A CASE STUDY ON THE APPLICATION OF SOCIAL MEDIA ANALYTICAL AND MANAGEMENT TOOLS

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Abstract- This paper details a review of social media management and analytical tools, and their subsequent application to a new small business venture. The research employed a case study approach applied to a modest takeaway business, which involved implementing strategic social media marketing, and promotion in seven popular social media sites. These included: Facebook, Twitter, Google+, Instagram, Pinterest, Foursquare and TripAdvisor. Moreover, the case study also involved monitoring the business's social media footprint where is was managed individually as well as with three SMM tools viz, Sendible, Hootsuite & Buffer. Recorded for analysis was the time consumed in each approach in an attempt to compare the time efficiency of each method. The produced social media analytics of the selected social media sites were studied in an attempt to determine the utility of each using some metrics, including most user viewed social media applications. Further, the social media analytics data was coupled with sales data of the business to explore their combined potential use for improving business performance. The results reveal that as expected SMM tools are more time efficient as compared to individual manual management of social media apps. Additionally, of the seven investigated social media tools: Facebook and Google+ had the highest recorded levels of engagement.

Index Terms- Data Analytics, Social Media Analytics, Social Media Management Tools.

I. INTRODUCTION

The domain of Information and Communication Technology applied to social media has evolved significantly in the past decade. In fact, it has been growing ominously at a breakneck speed over the last few years. After the wide spread adoption of Internet technologies in all aspects of life, the rise of social media use and application to diverse fields has seen phenomenal success. An example of its widespread impact is evident in a simple snap shot of a leading social media application. That is, as of March 2015, the active users of Facebook is close to a billion [1]. Given the growing use of social media by the public numerous social media services are spawning with increasing frequency. These include social networks that are catering to the niche markets and services such as image sharing (Instagram, Flickr), microblogging (Twitter), Social life sharing (Facebook, Google+, Myspace), Professional networking (LinkedIn), Video Sharing (YouTube), Location based awareness (Foursquare), and Travel review sites (TripAdvisor, Yelp). In Australia the most popular social media applications based on number of users include:
Facebook, Twitter, Google+, LinkedIn, YouTube, Foursquare Instagram, Pinterest and TripAdvisor etc.
Social media has provided enormous opportunity for companies to enhance their digital marketing efforts. Consequently, the majority of the big corporations are using Social media for engaging with customers, enhancing brand awareness and creating electronic WOM (Word of mouth). Large enterprises have created a specialist job market for staff that manage social media profiles for individuals, organizations, and large enterprises. However, to date small businesses are not fully able to leverage the power of social media. Much of this is similar to the problems faced with any new technology uptake and integration. That is, leveraging the full capabilities of social media is limited owing to the constraints such as lack of technical expertise, a substantial budget to pay for expertise, and/or time limitations to manage social media profiles.
The aim of our recent study detailed in this paper was to highlight and address the knowledge gap in use of social media for ICT marketing efforts for small businesses, More specifically, a case study approach was implemented involving a new small takeaway business with limited skilled technical aware staff, and a very rudimentary initial social media footprint. The first research question was to answer if SMM (social media management) tools are a more time efficient approach as compared to individual management of each social media applications. Furthermore, the research attempts to investigate which social networks are most useful and popular in terms of user views when used in for a small takeaway business. Finally, the third research question in an effort to discover what data are available through ICT social media analytics and how it can be potentially useful to improve a small regional takeaway.
Due to the nature of the research and focus of the technologies, being social media, the chosen methodological approach deemed most suitable was that of a case study approach. Additionally, the researchers were fortunate to have access to a small

takeaway business looking to implement strategic social media marketing and analyze the subsequent results. The business in question only had only a small presence in a few social media sites, and they were not being used as a strategic marketing tool and were effectively dormant in terms of user activity. As such it represented the perfect real world case to compliment the background research in this study.

The remainder of this paper details as best as possible in the limited space available the full research project, from start to finish, along with plans for future work. This includes the following sections: a summary of the extensive literature review and background work is provided in the next section; Section 3 provides in more detail the chosen research approach; section 4 is next which outlines the conceptual design of the experiment and case study; while section 5 provides the results, a conclusion of the research project, and the plans for future work in this space by the researchers driving this innovative study.

II. BACKGROUND AND RELATED WORKS

Social media has become one of the most popular marketing platforms for many businesses in today's corporate environment. Given the wide range of social media availability, the issue of effective maintenance and management of social media is paramount. Many Multinational and large corporations have a dedicated team for their social media marketing efforts, however it may not be as applicable for small business, due to budget concerns, expertise and number of staff, time constraints etc. Hence, social media management tools are also useful for SMEs (Small and Medium Enterprises). The aim of this section is to briefly review the evolution of social media, its various types, its potential uses, its underlying technologies, as well as examining a number of social media management tools.

A. Digital Marketing

Digital Marketing can be defined as the process of achieving the marketing objectives of a business and applying digital technologies to assist in achieving those objectives [2]. Basically, in practice Digital Marketing is used to maintain and enhance the different types of online presence of a company, such as website, social media pages with a combination of techniques such as e-mail marketing, social media marketing, search engine optimization, mobile marketing, and online advertising [2]. Digital marketing encompasses multichannel marketing by using different platforms such as desktop computers, tablets, mobile phones etc. and needs to work in integration with the traditional marketing channels of TV, print media, radio etc. to be effective [2].

Digital Marketing has now become one of the integral parts of marketing communication, the authors in [3] advocate that the use of it can enhance the chances of making the business successful. Studies have found that the use of digital marketing and social media marketing have a worthwhile impact on business performance. Moreover, studies assert that the digital natives (people born after 1980) extensively use digital technology as compared to digital immigrants (people born before 1980) [4]. Therefore, the need for digital marketing is ever-increasing. The use of digital technologies such as mobile marketing for marketing purposes is on the rise [5], with the intense proliferation of mobile devices in people's lives.

Subsequently, different types of media have evolved to support digital marketing namely Owned, Earned and Paid Media [2]. Owned media is the different types of media controlled by the business such as websites, blogs, e-mail list and social presence. Similarly, paid media is bought media from different sources, examples being ads displayed in other sites, a sponsorship, pay for click, lead or sales generated. Whereas, earned media is often user generated, partner generated such as bloggers, affiliate sites, including both online and offline [2].

B. Social Media

According to Kaplan and Haenlein "Social Media is a group of internet based applications that build on the ideological and technological foundations of web2.0, and that allows the creation and exchange of User Generated Content" [6]. Social media can be classified based on social presence/media richness and self-presentation/self-disclosure as Collaborative Projects (e.g. Wikipedia), Blogs, Content communities (e.g. Flickr, YouTube), Social Networking sites (e.g. Facebook, MySpace), Virtual Game Worlds(e.g., World of Warcraft) and Virtual social worlds (e. g. Second Life) [6]. User generated content is defined by OECD says it must be: first, published in publically accessible site or social networking site; second, it needs to show creative effort; third, must be created outside routine and professional effort [6]. Tuten & Solomon classified social media with the social media zones such as Social Commerce, Social community, social publishing and social entertainment [7]. Some of the popular social media are as follows.

Social media facilitates business growth, gives customers a voice, is mostly free and low cost, helps companies build a large fan base, increases a company's visibility and sales, places customs as co-owner of business, can be used as effective recruiting tools and enhances collaboration among employees [8]. Social bookmarking tools such as Digg, Delicious can be used to increase brand awareness of the business, similarly blogs could enhance the positive brand image [6].

C. Web Analytics

According to Beasley "Web analytics is a way of learning how users interact with websites and mobile apps by automatically recording aspects of users' behavior and then combining and transforming the behavior into data that can be analyzed" [9]. The three main metrics of web analytics are unique

visitors, visits/sessions and page views [10]. The basic measuring unit for the matrices are count, ratio and KPI. Web analytics works with two main technologies of log file and page tagging. Log file: It keeps the track of the web pages that load subsequently after the request for the web page is being made in a log file. The log file technology uses web server to track the activities while the web page is loaded, however if the web page is accessed from cache no tracking is done. Example of log files web analytics tools are AwStats and Sawmill. Although log file offers accurate and deep insight of the analytics, however it is very expensive and difficult to deploy and maintain. Therefore log file web analytics is not feasible for small businesses [9].

Page Tagging: Tracks how users go from one page to another and what they do on it. Page tagging is less accurate than log file, however it is cheap, easy to deploy and manage e.g. Google Analytics. In Page tagging a JavaScript code is embedded in the web page which is activated while the web page is loaded, the code is responsible for recording the tracking activities such as what page, when loaded, where the user come from (search engine or direct), IP address, technical details, user's browser, OS, Screen resolution etc. The tracking is recorded in cookie. Page tagging tracks the activities in two modes i.e. 1. Move from page to page 2. Activity on the page, Google analytics is an example of move from page to page. Page tagging has some disadvantages in that it is not 100% accurate. If JavaScript is disabled the browser then doesn't work, if a plug-in is used to block analytics then it also doesn't work [9].

Click Analytics are tools that record what users do on a page where they click, what key they press while moving mouse, it shows the aggregate of clicks of the user in particular session, for example – Tealeaf, CrazyEgg.

D. Social Media Analytics and Management Tools

The main objectives of Social Media Analytics is to create ICT tools and frameworks for collecting, monitoring, analyzing, summarizing and visualizing the social media data, directed by particular requirements for target application [11]. Social media analytics comprises of three stages namely Capture (capturing the data), Understand (understanding the data) and Present (presenting the data in meaningful way) [12]. The key technologies for social media analytics are text analysis, opinion mining, sentiment analysis, topic modelling, trend analysis, social media analysis and visual analytics [12]. Furthermore, social media analytics is useful to get enhanced competitive intelligence with gaining insight into consumers, suppliers, competitors and overall business trends [12]. Similarly, social media analytics can address the burning problems of marketers namely; tracking social media Return on Investment (ROI), identifying and engaging with the most influential users, formulating tactics for effective social media strategy [12]. Social media management tools support the coordinated use of and communication with several social media effectively [13]. Yadav states that social media management tool HootSuite offers point and click report creation and information collation to make the process even simpler [14]. A study on use of social media by NGO of UK found that, free social media management tools such as HootSuite, Socialmention.com, Twitalyzer were used in most of the NGOs rather than the paid ones [15]. There are free social management tools such as Buffer, TweetDeck as well as paid tools as Sprout Social, Sendible etc.

III. RESEARCH PROBLEM AND APPROACH

As mentioned in the literature review social media marketing has become an indispensable part of a business's ICT marketing efforts. Hence, multinational corporations have fully embraced social media marketing for their digital marketing efforts with dedicated teams [16]. Big corporations are already spending a considerable amount of their budget in use of Social Media Management which includes costs such as employees' salary, Social media marketing ads, and consultation with boutiques agencies having expertise in social media etc. [17]. However, small businesses are confronting difficulties to leverage the true potential of social media, due to constraints like lack of expertise, financials and time. Furthermore, given the large number of social networking site and constant new start-ups, it is a big issue to maintain and manage them effectively by a small business. Therefore, Social media management tools can be a solution for small business. According to [13] Social media management tools support the coordinated use of and communication with several social media effectively. Hence, this research would attempt to answer the question of whether the social media management tools are more time effective than individual social media application management when used for a small business. In addition, there are a large number of social media sites operating for niche markets and uses. As mentioned by Tuten & Solomon, Social media can be classified into four zones based on uses namely Social community (Facebook, Google+, Twitter), Social Commerce (TripAdvisor, Groupon etc.), Social Publishing (blogs, YouTube, Flickr etc.), Social Entertainment (Second Life, Zynga etc.) [7]. Given the vast number of social media applications available, it is an increasingly ongoing problem for a small business to decide which of the social media point of presence are useful for their online footprint. Therefore, the research aims to find out which of the social media applications are more effective for a small business. Part of the outcome is decided by the most user views received for the case study business. As discussed in the literature review social media analytics is useful to get enhanced competitive intelligence with gaining insight into consumers,

suppliers, competitors and overall business trends [12]. According to [12] social media analytics can address the burning problems of marketers namely; tracking social media Return on Investment (ROI), identifying and engaging with the most influential users, formulating tactics for effective social media strategy. Undeniably, social media can be a great tool for small businesses, given the nature of social media being free or requires significantly less investments. But, there are not enough research and know-how for small businesses to implement social media marketing effortlessly and enhance the business potential. Thus, the research would also try to discern what data are produced and available through ICT social media analytics that could potentially be used to improve business for a small regional takeaway. To answer these questions and address the identified issues the research would perform a case study with a small takeaway restaurant business. The business sin question had only had recently launched a small static social media footprint with no focus on a strategic online presence or use.

IV. CONCEPTUAL DESIGN

The research implements strategic social media marketing in the Case study business within popular social media platforms. Consequently, the social media updates are done actively throughout the period of the field experiment for the case study. Moreover, multiple social media promotion campaigns are conducted to encourage engagement of potential users, which is supported by traditional advertising as well. The effectiveness of the social media promotion campaigns are analyzed according to the engagement report from the social media analytics of respective social media applications. Finally, the social media analytics and sales data analytics are analyzed together to infer trends and derive recommendations for the business going forward. An overview of the phases in the conceptual study design are show in figure 1.

There is significant literature positing importance of social media for businesses. Hence the 1st phase would use popular social networking sites for the case study and perform set up social media. This phase includes setting up profiles in social media site. The 2nd step in this phase will include setup of social media management tools, as the research aims to answer their time effectiveness over individual social media applications management. The second phase of the case study research model will be divided into two sub phases encompassing recording the time consumed during the management of social media for the case study. Specifically, this phase will first record the time required for doing individual management of social media applications for a certain period. Subsequently, time consumed during management of social media by using the chosen SMM tools will be recorded for the same amount of time period.



Fig. 1 Conceptual Design Model

The third phase records the data from each social media for user engagement which would enable to answer the research question of which social media apps are most viewed by users. As mentioned in earlier chapter social media analytics provides worthwhile information about the user engagement with the social media which includes user views, likes, comments, shares etc. Hence, the data from social media analytics will be collected. In addition, to answer the question of using appropriate data to improve the small business, the social media data along with the real sales data from the business will be collected. To achieve homogeneity data from different period would be collected including the

period with social media promotion and similar periods without social media promotion. The final phase will analyze the collected data in the context of the case study business and the research questions will be answered and hypothesis will be tested. Additionally, this phase will attempt to generalize the findings with the representative case study.

V. EXPERIMENT DESIGN AND RESULTS

Studies has have shown that different social media platforms such as Facebook, YouTube, Twitter, Foursquare are more effective when used as a hybrid ecosystem rather than stand-alone (Hanna, et. al, 2011). Chaffey & Chadwick argue that digital marketing encompasses multichannel marketing by using different platforms such as desktop computers, tablets, mobile phones etc. and needs to work in integration with the traditional marketing channels of TV, print media, radio etc. to be effective (Chaffey & Ellis-Chadwick, 2012). Hence, to make the social media marketing initiative more effective and to make the walk-in customers aware of the social media footprint of case study business Maya Cuisine, two posters were posted at the business premises. The posters intended to disseminate information as well as encourage customers to engage with Maya Cuisine in Social Media Networks.

Facebook being the most popular social networking site with largest users worldwide and in Australia was chosen to be the preferred media for advertising. The experiment was conducted from 23rd June 2015 to 24th July 2015 in five segments with different purposes for certain durations. The total budget and duration of the five AD campaigns was $79.27 and 15 days respectively. The 1st campaign aimed to promote the deal of the day and was run for 1 day from 23 June 2015 to 24 June 2015. 2nd Campaign's goal was to promote Facebook Likes which was live for 2 days from 25 June 2015 to 26 June 2015. Likewise, the 3rd campaign's target was to promote offer with online coupon which was live for 7 days (29 June 2015 to 6 July 2015). Similarly, the 4th campaign was implemented with the purpose to promote case study business Maya Cuisine for 3 days from 10 July 2015 to 13 July 2015. Finally, the 5th AD campaign was targeted to promote website of case study business (www.mayacuisine.com.au) for online ordering of foods for 2 days from 22 July 2015 to 23 July 2015.

During the experiment, manual updating of the post in social media was carried out for the first week and the time consumed was recorded. Consequently, the social media management tools Hootsuite, Sendible, and Buffer were used to post contents into seven social media networks for another week. The time consumed for manual updating was 10 minutes for each social media site. Hence the total time to post an update in 7 social media was 70 minutes. Whereas the SMM tools supported easy posting to four social media networks i.e. Facebook, Twitter, Google+ and Pinterest but

did not support posting into Foursquare, TripAdvisor and Instagram. Therefore, the time consumed was significantly less as SMM tools enabled to compose and post the same content in the four supported social media sites at the same time. The total time to post updates in seven different social media was 40 minutes which is 43% less time as compared to manual posting. However, time posting to the other three social media networking sites was the same as the manual. Overall, the results of the field experiment shows that the social media management tools are time effective than individual social media application management when used for a small business.

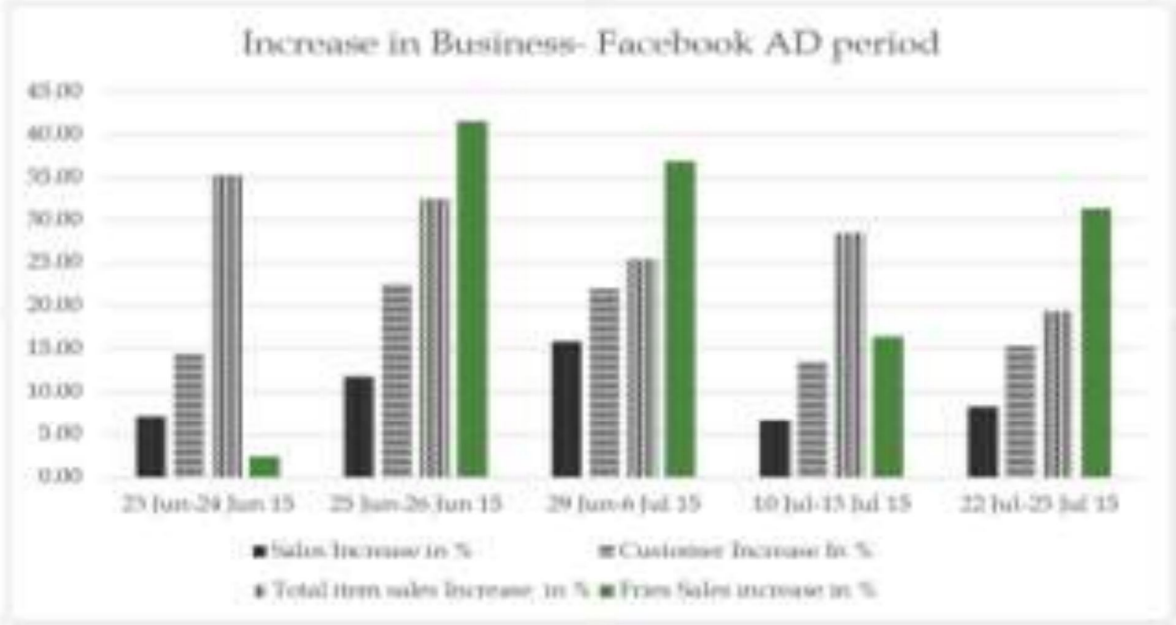


Fig. 2: Graph comparing increase in business for social media promotion period in percentage

The graph in figure 2 illustrates the trend of increase of business in Maya Cuisine in terms of percentage. Different variables such as total sales, customer numbers, Total items sales and Fries sales were noted during the period of Facebook AD and were compared with other previous period. It can be clearly seen that the business at Maya Cuisine has increased steadily over the time period. The increase in sales during the Facebook AD period rise steadily with the highest rise of 17% for 29 June to 6 July, whereas the lowest increase percentage of 7% were observed for the period 23 June-24 June 2015 and 10 July to 13 July period. The increase was 12% and 9% for the period 25June- 26 June 2015 and 22 July-23 July respectively.



Fig. 3: Facebook page and Tab visits from 1/3/2015 to 15/08/2015

For the period of the case study research, a field experiment was conducted with posting regular contents to seven social media networking sites. The engagement in the respective social media was recorded manually as well as from the respective social media analytics. The results reveal that the most user viewed social media applications with the higher engagement were Facebook and Google+, with medium engagement were Pinterest, TripAdvisor, Instagram and Twitter, whereas Social media with least or no engagement is Foursquare. Hence, it can be concluded that Facebook and Google+ are the most user viewed social media application when used for a small regional business. During the case study research it was noticed that the social media analytics provides worthwhile data which can be potentially used to improve business for a small regional takeaway. The data provided are engagement such as view, reach, comments, reviews, search, and share. In fact, the social media analytics data can be of prime importance to determine which of the medium to carry on the ICT marketing efforts. Moreover, it can also be used to decide which demography to target, time of the post, contents that are popular etc.

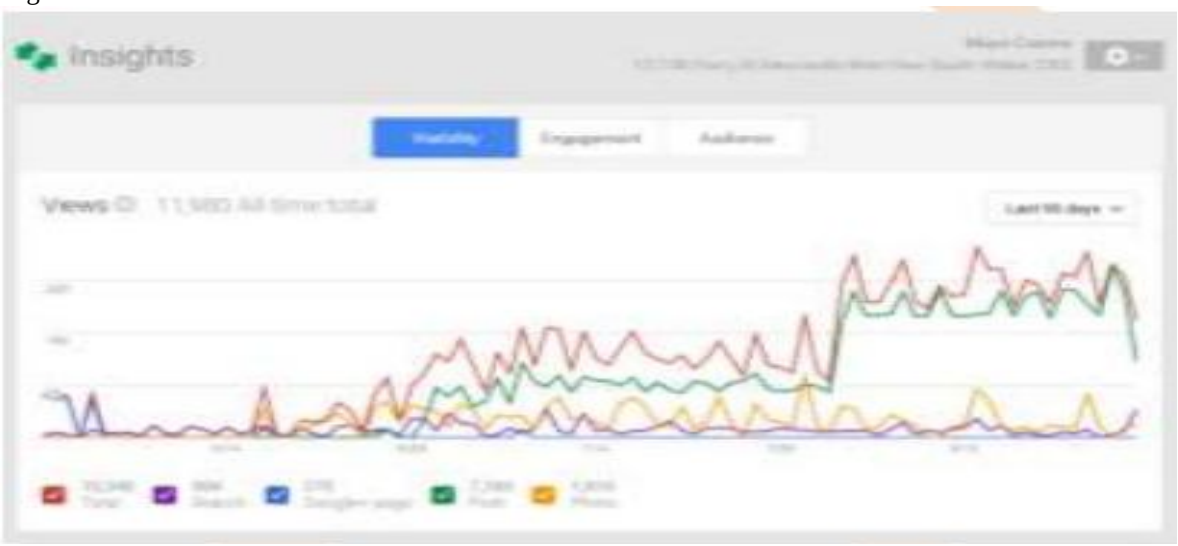


Fig. 4: Google+ Page Insights (analytics) for last 90 days from 27, August 2015

VI. CONCLUSION AND FUTURE WORK

After analysis of time consumption data for management of social media footprint of case study business Maya Cuisine, it was witnessed that the individual management of social media applications took considerably longer than using social media management tools. Since, some of the social media applications don't allow updates to be posted from SMM tools, they still required individual manual updates. Therefore, it can be concluded that SMM tools are more time effective than the individual management of the social media applications in our study. In addition, SMM tools offer option of scheduling the post for future date. This feature enables the post to be created and scheduled for a whole week which can save additional time of the small business operator. Different amount of engagement was observed out of the seven social media used during the case study research.

Facebook and Google+ show high engagement in terms of views, reach, whereas Pinterest, Twitter, Instagram, TripAdvisor showed medium engagement, but surprisingly Foursquare show the least or no engagement. Hence, for this specific case study it can be concluded that Facebook and Google+ are worthwhile social media investments compared to other alternative applications. Likewise, the case study research found that as expected, social media analytics provides deep insights to the user behavior. Moreover, it affords useful marketing insights such as which posts are performing better, which ADs are getting more engagement. When coupled with sales data analytics for a business it can give meaningful insights that can be used strategically going forward to potentially increase sales. Hence, our study further confirmed that social media analytics and sales data analytics are useful for small business performance management opportunity identification. Our future research will focus on a more detailed study of social media marketing's effectiveness in small takeaway businesses coupled with social media and sales data analytics. We plan on conducting surveys of other similar businesses to poll their use and understanding of these technologies, and hopefully raise awareness of the usefulness. . Additionally, we would like to conduct our study now over a longer period and compare the results to the pilot study we have just concluded. Moreover, multiple case studies conducted with other small business in alternate domains could give useful insights into the effectiveness of social media technologies for this business demographic.

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