the advertiser to advertise the products and services to their targeted customers. Literally, they can maximize the revenues through online advertisement by displaying the advertisement and enhancing the website contents. Google AdSense was the first website publisher who implements contextual advertising program. It works by providing webmasters with JavaScript code that, when inserted into web pages, displays relevant advertisements from the Google inventory of advertisers (Wikipedia.org, 2014). Mediabot is a tool that has been used by Google to calculate the relevance of the advertisement to be displayed on the webpage. Today, Google has more complex systems that they use to support contextual advertising which is "language-independent proximity pattern-matching algorithm" with a goal to increase the accuracy of matching. With the invention of AdSense, AOL Sponsored Listings, Microsoft adCenter and Yahoo! Publisher Network started to make an action to offer similar services just like Google. However, it will be a challenge for the website publishers to select the optimal contract or estimate the optimal price to be offered to the advertisers (Yuan, et al. 2012).

In the context of contextual advertising, advertisers is the player who needs advertising space to position its marketing messages and also they provides the information of advertisement to attract targeted customer to click on the advertisement. Advertisers have to ensure that the ads are "narrowly focused" so that the ads can be reached to the target market and not for those who does not use the product or services. Besides that, for each of the advertisement, its position and the total number of ads on the page have a significant influence on its click-through rate (CTR) (Joachims et al, 2005).
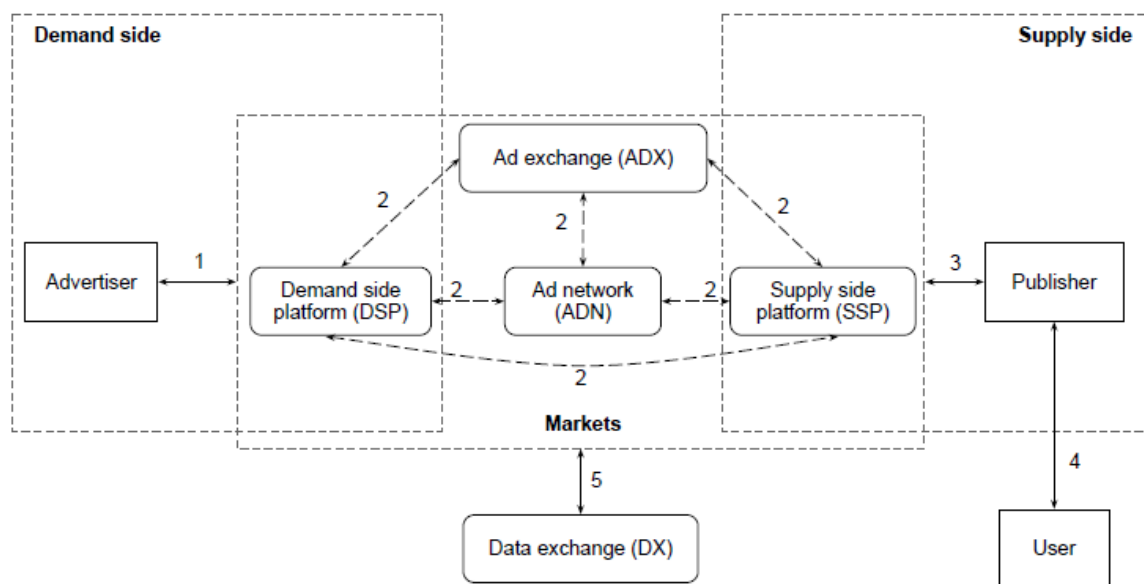
Figure 5: "Various players of Internet advertising and the trading process: 1) The advertiser builds campaigns in markets 2) The markets can trade campaigns and impressions to balance the demand and supply for better efficiency 3) The publisher registers impressions with the markets 4) The user issues queries or visits websites 5) The markets can query data exchanges for user profiles in real-time bidding."

Source: Internet Advertising: An Interplay among Advertisers, Online Publishers, Ad Exchanges and Web Users

In the rapid expansion of the online advertising industry and increasing revenue, more numbers of companies are engaging with the business by offering new tools and platforms which makes them different, exclusive and valuable to the rest of traditional players of online advertisement. Based on the figure 5 above, there are two major platforms that involved in the online advertisement which are Demand Side Platforms (DSP) and Supply Side Platforms (SSP). DSD will focus on advertisers' site where it will provide the advertisers or advertisement agencies by bidding for their campaigns in multiple ad networks automatically and allows the advertisers to display and promote their products and services to the targeted group of internet users. While SSP will serve the publishers by registering their ad inventories in multiple ad networks and publishers will receive the most beneficial ads automatically. In addition, Ad Exchange (ADX) will integrate all the ad networks together in one place. Publishers will request ads with a

given context to serve users, the ADX contacts candidate Ad Networks (ADN) in real-time for a wider selection of relevant ads (Yuan, et al. 2012).

In this research paper, contextual advertising will display the advertisement based on geography, language and other preferences of the visitors of the websites. Hence, with the existence of contextual advertising, the publishers manage to maximize the utilization of advertising opportunities and also revenues.

Figure 6: Example of Internet advertisement that can be seen on the Internet.

2.3 Issues of Contextual Advertising

Users will browse the website and they will perform searches using search engine and view the result in the website contents; the task of the website publisher is to display one or more advertisement on such pages. Madani. O and DeCoste. D (2005) found that the contextual advertising problem consists of making such selection and placement decisions of the advertisement in order to maximize the expected return over some period of time, where expected return is a function of the likelihood of the ads being clicked – and possibly even a transaction or purchase taking place – and the prices of those clicked ads.

In contextual advertising, matching advertisement with user's queries is to a certain degree way forward. This is because advertisers need to choose the keywords that "narrowly focused" and portray their advertisement so that the targeted customers can be reached and there are possibility that the website users will click on the advertisement. Behind the architecture of contextual advertising, the matching process is set automatically by the website contents where it makes the task more complicated. Besides that, the major challenge of being website publisher is the concern on how each of the advertisement should be evaluate and how the systems select the best advertisement accurately, efficiently and effectively.

Furthermore, another major challenge in contextual advertising is the sparsity. There may be many ads available, whereas the number of interactions we may get from a single typical user, in a time period of interest, may be very small in comparison, furthermore click rates for arbitrary ads are relatively small as well (Madani. O. & DeCoste. D., 2005)

2.4   The Perspective of Publishers in Online Advertising

Majority of the online publishers reserve spaces in their website for branding ads or contextual advertising purposes. Ads inventories can be sold to the advertisers in the form of contracts or in real-time basis. The publisher will be responsible for delivering a total number of impressions based on what was agreed on the contract; in some condition when the publisher is unable to deliver all guaranteed impressions, a penalty will be applied (Yuan, et al. 2012). As a result, the online publishers might face the challenges either to opt for the optimal contract (a contract between publisher and advertiser that minimizes the costs as much as possible for all that involved) or estimate the optimal reserve price that will benefit both advertisers and publishers.

Most of the publishers decided to take the plunge into monetizing the traffic of their websites by providing valuable and unique content as well as serving contextual advertisement to the Internet users in order to gain revenue. Hence, in order to gain revenue from advertising, publishers choose to go for Google Adsense ad tags and allow Google's engines and algorithms to figure out the rest on how to match the related advertisement with the contents of the website. By having this mechanism, the publishers can take care of doing what they do best (e.g. content management of the website). However, there are also some publishers (smaller publishers specifically) that prefer manual transmission rather than automatic because it lends a publisher far more control and power even though it requires a lot of works.

In the other context of contextual advertising, the publishers and ad exchanges will share the revenue. As a publisher, they have to ensure that the contents of the websites are beneficial, accepted and "profitable keywords" so that the keywords that found by the contextual advertising system can be matched with the keywords that the advertisers have bid. It can be concluded that; the more relevant ad displays on the websites, the higher the chances of the users will click on the advertisement and the more revenue that can be earned by the publishers.

2.4.1   Revenue Maximization

In contextual advertising, publishers will share the revenue with ad ad exchange; how and when an ad is delivered and displayed in the publisher's website in not within the publishers' control. This is because there is an engine or algorithm that will automatically plug the ads in the website based on the selected keywords by advertisers to display their ads in the publishers' websites. The contents of the websites play a major role in determining the relevance ads to be displayed within a website. However, there is one of the most natural questions about how the publishers can gain the revenue from the website: How should online publishers generate the highest expected payoff from the advertisement that is displayed in the publishers' webpage?

The focus here is on maximizing the revenue for the publishers; apparently publishers will have more control over advertisers due to the advertising requests that they receive from the advertiser. According to Roels and Fridgeirsdottir (2009) and Feige et al. (2008); their model allows publishers to dynamically optimization select which advertising requests are awarded advertising contracts. The equation below shows the model that has been explained by Roels, Fridgeirsdottir and Feige et al:

$$(n_i, \; \mathcal{W}_i, \; r_i, \; \pi_i)$$

Where:

n_i = Number of impressions requested;

W = Set of websites/viewers/time of delivery;

r_i = Cost-per-thousand (CPM) impressions;

π_i = Goodwill penalty in case the requested number of impressions cannot be fulfilled.

Source: Internet Advertising: An Interplay among Advertisers, Online Publishers, Ad Exchanges and Web Users

Based on Roels and Fridgeirsdottir (2009), they argue that unlike broadcast networks, one of the benefits as online publishers they are able to observe and monitor the traffic to their websites. Hence, it can dynamically arrange a strategy to deliver the impressions to the Internet users. In addition, by using this approach of dynamic programming formulation to gain more revenue they balance the immediate at time t against the potential upcoming profits. This approach is practical to decide whether to approve the advertising requests at time t when there are existing contracts that are still valid, when the difference between the numbers of requested impressions the number of delivered impressions up until time t is positive (Yuan, et al. 2012).

CHAPTER 3

METHODOLOGY

This chapter will be discussing further details on the methodology that will be involved to develop the project. Hence, this chapter will explain more on:

- Project Development Phases

- Project Activities

- Project Gantt Chart

- Tools for Project Development

3.1   Project Development Phases

A website that matches with user queries and related advertisement will be developed upon presenting the theory of contextual advertising in order to match with the website contents. Therefore, Rapid Application Development (RAD) methodology will be implemented throughout this project.

By definition, Rapid Application Development (RAD) is a type of software development methodology that required minimal planning and it will focus more on the rapid prototyping. In RAD model the functional modules are developed in parallel as prototypes and are integrated to make the complete product for faster product delivery (tutorialspoint.com, n.d). Since minimal planning is required in this type of methodology, it will make the project easier to adapt with any changes during the

development process. The most important part for this model is to ensure the development of prototype is successful and reusable.

Figure 7: Traditional Methodology vs. Rapid Application Development Methodology

One of the main reasons this methodology has been chosen because RAD is focusing on small projects that can be launched in a short time and it can be concluded with tangible deliveries. Besides that, the time allocated to complete this project is less than 9 months which is very short to come out with more sophisticated systems. The progress of the project also can be progressed since it only involves four phases which are analysis and quick design, prototype cycles (build, demonstrate, refine), testing and implementation. Hence, by implementing Rapid Application Development (RAD) in this project it will enable rapid delivery as it will shrink the development time due to the time constraint, reusability of project prototype and shortage of people to work on the project.

3.2 Project Activities

Rapid Application Development (RAD) consists of four major phases which are Analysis and Quick Design, Prototype Cycles (build, demonstrate and refine), Testing and Implementation. All of these phases need to ensure that it will meet the milestones that have been set and planned for the smooth project progress. The tasks involved are shown as in the table below:

Phase	Project Activities
Analysis and Quick Design	i. Prepare literature review and study the subject matters in depth (Online Advertising, Contextual Advertising, Issues of Contextual Advertising, etc) ii. Prepare Gantt Chart for task measurement and progress of the project. iii. Prepare questionnaires for data gathering purpose and distribute to at least 40 respondents. iv. Develop and plan ads matching system flowchart. v. Design user interface and construct contents for a website.
Prototyping Cycles	*Build* i. Develop a prototype for user interface and website contents. ii. Build advertisement invetories using *Bannersnack* that allow publishers to serve and display ads on the website. iii. Develop ads matching systems to match

	the related ads with website contents.
	Demonstrate
	i. Conduct a test to demonstrate the functionality of the prototype.
	ii. Make sure each of the function in the prototype is working fine.
	iii. Publish website and contextual advertising on web server.
	Refine
	i. Apply changes to the prototype if needed for further improvement and enhancement of the project.
	ii. Revert the prototype cycles until the system meet satisfaction and objectives of the project.

Table 1: Project Activities

3.3   Project Gantt Chart

Major tasks that involves in developing this project will be tabulated in a Gantt Chart. Gantt Char allows the project to keep on track and providing visual timeline for starting and finishing the task.

Final Year Project I															
No	Tasks	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1.	Selection of project title	▨	▨												
2.	Project proposal submission			*											
3.	Approval of project title				*										
4.	Research class				▨	▨	▨	▨	▨	▨					
5.	Submission of extended proposal						*								
6.	Project work continues							▨	▨	▨	▨	▨	▨		
7.	Proposal defense									*					
8.	Preparation of interim report										▨	▨	▨		
9.	Submission of interim report													*	

- *Indicate milestone for each of the activities*

Table 2: Project Gantt Chart

No	Tasks	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1.	Defining research problem	X	X												
2.	Literature review and research on the subject matters		X	X	X	X	X	X	X	X					
3.	Data gathering: Prepare questionnaire and distribute the questionnaires						X	X							
4.	Data analysis: Qualitative and quantitative								X						
5.	Develop ads matching system flowchart									X	X				
6.	Design user interface, system and architecture										X	X	X	X	X

Table 3: Project Gantt Chart (FYP1)

No	Tasks	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1.	Prototyping the user interface and website contents	X	X	X	X	X									
2.	Create ads database framework using ads maker software (bannersnack)						X	X							
3.	Write codes and develop ads matching system to match ads and website contents								X	X	X	X			
4.	Run a test to show the workability of prototype												X	X	
5.	System delivery														X

Table 4: Project Gantt Chart (FYP 2)

3.4   Tools for Project Development

Tools that going to be used for this project are:

1. *Wix*

   Wix is a web development platform that enables the users to build and develop HTML5 websites using simple cloud-based creation and management tools. In this project, this tool is used to create a website that easily to customize and can be used almost for anything.

2. Adobe Photoshop

   Adobe Photoshop is a graphic-editing software that developed and published by Adobe Systems. In this project, this software will be used to design the content and advertisement that will be displayed in the web pages.

3. BannerSnack

BannerSnack is a banner maker software that allows publisher to create interactive flash banner ads and other types of ads very quickly. Besides that, bannersnack also enable the publisher to monitor every ads that has been displayed in the publisher's website through the number of view/click by the Internet users.

CHAPTER 4

RESULTS AND DISCUSSION

This chapter it will be a crucial part of the whole progress report where the results of the survey questionnaire will be discussed and justified further details. All results that have been collected during online survey are tabulated and analyzed in this section.

4.1 Survey Analysis

The author has conducted a survey questionnaire mainly aimed to identify the perception of Internet users' on Internet advertising as well as contextual advertising. The survey was conducted online using Kwiksurvey.com and 42 responses of Malaysian Internet users' responded on the survey. The results of the surveys will be analyzed and deduce further details to come out with further conclusions and for the development of the project on the perspective of Malaysian Internet users' towards online advertising that advertised on the websites.

In the survey questionnaire, there are 22 close-ended questions being asked in the survey. The questionnaire divided into two sections:

  I.   _Section 1: Demographic Data_

In the first section of the questionnaire, the author has collected the demographic data of the 41 respondents with the intention to get the specific demographic information of the respondents. Collecting demographic data in this context is very important because online advertising depends heavily on demography where the advertisers need to know specific information about the potential customers who will be clicked on the

advertisement so that the advertisers can reach the maximum number of their targeted customers.

Seven questions about demographic data of the respondents being asked. The list of questions and analysis has been tabulated as followed:

Results and Analysis of Demographic Data

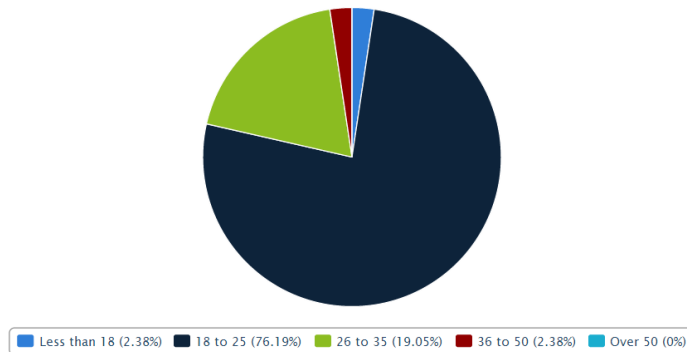1. **Which category below includes your age?**

Figure 8: Respondents group of age

Analysis:

Question 1 is referring to respondents' age group. Most of the respondents are from group of age 18 to 25 years old which consist of total 76.19% of the population. The remaining are from 26 to 35 (19.05%). Group of age that belong to less than 18 years old and 36 to 50 are the group that least responds on the questionnaire. It can be concluded that people from group age 18 to 25 is the major Internet users.
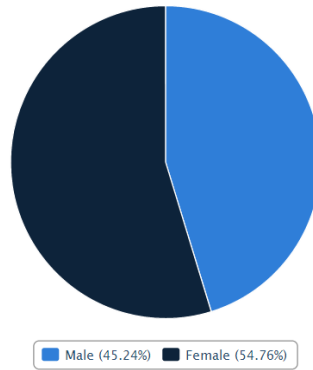
2. What is your gender?

Figure 9: Respondents age gender

Analysis:

Question 2 is referring to respondents' gender. From the questionnaire, 54.76% of the respondents are female and the remaining 45.24% are male. Therefore, most of the respondents that respond the questionnaire are female.
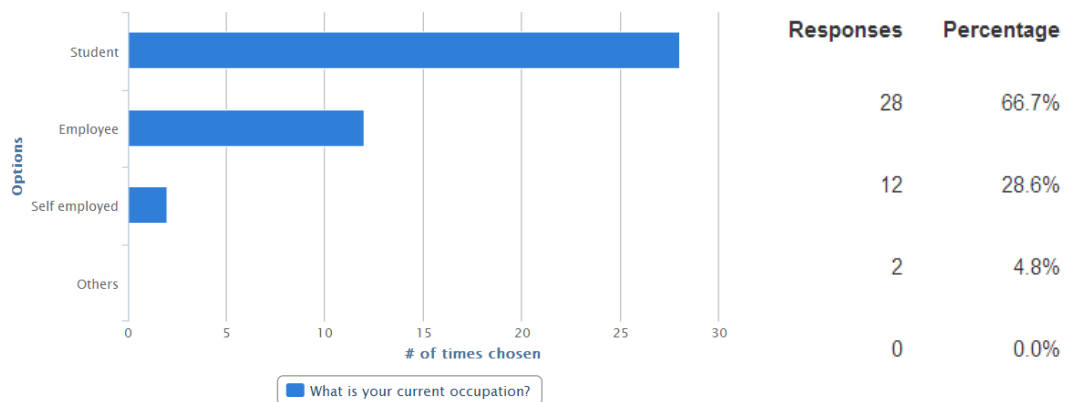
3. What is your current occupation?

Figure 10: Respondents current occupation

Analysis:

Question 3 is referring to respondents' current occupation. Majority of the respondents are students (66.7%) followed with employee with 28.6%. The remaining are self employed which are 4.8%. Hence, it can be deduced that most of the respondents are students.

4. What is your highest education level?

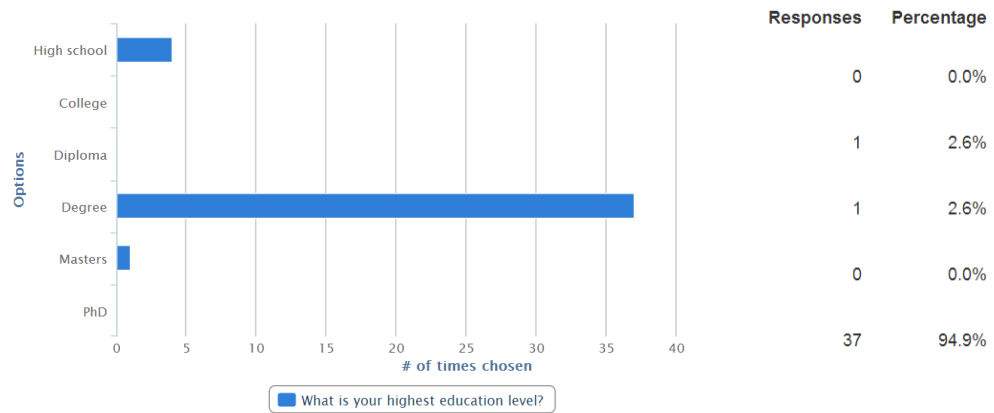|	Responses	Percentage
High school	0	0.0%
College	1	2.6%
Diploma	1	2.6%
Degree	0	0.0%
Masters	37	94.9%

Figure 11: Respondents highest education level

Analysis:

Question 3 is referring to respondents' highest education level. 88.1% of the respondents hold a Degree followed with 9.5% respondents hold high school certificate and the remaining 2.4% respondent with Masters. It can be concluded that majority of the Internet users hold a Degree.

5. How often do you browse the Internet?

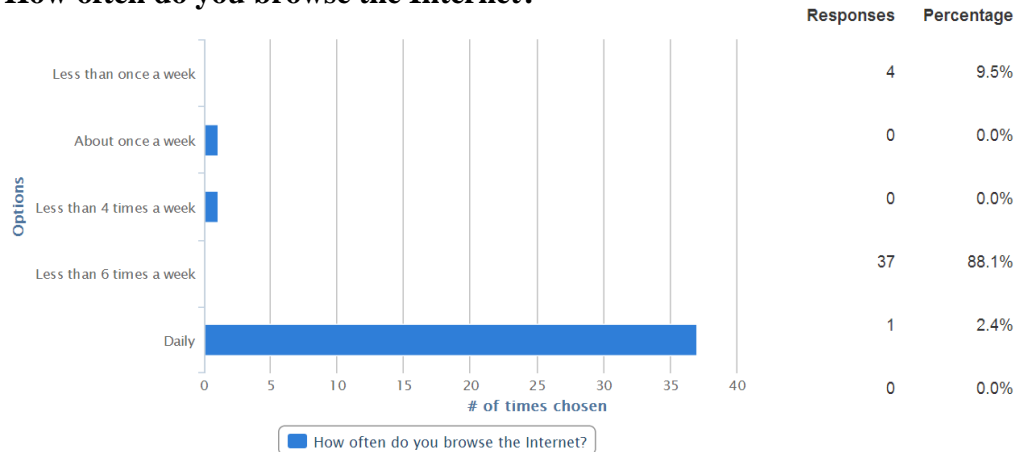|	Responses	Percentage
Less than once a week	4	9.5%
About once a week	0	0.0%
Less than 4 times a week	0	0.0%
Less than 6 times a week	37	88.1%
Daily	1	2.4%
	0	0.0%

Figure 12: How often respondents browse the Internet

Analysis:

Question 5 is about how often the respondents browse the Internet. 94.9% of the respondents claimed that they browse the Internet everyday. While 2.6% of the respondents said that about once a week and less than four (4) times a week they

browse the Internet. Hence, this reflects that most of the respondents using the Internet regularly in their daily life.

6. How many hours do you spend on browsing the Internet?

Less than 1 hour (5.13%)   Less than 3 hours (28.21%)   More than 4 hours (66.67%)
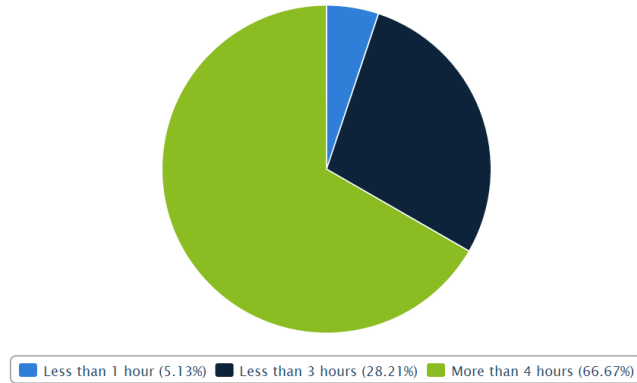
Figure 13: Duration the respondents spend on browsing the Internet

Analysis:

Question 6 is about the duration that the respondents spend on browsing the Internet. 66.67% of the respondents claimed they spend on browsing the Internet more than four (4) hours in a day. 28.21% claimed that less than 3 hours in a day they browsing the Internet and the remaining 5.13% spend on Internet less than one (1) hour. Therefore, it can be deduced that majority of the Internet users spends more than 4 hours of their daily life on the Internet.

7. Which search engine do you prefer the most?

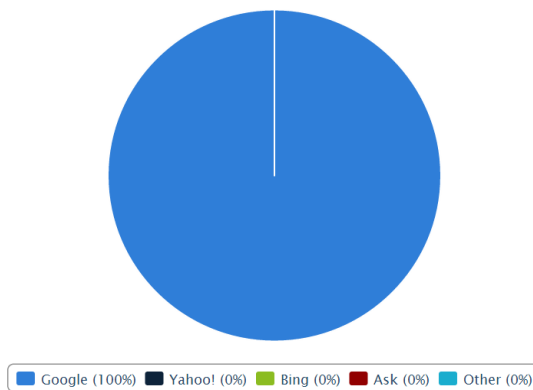Google (100%)   Yahoo! (0%)   Bing (0%)   Ask (0%)   Other (0%)

Figure 14: Preferred search engine by the respondents

Analysis:

Question 7 is asking the most prefer search engine by the respondents. 100% of the questionnaire respondents voted for Google as their favourite search engine. Hence, it can be concluded that most of the Internet users use Google as their most prefer search engine.

II. *Section 2: About Internet Advertising and Contextual Advertising*

In the second section of the questionnaire, the author collected the information with respect to the Internet users' perspective towards internet advertising and contextual advertising. This section will be a crucial part in the questionnaire to acknowledge the awareness and effectiveness of the Internet users on online advertising as well as contextual advertising. The questions and analysis are as followed:

8. **Are you aware of online advertising?**
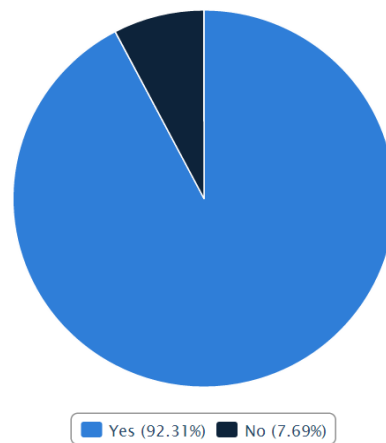

Yes (92.31%) No (7.69%)

Figure 15: Respondents awareness of online advertising

Analysis:

Question 8 is about the awareness of the respondents towards online advertising. Majority of the respondents (92.31%) respond to Yes and the remaining 7.69% of the respondents never heard of online advertising. Therefore, it can be concluded that most of the Internet users already exposed and heard to online

advertising. However, there are still minority group of the respondents that never being exposed of online advertising.

9. Have you ever clicked on online ads while browsing the Internet?
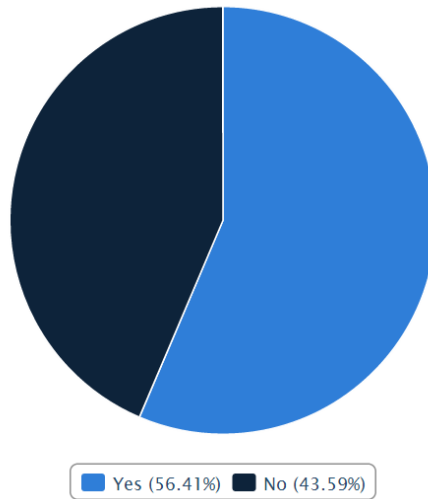

Yes (56.41%) ■ No (43.59%)

Figure 16: Respondents feedback respondents either they have ever clicked on online ads while browsing the Internet

Analysis:

Question 9 is asking the respondents either they have ever clicked on online ads while browsing the Internet. 56.14% of the respondents said Yes and the remaining 43.6% said No. Therefore, most of the respondents claimed that they have clicked on the online advertisement which means more than half of the respondents are familiar with online ads and show their interest by clicking on the ads or accidentally clicked it.

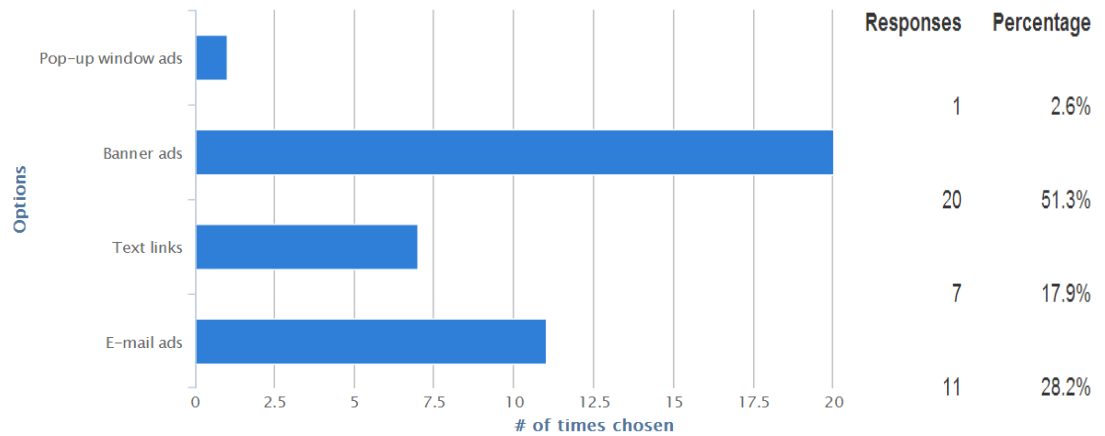**10. Which type of online advertisement do you prefer the most?**

Figure 17: Respondents most favorable type of online ads

Analysis:

Question 10 is about asking the respondents the most prefer type of online advertisement that the respondents chose. Majority of the Internet users voted for banner ads (51.3%), followed with E-mail ads and text link which are 28.2% and 17.9% respectively. Pop-up window ads are the least favorable type of online advertisement that Internet users voted for. As a result, banner ads is the most favorable type of online advertisement and there is probability because the banner ads is placed near the top of the web page and Internet users easily to be seen.

11. Based on your answer in question 10, which advertising characteristics was the most important feature(s) leading you to potentially click (You may tick more than one)?
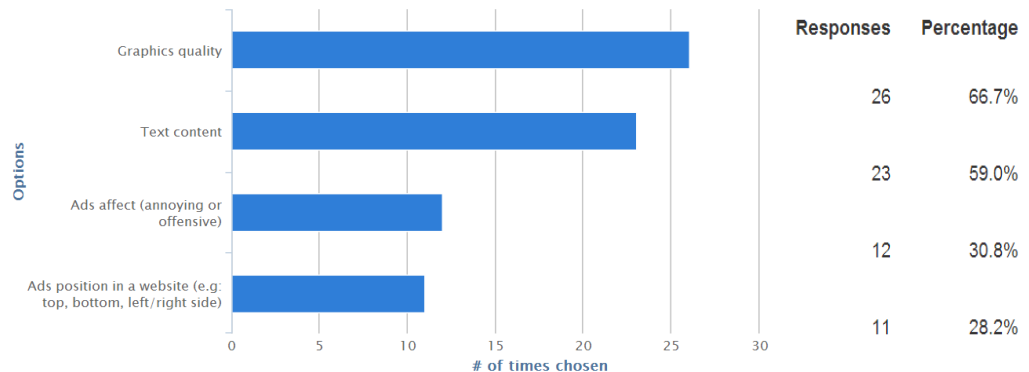

Figure 18: The most important feature(s) lead Internet users to click on the ads
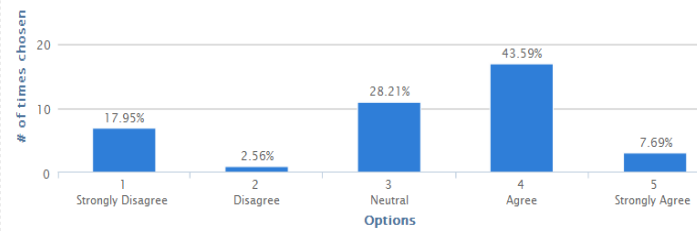
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Question 11 is referring to the advertising characteristics that the respondents looking at and lead them to potentially click on the advertisement. Based on the questionnaire, the Internet users preferred graphic quality (66.7%) as the most important feature that leading them to click on the advertisement. While 59% claimed that text content and 30.8% voted for ads affect that lead them to click the online ads. Ads position in a website (28.2%) is the least characteristics that the Internet users looking at. Hence, it can be deduced that graphics quality is the most important features of online advertising that lead them to click on the ads.

Questions 12 below are divided into 11 sub-questions that asked the respondents on their level of agreeableness and effectiveness on the following statements with respect to Internet advertising. The questions and analysis are as followed:

No	Result and Analysis
12.1	**When you see online ads, you find them annoying or irritating?** Analysis: Based on the questionnaire, 48.72% of the respondents agree with the statement that they find online ads are annoying and irritating. 25.64% strongly agree with the statement, 17.95% claimed the statement is neutral and 2% disagree with the stated statement. Hence, it can be deduced that majority of the Internet users in Malaysia found that the online ads are annoying and irritating. However, there are still small number of groups that still show some interest on online ads and denied the statement (online ads are annoying or irritating)

12.2	**You click-on online ads to seek additional information about the advertised product/service**
	Analysis:
	Majority of the respondents stated that they are agree (43.59%) with the statement above. 28.21% said they are neutral with the statement and 17.95% strongly disagree with the statement. The remaining 7.69% and 2.56% belongs to those who strongly agree and disagree with the statement respectively. Hence, it can be deduced that most of the Internet users clicked on the online ads to seek for more information about the advertised product or service.
12.3	**You click-on online ads to purchase the advertised product/service**
	Analysis:
	Based on the statistics, 28.21% of the respondents disagree and 23.08% strongly disagree with the statement. 28.21% of the respondents are on the neutral par on the other hand, 17.95% agreed and 2.56% strongly agreed with the statement. Hence, it can be said that majority of the Internet users are disagree and feel neutral to purchase the product/service that advertised on Internet probability because the users lack of confident and cannot put trust on online advertising.
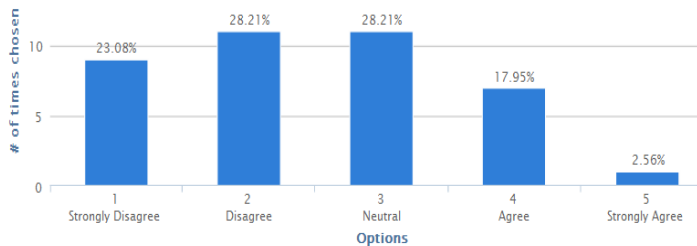
12.4	**You click-on online ads because you find it interactive** Analysis: The statistics show that 33.33% of the respondents agreed, followed with 28.21% neutral with the statement.17.95% are strongly disagreed and the remaining 15.38% and 5.13% belongs to those who disagreed and strongly agreed with the statement above. Therefore, it can be concluded that the Internet users click on the online ads because it is interactive and managed to attract users to click on it.
12.5	**You usually do not pay attention on online ads** Analysis: 33.33% of the respondents strongly agreed with the statement that they do not pay attention on online ads. 30.77% agreed with the statement, 28.21% voted for neutral. The remaining 7.69% disagree with the statement. It can be concluded that majority of the Internet users do not pay attention on online advertising.
12.6	**Do you think online ads interfere with your work while browsing the Internet?**
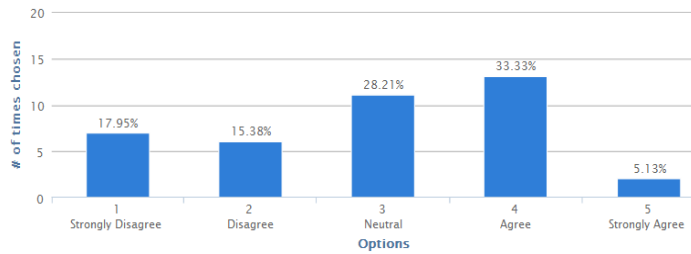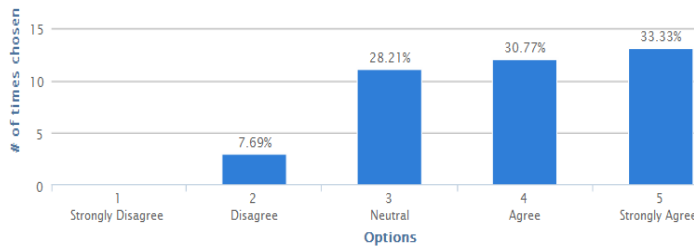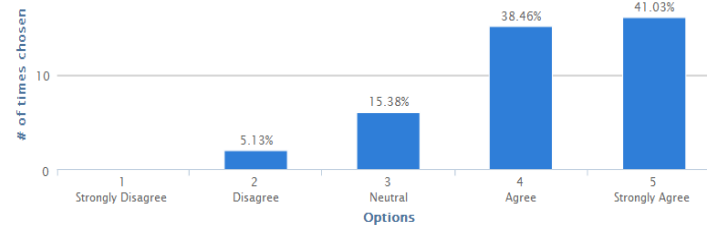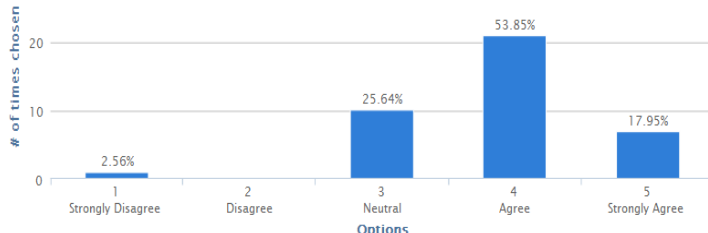
Analysis:

The graph above shows that 41.01% of the respondents strongly agreed that online ads always interfere while browsing the Internet and 38.46% agreed with the stated statement. 15.38% on the neutral side while the remaining 5.13% disagreed with the statement. Thus, it can be concluded that majority of the Internet users think that online ads interfere their work while they are browsing the Internet.

12.7	**The internet will become an information rich platform when businesses and advertisers use effective advertising characteristics and methods**
	Analysis:
	Based on the statistics, 53.85% of the Internet users agreed with the statement above. 25.64% on the neutral side, 17.95% strongly disagreed and only minority of respondents who strongly disagreed (2.56%) with the statement. Therefore, it can be said that most of the Internet users believed that the Internet will become an information rich and effective platform when businesses and advertisers use the right method to advertise the product or service to the right targeted customers.
12.8	**Online ads will assist you to make decision when the ads match with your queries**

Analysis:

The statistics shows that most of the respondents on the neutral side which is 43.59% with respect to the statement above. 23.08% of the respondents are agreed with the statement while 17.95% strongly agreed that the online ads assist them to make decision when the advertisements match with their queries. Besides that, 10.26% disagreed with the statement and the remaining 5.13% strongly disagreed with the statement. Therefore, most Internet users prefer to click on the Internet ads that match with their queries to help them to make further decision.

| 12.9 | **When you see a product (service) that you would to purchase (subscribe to) appearing on online ads, you will purchase (subscribe to) the product (service) immediately, even if you have no plan to purchase (subscribe to) it in the first place.** |
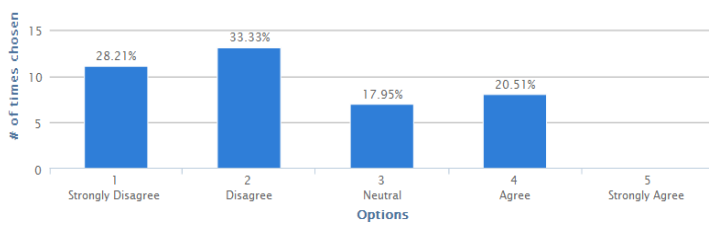
Analysis:

Based on the graph above, the respondents disagreed (33.33%) with the statement and 28.21% strongly disagreed with the statement. 20.51% of the respondents agreed and 17.95% on the neutral par. Hence, it can be concluded that majority of the Internet users in Malaysia will not purchase/subscribe the product/service immediately even though the product/service that they want to purchase/subscribe appear on online ads.

| 12.10 | **You prefer online ads rather than traditional advertisements (e.g:** |

newspaper, television, billboard)

Analysis:

The statistics shows that most of the respondents on the neutral side which is 38.46% with respect to the statement above. 23.08% of the respondents are agreed with the statement while 20.51% disagreed with the stated statement. On the other hand, 12.82% strongly disagreed with the statement and the remaining 5.13% strongly agreed with the statement. Hence, it can be concluded that the Internet users in Malaysia still prefer the traditional advertisement rather than online advertisement.

12.11	**In general, online advertisements are helpful in seeking additional information**

Analysis:

The statistics shows that, 33.33% of the respondents are agreed and on the neutral side of the statement above. 20.51% of the respondents are strongly agreed and on the other hand, 7.69% strongly disagreed and 5.13% disagreed with the stated statement. Therefore, majority of the Internet users are feeling neutral about online advertisements are helpful in seeking additional information. However, the respondents do not rejecting the statement completely, but they are not accepting it as a whole.
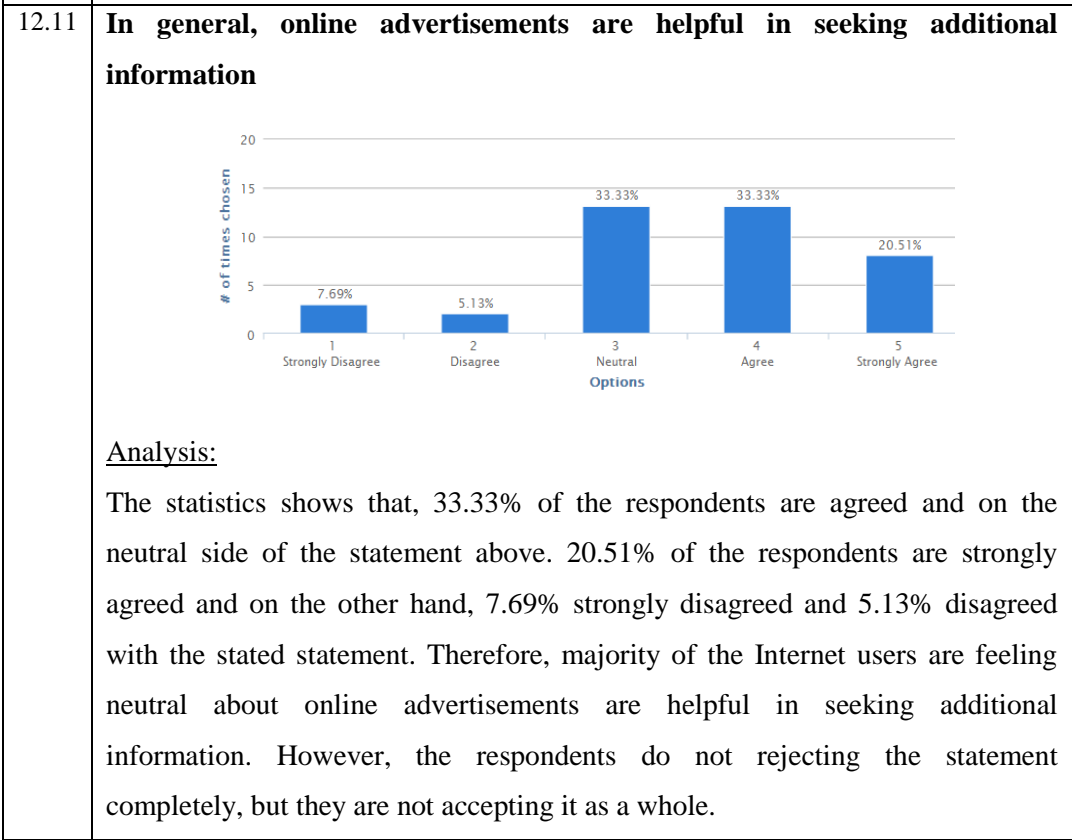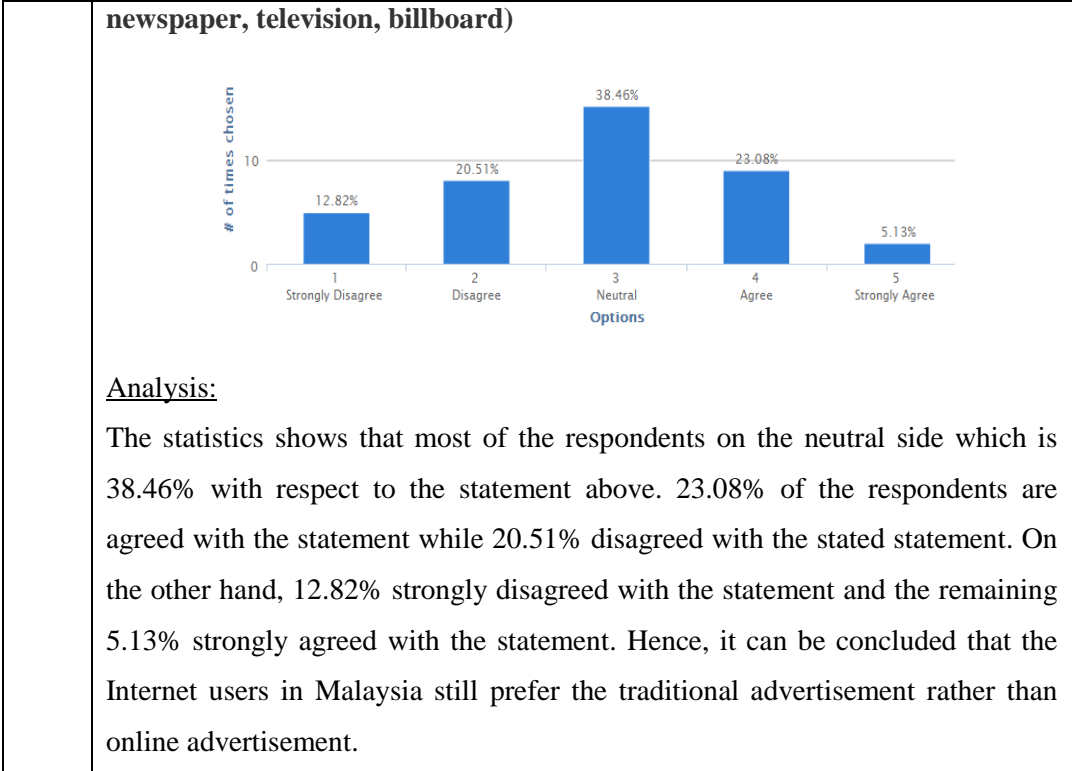
Table 5: Survey Results and Analysis

4.2   System Prototype Design

Based on the questionnaires that have been conducted to 42 respondents in Malaysia, the author proposed to have an ads matching system and getting the best match between the display advertisements and the content of the websites; in which the website will be managed mainly by the publishers.

The website namely "Corners of Malaysia" will act as a publisher that provides the information needed by the Internet user to learn and discover about Malaysia. Furthermore, the online publisher needs to keep updating the website with the latest information in order to generate more traffic of the website at one time and also the possibility that the Internet users will likely click on the display advertisement to seek for more information. The higher the traffic of the website, the higher the possibility of the Internet users to likely click on the display advertisement that related with the website contents and the user queries. Therefore, the more the revenues that gain by the publishers from online advertisement based on cost-per-click (CPC).

Besides that, there will be an agent in between that act as a platform to serve the publisher and advertiser to manage the placement and position of the ads and to get more targeted customers that will likely click on the ads. Therefore, in order to perform this project *bannersnack* will be used as an ad serving management. *Bannersnack* is an online advertisement maker that allows the publisher to monitor every advertisement that has been displayed in the publisher's website through the number of view/click by the Internet users. However, the process involved requires lot of works in putting the advertisements on the site in order to ensure the advertisement is situated on the right place and right position. Even though it takes a lot of time but it has high degree of customization.

Thus in this project, the author integrated Bannersnack and Google Adsense with the website. The website of Corners of Malaysia is developed by using wix and its fully customized template. The website is created in order to demonstrate and stimulate the ads-matching varieties.

Below are a few screenshots of the website built by the author:

    i.   The interface of Corners of Malaysia

Contextual Ads

Figure 19: Home Interface: Corners of Malaysia Website

Figure 20: Things Not to Miss Interface: Corners of Malaysia Website

The owner of this website will then act as publisher. The advertisements that paid by the advertisers will be displayed on the website (Corners of Malaysia) and it will mainly related to the website contents, satisfying the relevancy of the displayed ads. The publisher has to link the right ads to be displayed on the website with the website contents and effectively determine which ads will appear where.
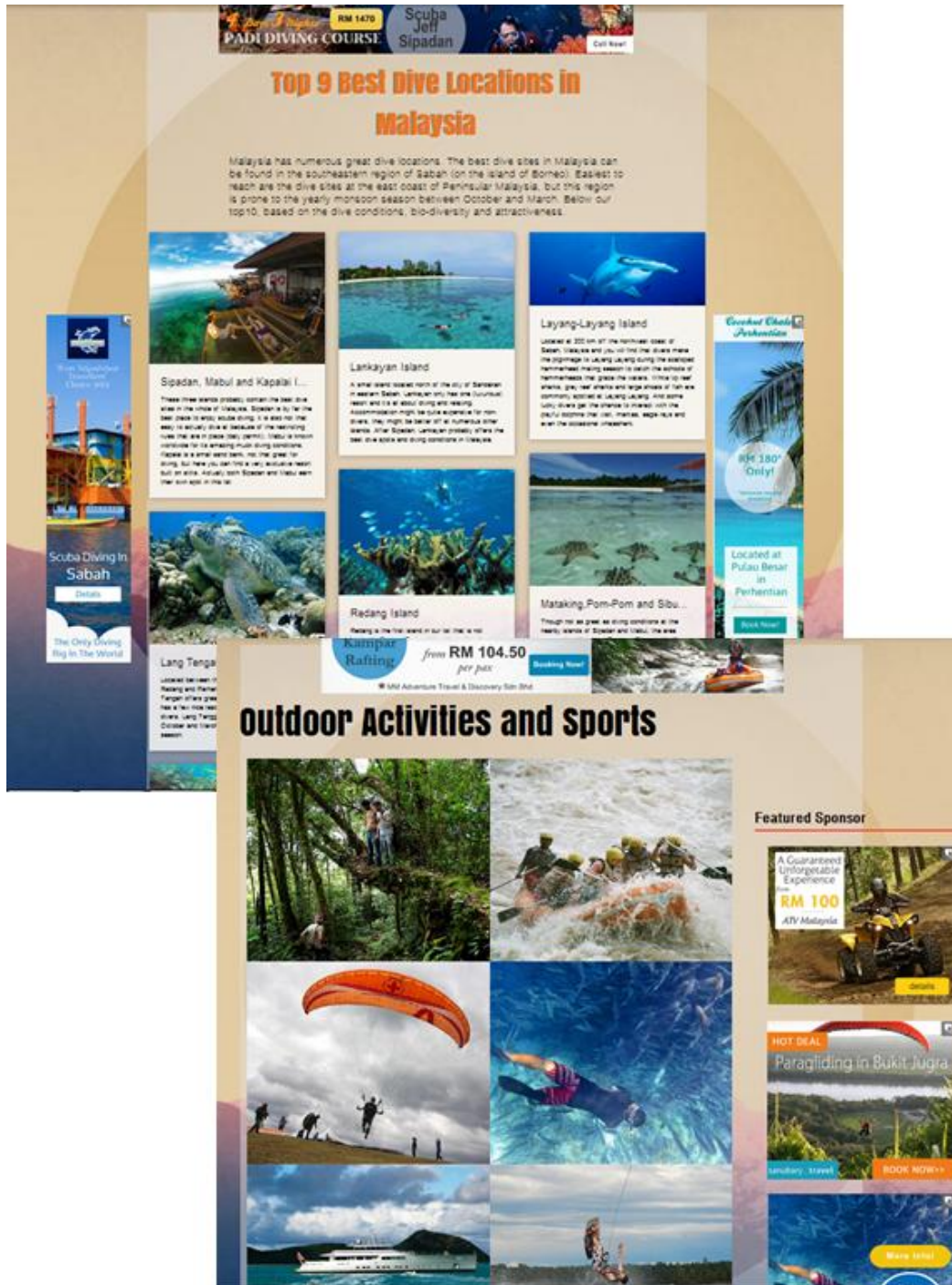
Figure 21: Diving & Outdoor Activities and Sports Interface: Corners of Malaysia Website

The next section of this topic will be discussed further details on how does the author use *bannersnack* to create the advertisement and the placement of the ads on the webpage of the Corners of Malaysia.

3.2.1   Advertisements Inventories

The author created advertisement inventories in the *Bannersnack* ads management. *Bannersnack* allows the publisher to manage the ads inventory and third-party advertisers to be displayed on the publisher's website. In this project, the author simulated the manual way of setting up the ads placement in each page of the website. This approach requires lot of works however the publisher and the advertiser can reach the targeting customers and there is high possibility that the visitor of the website will likely to click on the advertisement displayed since it is relevant with the website contents. Figure below shows the ads inventories in the *bannersnack* that has been created by the publisher.
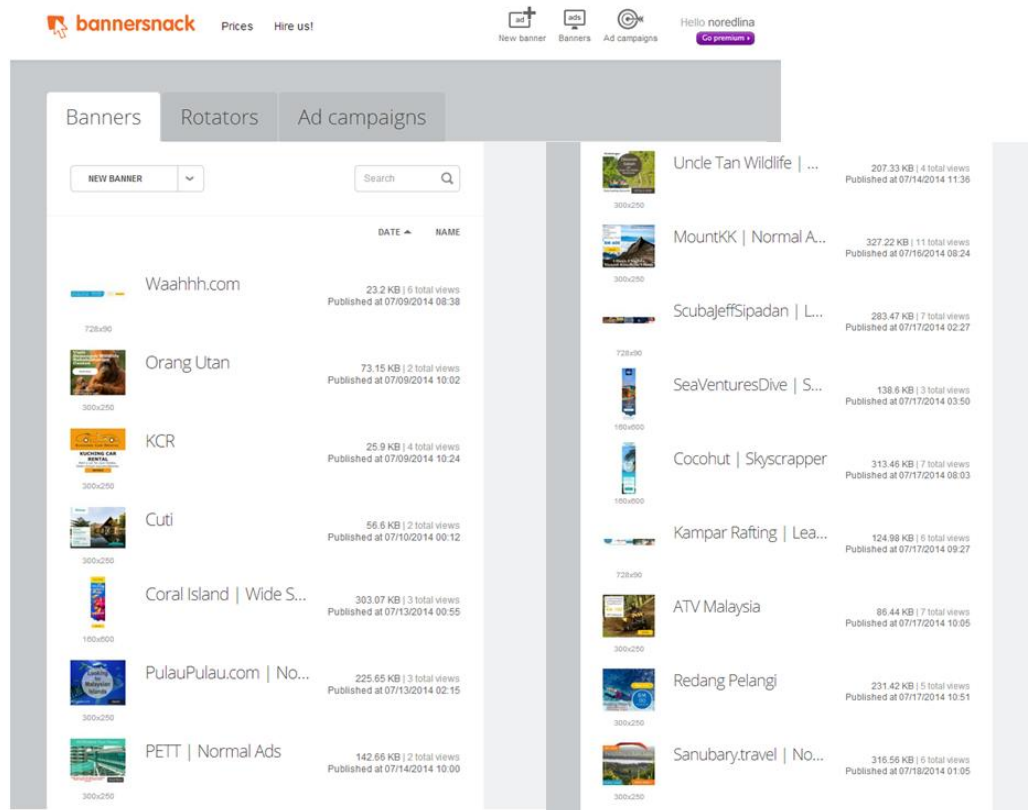
Figure 22: Advertisements Inventories in Bannersnack

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3.2.2 Advertisements Campaigns

Advertisement campaign is a series collection of ads that share a single idea, properties and themes which make up an integrated marketing communication (IMC). The publisher of the website will create a campaign within the Ad Campaigns tab on the *Bannersnack* account. In this context, price of the ads and ad size will be set by the publisher then sends a link over to the advertiser for the campaign. Once the advertiser (the organization or business) decided on how the ads will look like, destination or landed link in the Corners of Malaysia, agrees to the terms and conditions including approval of the price; the publisher needs to confirm the link and ad creative. Figure below shows the ads campaign in the *bannersnack* that has been created by the publisher.

Figure 23: Creating Campaign in Bannersnack
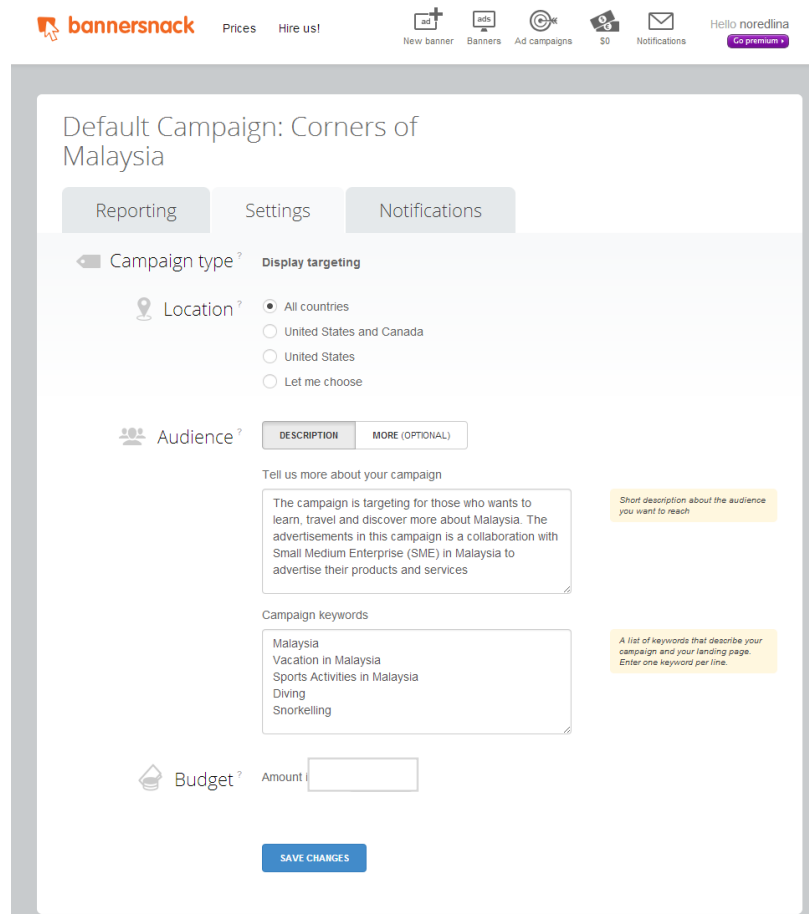
After campaign is created, it will be linked to the ads spaces that have been reserved by the publishers on the webpage. Every page in the website of Corners of Malaysia, there will be a zone (or multiple of zones) in which it will automatically display the ads that are in the campaign and have the exact size of the ads as requested by the advertiser. The next section will be explained more on the ads zone and how the ads are linking on the right zone.

3.2.3   Linking the Ads On The Right Zones

In Corners of Malaysia, there are more than one zones or spaces of ads that the publisher reserves in every page to display the advertisements. According to business term, zone is a pool of multiple advertisements that will display, serve, rotate and randomize ads.

 In order to set up zone(s) on website, it depends on the publisher on how they want to arrange the zone and it is flexible. The publisher has to integrate the *Bannersnack* ads management with the website in order to perform, manage and display the advertisements. Furthermore, in order to setting the zone(s) in the page of the website; the publisher will need to have serving code for every ads zone on the website. This zone's serving code will be displayed the ads within their own zone.

The publisher can organize the zones on the website either by ad sizes or by ad position. Figure 24 shows the example of the ad size that has been used to advertise the ads in Corners of Malaysia.
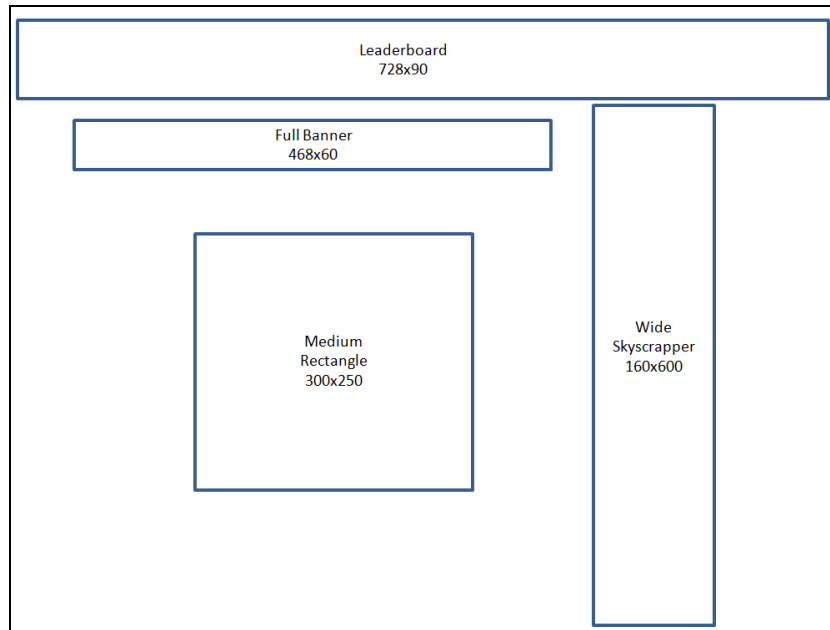
Figure 24: Selected Standard Size of Banner Ads

Additionally, ad position can be determined by looking at the performance of the ads. This means that some ads are more profitable, get more clicks and earn higher click through ratio. It is fact that some advertisements can perform better than the other advertisements. By having this element, publisher can choose to display the ads that perform better on the top or display it more often. Hence, this can maximize the Return on Investment (ROI) for the better ads and revised or improved the ads that are less performed.

Bannersnack ads management allows the publisher to monitor and adjusts the ads priority. Therefore, publisher can optimize the ads much better based on the higher clicks and most visited advertisements by the Internet users. Equation below shows the relationship between the website of the traffic, number of ads click by users and the revenues gain by the publisher.

Figure 25: The Statistics Shown for the Display Ads

Figure 25 shows the statistics for the *Wahhh.Com* advertisement where the ads gained the highest click among the other ads. The good performing ads get higher ad priorities (located as the ads leaderboard) on the website and the opposite situation happens to the poor performing ads.

In this example, the publisher has 2 ads; A and B on click optimization. Both ads are started out at the same priority. After a week, it has been monitored that ad A has 15 clicks while ad B only has 10 clicks. It means that the Internet users respond to ad A better than ad B. Therefore, priority will be given for ad A to be displayed on the top of the webpage and it will display more frequently than ad B.

CHAPTER 5

CONCLUSION AND RECOMMENDATION

As a conclusion, this research paper is focusing on to successfully match the contents of the websites with the related advertisement through the theory of contextual advertising. Besides that, the purpose of having this paper also to ensure there is a valuable connection between the websites and the contextual advertisement that could benefits the Internet users and also to maximize the revenues of the publishers from online advertisement through cost-per-click (CPC).

Internet advertising has a big potential to continuously expand in the advertising industry to assist the businesses to reach their target customers in promoting their products or services. In addition, contextual advertisement approach that match to the website contents will make the Internet as beneficial platform for the users to gain information hence the ads are more likely to be clicked on by the users.

Recommendations for future work that needs to be done are the ads will be delivered and displayed to the Internet users will become more targeted where it can maximized the satisfaction and will become more helpful. In order to have that feature in contextual advertising; it can be done through providing a system that have a good algorithm of predicting the user behavior based on their browsing history and able to select keywords that matches with search queries accurately. Therefore, publishers will be able to understand its audience much better and also able to place the ads on the right position on the website.

Besides that, it is suggested that as online publishers they need to improve the contents of the websites in order to generate more traffic and maximize the ROI. One of the mechanisms that could be employed by the publishers is by implementing fractional factorial design. It can be used to test which features of the website are attractive and most beneficial to users and it also can be used by the advertisers to improve the quality of ads that will be displayed on the webpage. Thus, this approach makes good utility of remain impressions and can boost income for publisher and advertiser occasionally.

In addition, this research paper also shows that the theory of contextual advertising from the publisher's perspective is directly applicable in practice. By having this kind of platform, the organization specifically for small medium enterprise could employed to advertise their ideas, products and services at a lower cost and it will contribute to bringing forward the future of online advertising.

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APPENDICES

Appendix A: Survey Questionnaires

Contextual Advertising – Your Opinion Counts!

In this survey, approximately 50 people will be asked to complete a survey that asks questions about Online Advertising. It will take less than 10 minutes to complete the questionnaire.
Your participation in this study is completely voluntary. There are no foreseeable risks associated with this project. However, if you feel uncomfortable answering any questions, you can withdraw from the survey at any point. It is very important for us to learn your opinions.

The questionnaires below are focusing on Internet Advertising. Please take a moment to read the instructions and kindly complete the survey below. You are required answer all the questions in order to submit your answers. Questions with '*' sign must be answered.

1. **What age group that you belong to?***

   o less than 18

   o 18 to 25

   o 26 to 35

   o 36 to 50

   o over 50

2. **What is your gender?***

   o Male

   o Female

3. **What is your current occupation?***

   o Student

   o Employee

   o Self employed

   o Others

4. What is your highest education level?*

- o High school
- o College
- o Diploma
- o Degree
- o Masters
- o PhD

5. How often do you browse the Internet?*

- o Less than once a week
- o About once a week
- o Less than 4 times a week
- o Less than 6 times a week
- o Daily

6. How many hours do you spend on browsing the Internet?*

- o Less than 1 hour
- o Less than 3 hours
- o More than 4 hours

7. Which search engine you prefer the most?*

- o Google
- o Yahoo!
- o Bing
- o Ask
- o Other: [   ]

8. Are you aware of online advertisement?*

- o Yes
- o No

9. **Have you ever clicked on online ads while browsing the Internet?***

    o Yes

    o No

10. **Which type of online advertisement do you prefer the most?***

    o Pop-up window ads

    o Banner ads

    o Text links

    o E-mail ads

11. **Based on your answer in question 10, which advertising characteristics was the most important feature(s) leading you to potentially click (You may tick more than one)?***

    o Graphics quality

    o Text content

    o Ads affect (annoying or offensive)

    o Ads position in a website (e.g. top, bottom, left/right side)

12. **Please rate the following items that best describe your general perception about internet advertising.***

    1 – Strongly Disagree   2 – Disagree   3 – Neutral

    4 – Agree   5 – Strongly Agree

	1	2	3	4	5
When you see online ads, you find them annoying or irritating					
You click-on online ads to purchase the advertised product/service					
You click-on online ads to seek additional information about the					

	1	2	3	4	5
advertised product/service					
You click-on online ads because you find it interactive					
You usually do not pay attention on online ads					
Do you think online ads interfere with your work while browsing the Internet?					
The internet will become an information rich platform when businesses and advertisers use effective advertising characteristics and methods					
Online ads will assist you to make decision when the ads match with your queries					
When you see a product (service) that you would to purchase (subscribe to) appearing on online ads, you will purchase (subscribe to) the product (service) immediately, even if you have no plan to purchase (subscribe to) it in the first place.					
You prefer online ads rather than traditional advertisements (newspaper, television, billboard)					
In general, online advertisements are helpful in seeking additional information					

The Mechanism for Online Publishers to Monetize a Website and Manage the Contextual Advertising

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Abstract- The evolution of technology and internet (World Wide Web) has brought about many predictions of their possibilities to transform the businesses, education, economy, and social at bigger perspective. With the advent of the internet and ad server in early 1990s, internet has become one of the marketing channels that have been used for advertising purpose. Based on the article stated in Digital Advertising Broke $100 Billion in 2012 it mentioned that "In 2012, web advertising approximately grew about 55.8% in the Middle East and Africa and 38.4% in Eastern Europe while 21.5% and 13.9% for North America and Western Europe". The latter shows that the users and the advertisers increasingly shift their attention on web applications that as well give the benefits to the publishers to maximize more revenue.

This project going to discuss further details the mechanism for publishers to monetize their website and to match the related advertisements with the website contents. Providing these kinds of advertising (contextual) will give a challenge to the publishers to display the advertisement that possibly will be clicked on by the users.

Two main objectives will be addressed in these research papers are; to study the best approach for the publishers to maximize the revenues by displaying related advertisement with website and to develop a website prototype that shows important connection between the function of publishers to maintain and manage the website contents and Contextual Ads.

Hence, the scope of the study will be discussing on the major player in online advertisement which is publisher; to learn, discover and analyze the theory and concept of online advertisement and contextual advertising from publisher's perspective.

I. INTRODUCTION

A. Background Study

Marketing mix is a combination of price, product, place, and promotion; it is a business tools that widely used in marketing area by marketers to serve the needs and desires of the product's customers while generating optimum income. One of the marketing mix under promotion that has been used broadly in a business is advertising. Advertising has been used to persuade, influence or control the viewers to take additional action where drive the customers behavior with respect to marketable offering as well as increase businesses' sales and revenues. Literally there are lots of medium that can be used for advertising purpose. For example, billboards, printed flyers, television and radio advertisement, and online advertisement. In addition, advertising allows company to sell their ideas, products and services that are differentiated by the brand identity.

The existence of internet allows the organizations to advertise their products and services to the whole world at a lower cost rather than using traditional advertising and it has bring a new phenomenon in the advertising industry. Internet becomes a medium of communication that brings the greatest impact and important achievement of humandkind and managed to change both civilization and communication (Gates. C.F., 1995, Hahn & Stout, 1994, and Otte, 1994).

Nowadays, internet advertising has embarked with excellent evolution. According to eMarketer CEO and co-founder Geoff Ramsey; they stated that the growth of online advertising has been robust and it already represents the second-biggest advertising after television. Besides that, it is forecasted that printed advertising (newspaper and magazine) will lose 9.3% of market share in 2015.

1

These days, online advertising is a large and has grown rapidly in the market and online advertising become a significant role in today's internet ecosystem. Worldwide spending on internet advertising was total $65.2 billion in 2008, or nearly 10% of all advertisement spending across all media, and will grow 15- 20% a year to reach $106.6 billion in 2011, or 13.6% of total ad spending, according to Digital Marketplace Model and Forecast (Pak. A & Chin-Wan Chung, 2010).

Most of the online advertising consists of textual advertising where it takes mainly; contextual advertising and sponsored search. Contextual advertising is a textual advertising where advertisement is placed in the website contents while sponsored search is a placement of paid links as a response to the users' queries that displays the "best match" and relevant advertisement. Therefore with the context of this research paper that focusing on publisher's perspective, the publishers have to know the mechanisms to display the related advertisement that are linked with users' interest and with this approach it will help the online publishers to maximize their revenues from online advertising. Figure 1 below shows the ecosystem and major players involves in the internet advertising.
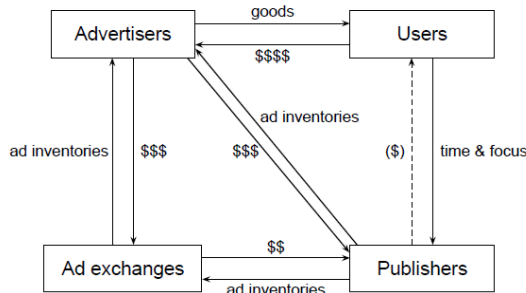
Source: Internet Advertising: An Interplay among Advertisers, Online Publishers, Ad Exchanges and Web Users

Figure 1: The basic system of Internet advertising. Advertisers spend budget to buy ad inventories from ad exchanges and publishers; ad exchanges serve as matchers for ads and inventories; publishers provide valuable information to satisfy and keep visitors; users read ads and purchase goods from the advertisers. Note that normally users would not receive cash from publishers.

One of the publisher's goals is to maximize the revenue by displaying the advertising in the sponsored search. However, this objective is symbiotic with advertisers' need to attain better business results through advertising. There are many approaches for the publishers to gain more revenues from online advertisement. For instances CPI (cost-per-impression) where the advertiser pays the display advertisement on a website; CPA (cost-per-action) an advertiser pays to the publisher based on each users that was brought by the advertisement and last but not least is CPC (cost-per-click) where the advertiser need to pay whenever the users click-on the advertisement which reflects the interest of users.

B. Problem Statements

The problem statements of this study would be as follow:

- Display relevant advertisement that match with website contents; publishers need to find the best approach to display the best match between the advertisement and content of the websites. An example of irrelevant display advertisement could be display ads related to "Diving in Malaysia" on website about "Boutique in Malaysia".
- Maximizing advertising revenues for online publishers through online advertisement; where the publishers have to increase the possibilities that the users going to click on the advertisement when the users visit the website.
- Establish a platform for small businesses to advertise their ideas, product and services; where publishers need to effectively and successfully display the advertisement in the website with an optimum advertising costs and at the same time generating as much revenue as possible.

C. Objectives & Scope of Study:

The objectives of this project are:

- To study the best approach for the publishers to maximize the revenues by displaying related advertisement with website contents through independent web publishing.
- To develop a website prototype that shows important connection between the function of publishers to maintain and manage the website contents and Contextual Ads.

The scope of study for this project:

- Theory and concept of online advertisement and contextual advertising from publisher's perspective.

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- Explore the best approach to increase advertising revenues for online publishers.
- Study the major player in online advertisement which is publisher.

I. LITERATURE REVIEW

A. Current Trends in Online Advertising

Online advertising is one of the marketing processes that use internet to promote the ideas, products and services to the consumers. Example of online advertising are search engine marketing, email marketing, and mobile advertising. Literally, online advertising will involve four major players which are publishers, advertisers, ad exchange and users.

Today, online advertising expenditures are rapidly increase and growing throughout the year and the total spend of online advertising in the worldwide reached $503 billion at the end of 2013. Based on the total spend of online advertising recorded in 2013, it shows that there are still much potential for the industry to grow in the coming year and the advertisers have lot of opportunity to be grabbed to reach more audience hence, increase the awareness of the customers towards the products and services that has been advertised on the internet. It shows that advertising that use internet or online approach to deliver and promote the business message is more attracting and could keep the new and existing customers.

Since its inception, the Internet has been a testing ground for different marketing approaches to online advertising (Shankar. V. & Hollinger. M. 2007). The advancement and innovation of internet has drive online advertising from text advertisement to interactive advertisement. Recently, Google declared that the company earns revenues on advertisement more than newspapers and magazines starting from year 2012 onwards. According to David (2013) he stated that almost all of Google's expected $60 billion in revenue will come from advertising this year. This news proves that traditional advertisement (printed advertisement) suffered declining in advertising revenue.

Online advertising spending continued to grow throughout the year and predicted to continue into the foreseeable future. However, the percentage change of online advertising decreases over the year as the online advertising industry becomes more matured and many businesses start to use online advertising as part of the promotional campaign. Hence, advertising industry has changed the dynamics of the business world from traditional advertising methods to online advertising due to the evolution of technology. According to Haque (2007), the developments of computer mediated communication technology, brings up the chances for the businesses to get direct feedback from the customers and website visitors with the ability to customize individual messages. It is believed that in the future online advertising will start to dominate the advertisement industry since online advertisement is in the edge of facing "explosive growth".
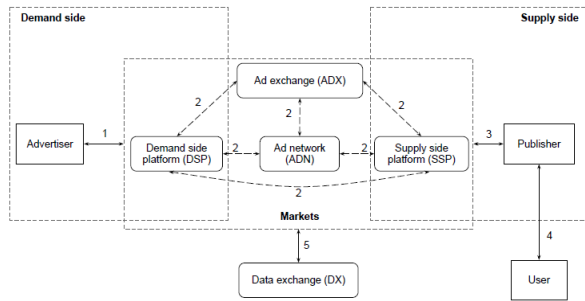
B. Theory of Contextual Advertising

Contextual Advertising is one of the types of online advertising that will be adapted and implemented in this research paper which mainly focuses to "best match" the user queries with the relevant advertisement hence to increase advertising revenues for online publishers. According to Merle. (n.d); contextual advertising is the text of a web page that scanned for "keywords" or a theme, then ads will be shown related to the website content. In this context of advertising, the owner of the web page (web publisher) need to match the website contents with the related advertisement to be displayed in order to increase the users' satisfaction. For instance, if the users search for "Top Islands in Malaysia", the website must be able to display advertisement related with that particular island (such as hotels, resorts and holiday package ads). The advertisement normally will be displayed in the right hand side or the website or at the top and bottom of the website.

In the internet advertising, there are four major players involved: ad exchange, advertiser, publisher and user. Based on the internet advertising ecosystem, ad inventories are operated with the force of demand and supply from the advertisers. In this context, advertiser will demand his advertisement will be displayed in the ads inventories. Therefore, advertisers can achieve and matches their goals in the advertisement through find the available ad inventory in the market. Ad exchange will provide advertising service that allows the advertisers to display and promote their products and services to the targeted group of internet users. An ad exchange also manages contract negotiation between advertisers and content publishers that wish to sell ad spaces (Yuan et al, 2012). Advertisers and ad exchange will bid the keywords for the ads to be displayed and listed in a search result page (e.g: Google, Yahoo Search) or in the publisher's website at the auctioned price.

Website publishers provide a platform to the advertiser to advertise the products and services to their targeted customers. Literally, they can maximize the revenues through online advertisement by displaying the advertisement and enhancing the website contents. Google AdSense was the first website publisher who implements contextual advertising program. It works by

providing webmasters with JavaScript code that, when inserted into web pages, displays relevant advertisements from the Google inventory of advertisers (Wikipedia.org, 2014). Mediabot is a tool that has been used by Google to calculate the relevance of the advertisement to be displayed on the webpage. Today, Google has more complex systems that they use to support contextual advertising which is "language-independent proximity pattern-matching algorithm" with a goal to increase the accuracy of matching. With the invention of AdSense, AOL Sponsored Listings, Microsoft adCenter and Yahoo! Publisher Network started to make an action to offer similar services just like Google. However, it will be a challenge for the website publishers to select the optimal contract or estimate the optimal price to be offered to the advertisers (Yuan, et al. 2012).

In the context of contextual advertising, advertisers is the player who needs advertising space to position its marketing messages and also they provides the information of advertisement to attract targeted customer to click on the advertisement. Advertisers have to ensure that the ads are "narrowly focused" so that the ads can be reached to the target market and not for those who does not use the product or services. Besides that, for each of the advertisement, its position and the total number of ads on the page have a significant influence on its click-through rate (CTR) (Joachims et al, 2005).

Source: Internet Advertising: An Interplay among Advertisers, Online Publishers, Ad Exchanges and Web Users

Figure 2: "Various players of Internet advertising and the trading process: 1) The advertiser builds campaigns in markets 2) The markets can trade campaigns and impressions to balance the demand and supply for better efficiency 3) The publisher registers impressions with the markets 4) The user issues queries or visits websites 5) The markets can query data exchanges for user profiles in real-time bidding."

In the rapid expansion of the online advertising industry and increasing revenue, more numbers of companies are engaging with the business by offering new tools and platforms which makes them different,

exclusive and valuable to the rest of traditional players of online advertisement. Based on the figure 5 above, there are two major platforms that involved in the online advertisement which are Demand Side Platforms (DSP) and Supply Side Platforms (SSP). DSD will focus on advertisers' site where it will provide the advertisers or advertisement agencies by bidding for their campaigns in multiple ad networks automatically and allows the advertisers to display and promote their products and services to the targeted group of internet users. While SSP will serve the publishers by registering their ad inventories in multiple ad networks and publishers will receive the most beneficial ads automatically. In addition, Ad Exchange (ADX) will integrate all the ad networks together in one place. Publishers will request ads with a given context to serve users, the ADX contacts candidate Ad Networks (ADN) in real-time for a wider selection of relevant ads (Yuan, et al. 2012).

In this research paper, contextual advertising will display the advertisement based on geography, language and other preferences of the visitors of the websites. Hence, with the existence of contextual advertising, the publishers manage to maximize the utilization of advertising opportunities and also revenues.
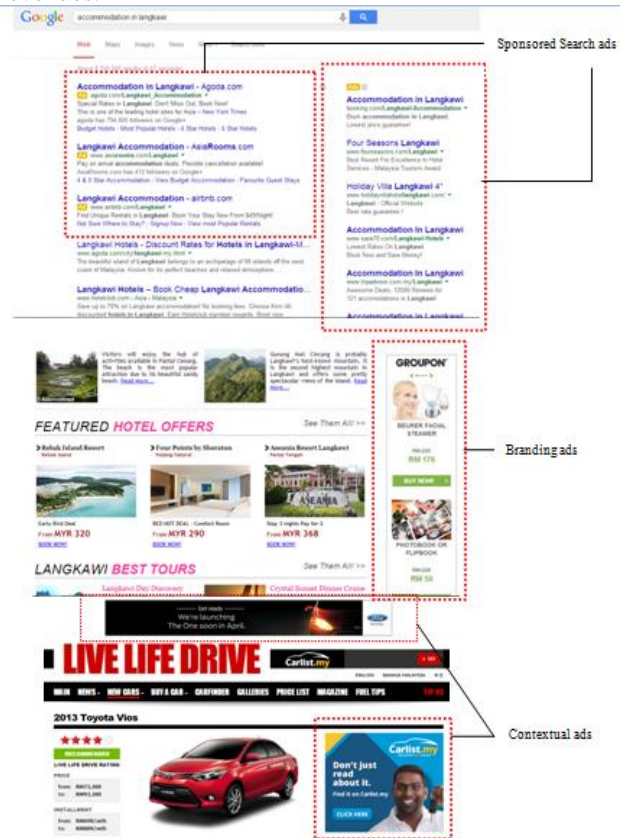
Figure 4: Example of Internet advertisement that can be seen on the Internet.

C. Issues of Contextual Advertising

Users will browse the website and they will perform searches using search engine and view the result in the website contents; the task of the website publisher is to display one or more advertisement on such pages. Madani. O and DeCoste. D (2005) found that the contextual advertising problem consists of making such selection and placement decisions of the advertisement in order to maximize the expected return over some period of time, where expected return is a function of the likelihood of the ads being clicked – and possibly even a transaction or purchase taking place – and the prices of those clicked ads.

In contextual advertising, matching advertisement with user's queries is to a certain degree way forward. This is because advertisers need to choose the keywords that "narrowly focused" and portray their advertisement so that the targeted customers can be reached and there are possibility that the website users will click on the advertisement. Behind the architecture of contextual advertising, the matching process is set automatically by the website contents where it makes the task more complicated. Besides that, the major challenge of being website publisher is the concern on how each of the advertisement should be evaluate and how the systems select the best advertisement accurately, efficiently and effectively.

Furthermore, another major challenge in contextual advertising is the sparsity. There may be many ads available, whereas the number of interactions we may get from a single typical user, in a time period of interest, may be very small in comparison, furthermore click rates for arbitrary ads are relatively small as well (Madani. O. & DeCoste. D., 2005).

D. The Perspective of Publishers in Online Advertising

Majority of the online publishers reserve spaces in their website for branding ads or contextual advertising purposes. Ads inventories can be sold to the advertisers in the form of contracts or in real-time basis. The publisher will be responsible for delivering a total number of impressions based on what was agreed on the contract; in some condition when the publisher is unable to deliver all guaranteed impressions, a penalty will be applied (Yuan, et al. 2012). As a result, the online publishers might face the challenges either to opt for the optimal contract (a contract between publisher and advertiser that minimizes the costs as much as possible for all that involved) or estimate the optimal

reserve price that will benefit both advertisers and publishers.

Most of the publishers decided to take the plunge into monetizing the traffic of their websites by providing valuable and unique content as well as serving contextual advertisement to the Internet users in order to gain revenue. Hence, in order to gain revenue from advertising, publishers choose to go for Google Adsense ad tags and allow Google's engines and algorithms to figure out the rest on how to match the related advertisement with the contents of the website. By having this mechanism, the publishers can take care of doing what they do best (e.g. content management of the website). However, there are also some publishers (smaller publishers specifically) that prefer manual transmission rather than automatic because it lends a publisher far more control and power even though it requires a lot of works.

In the other context of contextual advertising, the publishers and ad exchanges will share the revenue. As a publisher they have to ensure that the contents of the websites are beneficial, accepted and "profitable keywords" so that the keywords that found by the contextual advertising system can be matched with the keywords that the advertisers have bid. It can be concluded that; the more relevant ad displays on the websites, the higher the chances of the users will click on the advertisement and the more revenue that can be earned by the publishers.

i. Revenue Maximization

In contextual advertising, publishers will share the revenue with ad ad exchange; how and when an ad is delivered and displayed in the publisher's website in not within the publishers' control. This is because there is an engine or algorithm that will automatically plug the ads in the website based on the selected keywords by advertisers to display their ads in the publishers' websites. The contents of the websites play a major role in determining the relevance ads to be displayed within a website. However, there is one of the most natural questions about how the publishers can gain the revenue from the website: How should online publishers generate the highest expected payoff from the advertisement that is displayed in the publishers' webpage?

The focus here is on maximizing the revenue for the publishers; apparently publishers will have more control over advertisers due to the advertising requests that they receive from the advertiser. According to Roels and Fridgeirsdottir (2009) and Feige et al. (2008); their model allows publishers to dynamically optimization select which advertising requests are awarded advertising contracts. The equation below

shows the model that has been explained by Roels, Fridgeirsdottir and Feige et al:

$$(n_i, \; \mathcal{W}_i, \; r_i, \; \pi_i)$$

Where:

n_i = Number of impressions requested;

W = Set of websites/viewers/time of delivery;

r_i = Cost-per-thousand (CPM) impressions;

π_i = Goodwill penalty in case the requested number of impressions cannot be fulfilled.

Source: Internet Advertising: An Interplay among Advertisers, Online Publishers, Ad Exchanges and Web Users

II. METHODOLOGY

Rapid Application Development (RAD) methodology will be implemented throughout this project. By definition, Rapid Application Development (RAD) is a type of software development methodology that required minimal planning and it will focus more on the rapid prototyping. In RAD model the functional modules are developed in parallel as prototypes and are integrated to make the complete product for faster product delivery (tutorialspoint.com, n.d). Since minimal planning is required in this type of methodology, it will make the project easier to adapt with any changes during the development process. The most important part for this model is to ensure the development of prototype is successful and reusable.
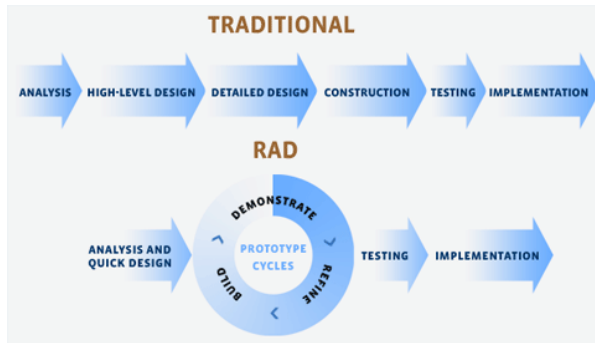

Figure 5: Traditional Methodology vs. Rapid Application Development Methodology

One of the main reasons this methodology has been chosen because RAD is focusing on small projects that can be launched in a short time and it can be concluded with tangible deliveries. Hence, by implementing Rapid Application Development (RAD) in this project it will enable rapid delivery as it will shrink the development time due to the time constraint, reusability of project prototype and shortage of people to work on the project. Tools that have been used for this project are:

i. *Wix*

Wix is a web development platform that enables the users to build and develop HTML5 websites using simple cloud-based creation and management tools. In this project, this tool is used to create a website that easily to customize and can be used almost for anything.

ii. *Adobe Photoshop*

Adobe Photoshop is a graphic editing software that developed and published by Adobe Systems. In this project, this software will be used to design the content and advertisement that will be displayed in the web pages.

iii. *Bannersnack*

BannerSnack is a banner maker software that allows publisher to create interactive flash banner ads and other types of ads very quickly. Besides that, bannersnack also enable the publisher to monitor every ads that has been displayed in the publisher's website through the number of view/click by the Internet users.

III. RESULTS AND DISCUSSIONS

A. *Survey Analysis*

The author has conducted a survey questionnaire mainly aimed to identify the perception of Internet users' on Internet advertising as well as contextual advertising. The survey was conducted online using Kwiksurvey.com and 42 responses of Malaysian Internet users' responded on the survey. The results of the surveys will be analyzed and deduce further details to come out with further conclusions and for the development of the project on the perspective of Malaysian Internet users' towards online advertising that advertised on the websites. In the survey questionnaire, there are 22 close-ended questions being asked in the survey. The questionnaire divided into two sections: 1) Demographic Data 2) About Internet Advertising and Contextual Advertising.

Based on the questionnaire, it can be concluded that more than 90% of respondents aware of online advertising and more than 50% of Internet users click on the online advertisement to seek for more information about the advertised product or service.

Question: You click-on online ads to seek additional information about the advertised product/service?
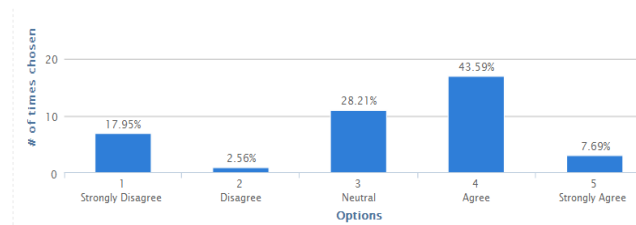

Figure 6: Survey Analysis

B. System Prototype Design

Based on the questionnaires that have been conducted to 42 respondents in Malaysia, the author proposed to have an ads matching system and getting the best match between the display advertisements and the content of the websites; in which the website will be managed mainly by the publishers.

The website namely "Corners of Malaysia" will act as a publisher that provides the information needed by the Internet user to learn and discover about Malaysia. Furthermore, the online publisher needs to keep updating the website with the latest information in order to generate more traffic of the website at one time and also the possibility that the Internet users will likely click on the display advertisement to seek for more information. The higher the traffic of the website, the higher the possibility of the Internet users to likely click on the display advertisement that related with the website contents and the user queries. Therefore, the more the revenues that gain by the publishers from online advertisement based on cost-per-click (CPC).

Besides that, there will be an agent in between that act as a platform to serve the publisher and advertiser to manage the placement and position of the ads and to get more targeted customers that will likely click on the ads. Therefore, in order to perform this project *bannersnack* will be used as an ad serving management. *Bannersnack* is an online advertisement maker that allows the publisher to monitor every advertisement that has been displayed in the publisher's website through the number of view/click by the Internet users. However, the process involved requires lot of works in putting the advertisements on the site in order to ensure the advertisement is situated on the right place and right position. Even though it takes a lot of time but it has high degree of customization.

Thus in this project, the author integrated Bannersnack with the website. The website of Corners of Malaysia is developed by using wix and its fully customized template. The website is created in order to demonstrate and stimulate the ads-matching varieties.

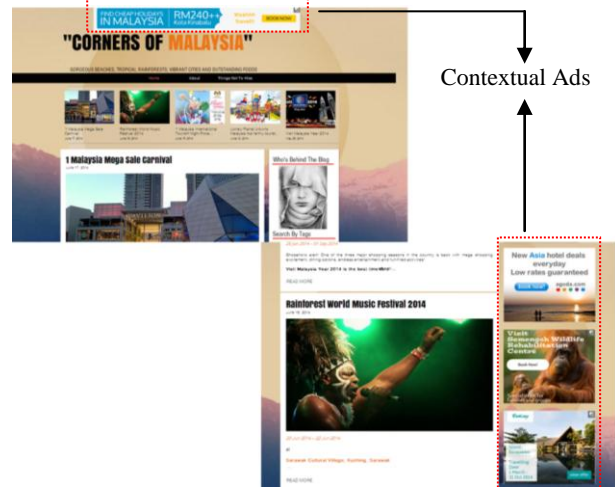Below are a few screenshots of the website built by the author:

Figure 7: Corners of Malaysia Interface

Figure 8: Prototype of the Website created

The author will need to create advertisement inventories in the Bannersnack ads management. Bannersnack allows the publisher to manage the ads inventory and third-party advertisers to be displayed on the publisher's website. In this project, the author simulated both automatic and manual way of setting up the ads placement in each page of the website. This approach requires lot of works however the publisher and the advertiser can reach the targeting customers and there is high possibility that the visitor of the website will likely to click on the advertisement displayed since it is relevant with the website contents. Below are a few of ads designed by the author:

Figure 9: Banner ads prototype

Next, advertisement campaigns will be created where it is a series collection of ads that share a single idea, properties and themes which make up an integrated marketing communication (IMC). The publisher of the website will create a campaign within the Ad Campaigns tab on the Bannersnack account. In this context, price of the ads and ad size will be set by the publisher then sends a link over to the advertiser for the campaign. Once the advertiser (the organization or business) decided on how the ads will look like, destination or landed link in the Corners of Malaysia, agrees to the terms and conditions including approval of the price; the publisher needs to confirm the link and ad creative. After campaign is created, it will be linked to the ads spaces that have been reserved by the publishers on the webpage. Every page in the website of Corners of Malaysia, there will be a zone (or multiple of zones) in which it will automatically display the ads that are in the campaign and have the exact size of the ads as requested by the advertiser.

Once ads inventories and ads campaigns are created, it is time to link the ads on the right zone. In Corners of Malaysia, there are more than one zones or spaces of ads that the publisher reserves in every page to display the advertisements. According to business term, zone is a pool of multiple advertisements that will display, serve, rotate and randomize ads.

In order to set up zone(s) on website, it depends on the publisher on how they want to arrange the zone and it is flexible. The publisher has to integrate the Bannersnack ads management with the website in order to perform, manage and display the advertisements. Furthermore, in order to setting the zone(s) in the page of the website; the publisher will need to have serving code for every ads zone on the website. This zone's serving code will be displayed the ads within their own zone.

Additionally, ad position can be determined by looking at the performance of the ads. This means that some ads are more profitable, get more clicks and earn higher click through ratio. It is fact that some advertisements can perform better than the other advertisements. By having this element, publisher can choose to display the ads that perform better on the top or display it more often. Hence, this can maximize the Return on Investment (ROI) for the better ads and revised or improved the ads that are less performed.

Bannersnack ads management allows the publisher to monitor and adjusts the ads priority. Therefore, publisher can optimize the ads much better based on the higher clicks and most visited advertisements by the Internet users. Equation below shows the relationship between the website of the traffic, number of ads click by users and the revenues gain by the publisher.

Hence, let W = Website traffic
A = Ads
CTR = Click Through Rate
Rev = Revenue (RM)

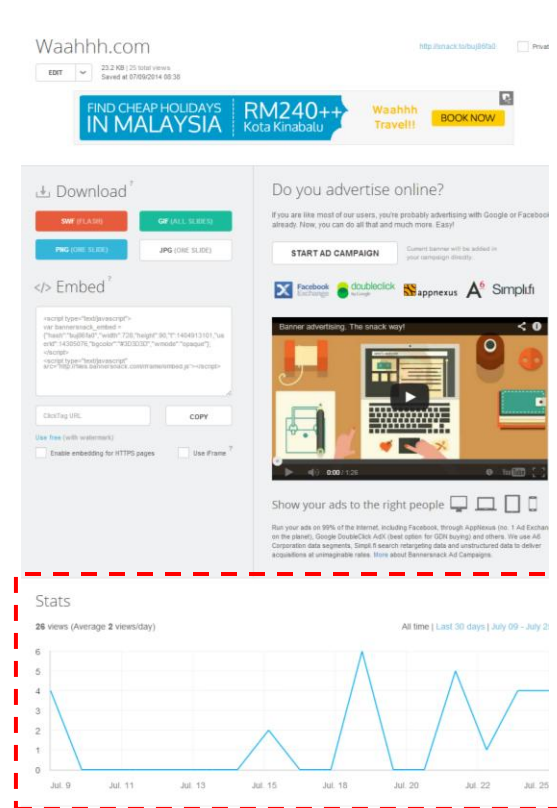Therefore; $\Delta W + \Delta A \longrightarrow \Delta CTR + \Delta R$

Figure 10: The Statistics Shown for the Display Ads

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Figure 10 shows the statistics for the Wahhh.Com advertisement where the ads gained the highest click among the other ads. The good performing ads get higher ad priorities (located as the ads leaderboard) on the website and the opposite situation happens to the poor performing ads.

In this example, the publisher has 2 ads; A and B on click optimization. Both ads are started out at the same priority. After a week, it has been monitored that ad A has 15 clicks while ad B only has 10 clicks. It means that the Internet users respond to ad A better than ad B. Therefore, priority will be given for ad A to be displayed on the top of the webpage and it will display more frequently than ad B.

IV. RECOMMENDATIONS

Recommendations for future work that needs to be done are the ads need to be delivered and displayed to the Internet users will become more targeted where it can maximized the satisfaction and will become more helpful. In order to have that feature in contextual advertising; it can be done through providing a system that have a good algorithm of predicting the user behavior based on their browsing history and able to select keywords that matches with search queries accurately. Therefore, publishers will be able to understand its audience much better and also able to place the ads on the right position on the website.

Besides that, it is suggested that as online publishers they need to improve the contents of the websites in order to generate more traffic and maximize the ROI. One of the mechanisms that could be employed by the publishers is by implementing fractional factorial design. It can be used to test which features of the website are attractive and most beneficial to users and it also can be used by the advertisers to improve the quality of ads that will be displayed on the webpage. Thus, this approach makes good utility of remain impressions and can boost income for publisher and advertiser occasionally.

V. CONCLUSION

As a conclusion, this research paper is focusing on to successfully match the contents of the websites with the related advertisement through the theory of contextual advertising. Besides that, the purpose of having this paper also to ensure there is a valuable connection between the websites and the contextual advertisement that could benefits the Internet users and also to maximize the revenues of the publishers from online advertisement through cost-per-click (CPC).

Internet advertising has a big potential to continuously expand in the advertising industry to assist the businesses to reach their target customers in promoting their products or services. In addition, contextual advertisement approach that match to the website contents and user queries will make the Internet as beneficial platform for the users to gain information hence the ads are more likely to be clicked on by the users.

In addition, this research paper also shows that the theory of contextual advertising from the publisher's perspective is directly applicable in practice. By having this kind of platform, the organization specifically for small medium enterprise could employed to advertise their ideas, products and services at a lower cost and it will contribute to bringing forward the future of online advertising.

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