

Web 2.0 distinct characteristics and implications for small businesses in Papua New Guinea

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Abstract

Many small businesses in Papua New Guinea face challenges in maintaining sustainability and profitability. One of these includes limited knowledge on the usefulness of web applications in the marketing of goods and services. This paper highlights the distinct characteristics of Web 2.0 as a key tool in web-based marketing. Distinct characteristics of Web 2.0 applications are illustrated with examples of possible use by small businesses. In addition, key challenges of adoption are identified and suggestions provided to maximise the effective and creative use of Web 2.0 in small business in contemporary Papua New Guinea.

Key words: Information Communication Technology (ICT), Web technologies, small businesses, small and medium enterprise, micro-enterprise, PNG development strategic plan, Vision 2050, crowd sourcing, knowledge database management, long tail, marketing strategies.

Introduction

Today, as PNG strives to achieve objectives of the Vision 2050 and the PNG Development Strategic Plan 2010-2030, specifically in wealth creation for its citizens, it still faces huge challenges in providing an environment that is conducive for business. The World Bank's 'Ease of Doing Business 2015' ranked PNG 145 out of 189 countries while Pacific countries such as Tonga (78th), Fiji (88th), Vanuatu (94th) scored higher placings (World Bank Group, 2015). One of these challenges lies in the development of Information, Communication Technology (ICT) infrastructure and services that are capable of meeting the needs of businesses, particularly small businesses. Since the advent of internet and mobile technology in PNG in recent years, many individuals and organisations have benefited enormously, with some now using it for health related studies or interventions, mobile banking and money transfer (Watson, 2012). With a private research consultancy forecasting that there would be 2.9 million mobile subscribers in PNG in 2015 (Research and Markets, 2012), there is much greater need for small businesses to use the ICT services particularly the internet to market their products, share information and share business content.

This paper highlights five (5) distinct characteristics of Web 2.0 as a key tool in web-based marketing. It also shows how mobile technology can be incorporated with Web 2.0. It then discusses the challenges faced by small

business in Papua New Guinea who have the potential to adopt Web 2.0 as a key marketing strategy. Finally, recommendations are suggested as to how small businesses can overcome these challenges.

Background

In 2004, Parliament passed the *Informal Sector Development and Control Act* to encourage Papua New Guineans to recognize informal economic activities. Six years later, the National Executive Council (NEC) passed a policy framework, that was developed by the Department of Community Development and the Institute of National Affairs to harness the previous policy and encourage the potential of small businesses (Department of Community Development, 2011). Although there are arguments globally as to what constitutes a small business, in this paper, we define small business in Papua New Guinea (PNG) as one having turnover of less than K250,000 (National Department of Treasury, 2015). Small businesses may be participating in the informal economy as micro-enterprises or in the formal economy as small to medium enterprises (SME). The PNG National Department of Community Development defines SMEs as an organization that operate mostly in the formal economy and have defined organizational structures (Department of Community Development, 2011). These organizations seek formal financing, acquire capital equipment and employ more advanced technology, while developing accounting, inventory control and planning systems and learning to deal with regulators and other authorities (Department of Community Development, 2011, p. 12). In contrast, Micro-enterprises operate in the informal economy and lack defined organizational structure. They are financed informally and rely on simple tools and techniques of production and marketing. They do not usually have paid employees, have no formal systems of accounting or planning and generally avoid contact with regulators or other authorities.

With the PNG Government already committing huge financial investments into the SME sector with K100 million to the National Development Bank and K200 million to Bank South Pacific for housing (Business Advantage PNG, 2015), and providing supporting policies and a strategic framework (Department of Community Development, 2011) many of these small businesses have to take advantage of web based technologies to increase their successes and sustainability. Web 2.0 offers that opportunity to small business owners in PNG.

Web 2.0

Web 2.0 is a term used to describe the second generation of web browsing applications which would support users' active participation online (O'Reilly, 2007). Others have defined Web 2.0 as a new generation of tools that are used to build collaboration and partnerships among a group of users (Parise & Guinan, 2008; Muessig, et.al, 2015). The term itself was first coined in 2004 by Dale Dougherty who was, at the time, the vice president of the O'Reilly media incorporation. It was during this media convention that Dale's team wanted to

capture the feeling that despite the dot.com bust, the Web was becoming more user-centric than ever in the way it would now be seen and used by consumers (Andersen, 2007). Anderson further highlighted that, the term was not coined to capture a set of technologies but something far more unstructured.

It is noted that the notion of Web 2.0 is still difficult to grasp in terms of what it means given its various definitions (O'Reily, 2005a; Andersen, 2007; Parise & Guinan, 2008). However, what is most interesting about Web 2.0 is that the value of user-generated content is creating a network of effects among the users (Parise & Guinan, 2008, p.1; Muessig, et.al, p.174). Initially, the term Web 2.0 was regarded as another marketing jargon for businesses adopting Web 2.0 technologies (O'Reily, 2007 p.1). Despite this argument, internet users and businesses alike are leveraging these technologies not only to market their products and services online but also for educational or health reasons.

Some examples of Web 2.0 applications include wikis, blogs, Flickr, Facebook, LinkedIn, Twitter and mashups to name a few. These applications provide businesses with vast opportunities to curate and create digital content and then share with other business partners in their network. These tools are also known for other uses in sectors such as health and education (Popescu, 2015; Muessig, et.al, 2015). In other words, Web 2.0 applications provide internet users the flexibility to create content in their respective domain of interest and also disseminate information with whom they want to share in their group of networks. Given these capabilities of Web 2.0 applications, it is tempting for internet users to deviate away from realising the full potential of e-commerce and online marketing tools, particularly those venturing into small scale businesses (Thomas, 2010).

Prior to Web 2.0 developments, the Web 1.0 era delivered a static look and feel to the web browsing applications with very little opportunity for users to create and or share digital content (Anderson, 2007). Despite these limitations of web 1.0, it should however, be seen as the initial phase of Web 2.0 development.

Web 2.0 is now considered to enable small businesses in PNG to make informed choices about the kind of tools they want to use, how they want to use them and why. O'Reily (2007) emphasized that in order for companies to remain competitive in the world of business, the first step would be to embrace Web 2.0. To achieve this, O'Reily suggested seven (7) key competencies of Web 2.0 technologies that would guide businesses to benchmark their businesses processes and practices towards a successful implementation of web technologies (p.21). This paper has selected five (5) out of the seven characteristics which are relevant for small businesses.

Harnessing collective intelligence

Hypertext markup language (HTML) was the beginning of the World Wide Web (WWW) that provides users with an enormous repository of knowledge (Zettsu & Kiyoki, 2006). This knowledge is constructed by a group of people who share a common understanding (p.1). As new sites and content become

available on the Web, this bank of knowledge is further enhanced by other users who discover and contribute to existing knowledge (O'Reily, 2007). Early developments of Web 2.0 that catalogue this wealth of knowledge are search engines such as Yahoo and Google.

As new knowledge surfaced, the need to be able to make meaningful data from this new knowledge was equally important. This saw the development of mashups, tools where another application is created as a result of integrating content from one or more web sources (Donston, 2008). This makes Mashups part of Web 2.0 platforms by which users have the autonomy to also personalize web applications, engage in social networks and collaborate online.

The first type of Mashup is known as Consumer Mashup and uses different forms of media sources to create a single user experience. An example of this is the Google Maps and its ability to combine various web services into a single graphical user interface (Harris, 2008). Yee (2008) also explains how Google Maps are used by small business owners in the United States to promote their services whilst improving their local presence both locally and internationally. He provided examples of Housingmaps.com and Craigslist.org websites. Both web sources serve different purposes each providing geographical maps and rent lists, respectively. Rental properties from Graigslist are then incorporated into housingmaps.com. This integration provides a map of places and a list of rental details on the map.

A similar approach could be adopted by small property owners in PNG who have limited financial resources. As more and more lists of rental places get added by prosumers to the Craigslist website, it increases the amount of knowledge there is about renting opportunities which may be safe, clean and affordable for both local and international consumers. For example, a consumer in Chicago visits Craigslist website and clicks on the number of properties on the interactive map with a pop-up menu showing all the fourteen (14) different properties in a location. The consumer then chooses from the list of properties to gather more information.

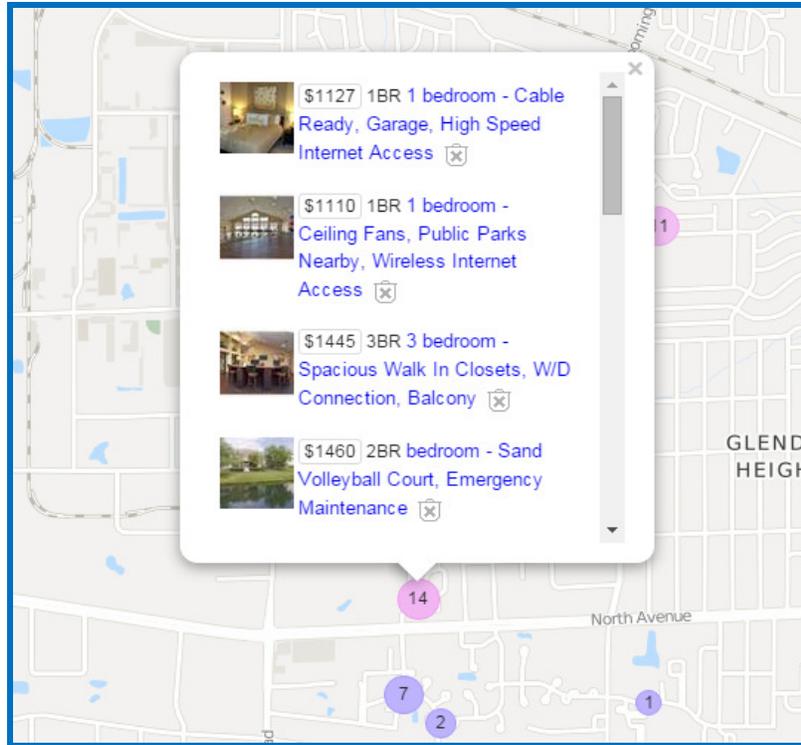


Figure 1: An illustration of an interactive map of rental properties. Adapted from *Craigslist website*. Retrieved on November 12, 2015 from <http://chicago.craigslist.org/search/apa>

Data mashup application is another type of mashup tool. Harris (2008) suggests a mapping application called AlertMaps, as an example of a Data Mashup suitable for small businesses. With AlertMaps, over 200 sources of real-time weather patterns, severe conditions and seismic information are incorporated onto a central world map (Harris, 2008 p.68). Again these substantial amounts of information would not only be used for public consumption but arguably, the same data can be retransmitted via mobile devices to where people or small businesses in need for data can make informative choices (South, 2011; Vericat, 2010).

Another example of a data mashup tool is called 'Ushahidi'. This application was designed using the free open source mapping software which allows anyone with a mobile device to visualize live events as they unfold (Vericat, 2010). Ushahidi was first used during the national Kenyan pre-post elections in 2008 which helped people move into safer areas particularly in the violent prone parts of Kenya (p.1). By 2011, the Ushahidi platform has been deployed over eleven thousand times (11, 000) across countries by relief organisations, media companies and activists (Hall, 2011). An example of a media organisation using the platform is Al Jazeera. In January of 2009, Al Jazeera in

their 'War on Gaza' website used this platform to follow closely activities on the ground (Salkowitz, 2010). Figure 2 shows how reported incidents of activities such as rocket attacks, air strikes and locations of civilians, are populated onto a visual map (ICT4Enterpreneurs, 2009).

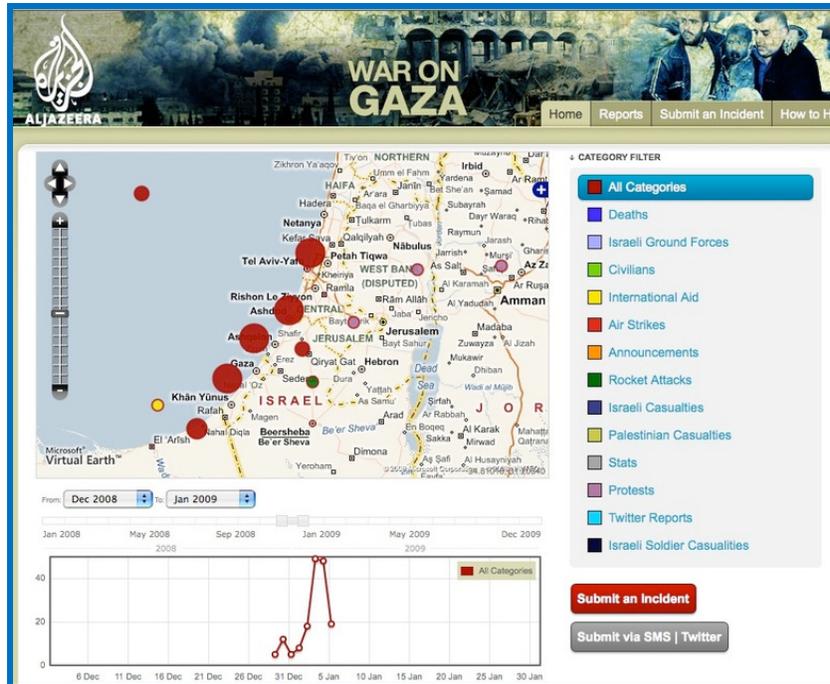


Figure 2: A visual map of different activities during the war in Gaza. Adapted from *ict4entrepreneurs* website. Retrieved on February 15, 2016 from <http://ict4entrepreneurship.com/2009/04/21/citizen-journalism-and-the-war-on-gaza/>

Small businesses in PNG can leverage this freely-available application on a cheap mobile device to fast track humanitarian aid where government services are far from reach.

Data as the next Intel

'Data the next Intel', is a metaphor that is used to describe Web 2.0 platforms as an aggregation of systems, driven by a central source (O'Reilly, 2007). O'Reilly goes on to explain this further by giving several examples of mapping organisations such as MapQuest, HereMaps, TeleAtlas and NevTaq. He indicated that these companies contribute a great deal of time and effort into investing in their map databases because it is the core data that is generated and used that gives businesses the competitive edge (p.12). For example, NevTaq technology provides GPS Tracking system for traveling vehicles. This GPS Tracking system can also be used by other stakeholders such as Yahoo or

Google who need accurate geolocations to drive some of their own web services such as Yahoo or Google maps.

The *Here.com* website is another good example of an organisation that also utilizes mapping data gathered from satellites and GPS data points embedded in cars to enhance business intelligence, urban planning, logistics optimization and customer care. The company (*Here.com*) provides a cloud-based solution Software as a Service (SaaS) for both on and offline navigational maps for consumers with little to no internet connectivity. Behind this warehouse of data sits three main categories of Application Programming Interfaces (APIs) that include JavaScript, REST and Mobile APIs; each one having its own set of APIs that perform specific functions from extracting maps from geospatial locations, routes, and traffic incidents to consumers. For example, when a consumer searches for a route on a mobile to get from point A to point B via a public transport, a routing API will calculate the best shortest route. The route is then displayed on a visual map supported by a geocoding API in colour-coordinated points. An illustration of the above example is shown in Figure 3.

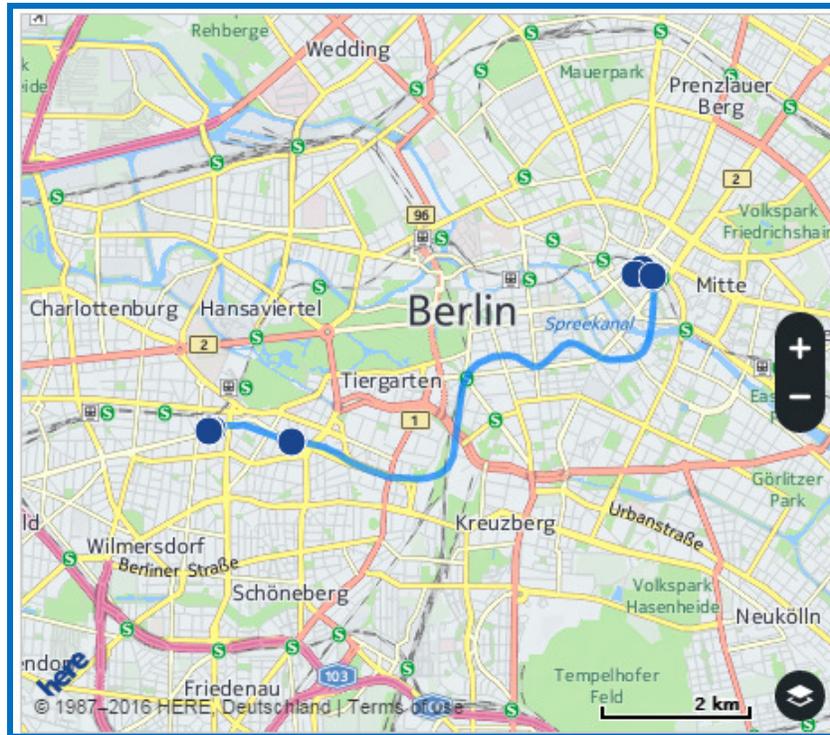


Figure 3 An image showing routes and Geolocations generated by APIs for commuters. Retrieved from <https://developer.here.com/api-explorer/maps-js/servicesRouting/map-with-route-from-a-to-b-using-public-transport>

Essentially, without a central mapping database aggregated systems that supports the search for a hotel, place, event or person online and offline would not have been fully appreciated by the end user. For small businesses in the remotest parts of PNG, aggregated SaaS of Web 2.0 technologies can provide suppliers accessible routes using the off-line mapping application.

Rich user experience

Another characteristic of Web 2.0 application is its ability to provide what O'Reilly describes as a 'rich user experience' (2007, pg.21). Some examples of rich user experience include features such as 'drag and drop', customizable interfaces and offline web services. An example of an application that meets this level of performance is a software call, *eXo*. This is an open source application designed to improve productivity in the workplace (Lamarque, 2016). *eXo* has a platform that is built on Java infrastructure which allows users to customize the page and manage their own content. The application encourages collaborative activities through the use of Forums and Wikis. With Forums, small business owners can add discussion topics to stimulate debates among team members, customers and employees about products and services. With Wikis, team members can create and edit documents together. For small businesses, wikis are useful in creating 'how to' documents that may be deemed as valuable by clients or team members. Wikis also provide small businesses the opportunity to build and manage knowledge databases for internal use. Figure 4 shows an example of a team (platform 40) wiki page where only the members in the group (shown in red colour) can contribute to developing and editing content.

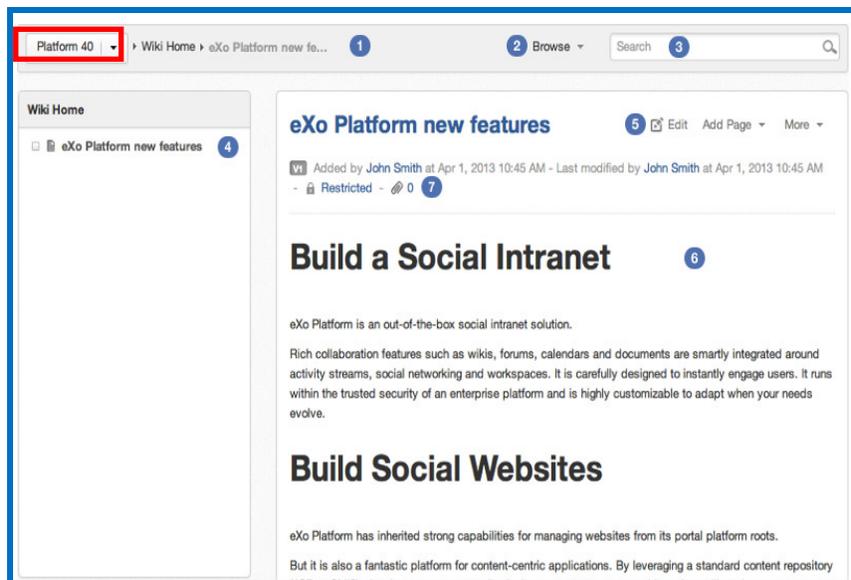


Figure 4. A screenshot of eXo's wiki feature with an example of document under development. Adapted from *eXo website*, Smith, J (2013). Retrieved February 2, 2016 from <https://www.exoplatform.com/docs/public/index.jsp?topic=%2FPLF43%2FPLFUserGuide.WorkingWithWikis.html>

The eXo platform also enables organisations to build what is known as the 'Intranet Cloud Workspace'. With cloud workspaces, organisations can create social intranets giving their employees, customers or team members the opportunity to collaborate and share resources more effectively both on and offline. The Intranet Cloud Workspace interface gives consumers the ability to customise home profiles, status updates, like a post, comment and upload documents; a platform similar to Facebook, Myspace and Twitter. The *eXo* 3.5 platform is also compatible on mobile browsers.

Essentially, this means that a user can expect the same user experience on his or her mobile or ipad. It would also mean that users can utilize drag and drop features on their mobile devices to interact with the interface. These key capabilities illustrate how Web 2.0 applications support a rich user experience.

Leveraging the long tail

The 'long tail' is a concept that describes an economical shift in focus from a relatively small number of products in the mainstream markets (at the short head of the demand curve) towards a large number of niche markets (selling a variety of products) in the long tail of the demand curve (Anderson, 2004). This shift creates new opportunities for niche markets to reach more customers with a broader product range.

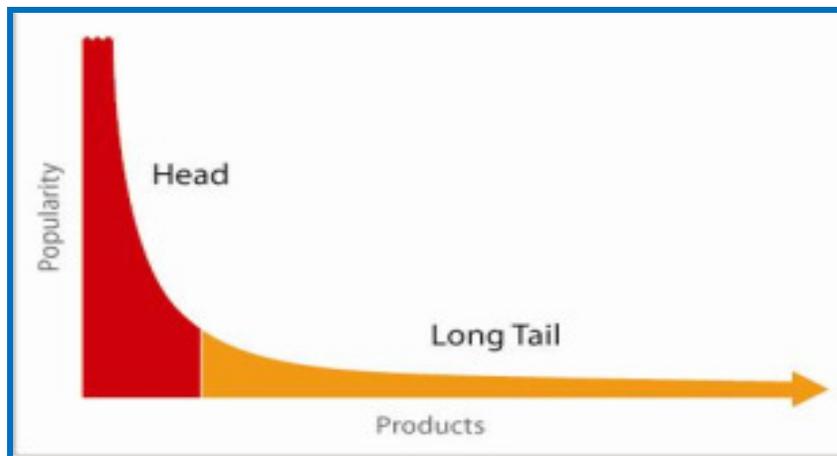


Figure 5: An illustration showing the long tail along the demand curve. Adapted from *Wired*. Anderson, (2004). Retrieved November 30, 2015 from <http://www.wired.com/wired/archive/12.10/tail.html>

Collectively, the value of products sold in small quantity can exceed that of a few best sellers (Lew, 2008). Lew also argues that the ‘long tail’ can only be achieved through the use of a distribution channel with minimal storage space (p.411). This suggests that wider market could be reached if web technologies are utilized well. An example of a small business that leverages this tail further is *ArtFire*. *ArtFire* is a small Tucson, Arizona business in the US. It is a business with a passion for handmade, art and craft business. On the website, ArtFire provides an interactive handmade marketplace for other craft communities to support individual markets promote product brands.

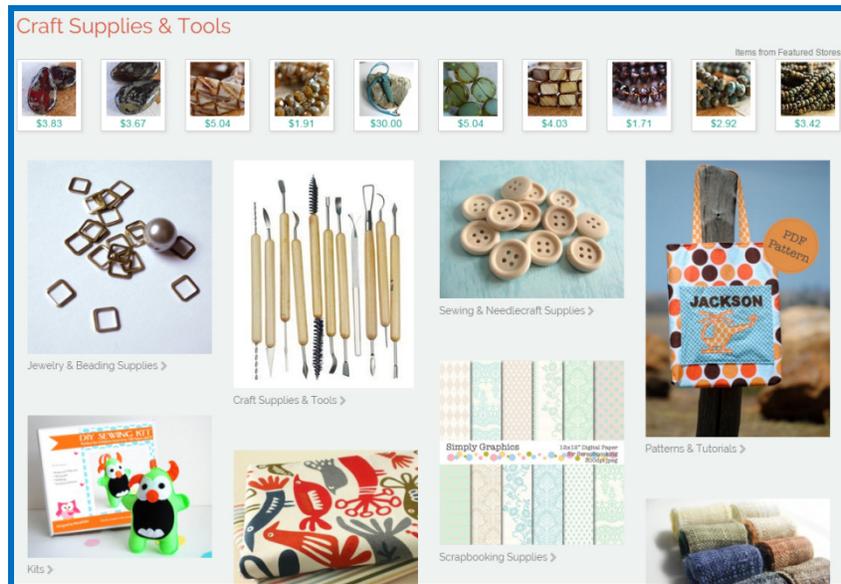


Figure 6: A screenshot of Artfire’s product range of craft supplies and tools sold in small quantities. Adapted from *ArtFire website*. Retrieved on February 12, 2016 from https://www.artfire.com/ext/markets/craft_supplies_and_tools

ArtFire’s driving force is in the variety of products it promotes online. These products range from handmade category cascades into bags, purses, jewellery, baskets, candles, edibles, floral, furniture and the list goes on. Nevertheless what is more important is that this site promotes the producers of these products and their local brands of handmade products. These handmade products are then sorted into other category listing of the suppliers who make the products. Other category listings include the design of those handmade products, places to check such as Vintage shops and less popular commercial shops. An interesting category of this site is the *Media*. This category sells books authored by homemade authors. Some of those books teach you how to make your own accessories for your household use. Arguably, ArtFire provides a variety of handmade products to a variety of customers in building on the ‘wisdom of the crowd’ based on viewers and buyers selection and

preferences. This helps ArtFire arrange this architecture of participation under a ratings system of 'Most Viewed', 'Most Commented', 'Most Recent' and 'Highly Rated'. In doing so, the customers indirectly leverage the long tail, even further.

Light-weight model & cost-effective scalability

The phrase 'Light-weight Model & Cost-effective Scalability' describes Web 2.0 technologies which capabilities that can provide users with limited financial resources to participate in a social environment. The phrase is also used to describe platforms that allows the user to 'do more with less' (O'Reilly, 2007).

Blogs and wikis are examples of Web 2.0 applications that present features to be cost-effective for small businesses. Some of these enabling features include 'TypePad', 'Widgets', 'RSS feed', 'Templates', 'Maps' and 'Visitor-Statistics plug-ins'. All of these features are usually free to use unless if the user wishes to use blogs or wikis for commercial purposes, then a small fee may be charged. These features on a Blog provide businesses with a reasonably inexpensive approach to market product and service.

Another example of a light-weight model is 'Facebook'. In 2009, Facebook recorded more than sixty-eight (68) million users with an average of two hundred and fifty thousand users registering on facebook each day (Waters, Burnett, Lamm & Lucas, 2009). Given these statistics, organisations should not ignore the social networking phenomenal to engage stakeholders and create relationships (p.1). Predominately, Facebook is used to collaborate with others from across the world. However, as we also know this social connectivity also presents an agile approach for most businesses who want to have some of their marketing strategies to go viral. This gives ample time for a business to focus on improving their services and products. It also allows businesses to concentrate on Return of Investment (ROI) and adapt to a new web platform. Facebook's eco-system is harnessed by the users' network of networks. With Facebook's easy to use features such as '*Status*', '*Likes*', '*Add Photo*', '*Timeline*' and '*Map*' (just to name a few). Small businesses can use this space to keep product updates and or post advertisements on their wall. Besides this, Facebook also provides a 'Marketing Solution Page' for business who would like to improve their business success through customer reviews. This can be viewed as an agile approach towards improving market portfolios overtime based on the type of suggestions they get from new and existing customers.

Discussion

In 2013, there were 49,500 registered SMEs in PNG and through the Medium Term Development Plan 2015-2017, it estimates there will be 170,000 SMEs in PNG with 90% ownership by 2017. (Department of National Planning and Monitoring, 2015, p. 66). Small businesses, which are inclusive of micro-enterprises and SMEs face many challenges. One of these challenges has been their inability to use the Internet to market their products, goods or services. This disadvantage is related to low accessibility of the internet, high cost of

maintaining internet connectivity, low levels of knowledge on ICT use and a general lack of web based marketing strategies by businesses in PNG. However, Web 2.0 characteristics outlined earlier in this paper allow businesses to overcome resource and knowledge deficits by making use of external resources. These external resources include cloud computing, reducing the need for costly infrastructure and open source software that reduce costs of running business (Bell & Loane, 2010).

In this paper, it has been highlighted that blogs, mashups, and wikis are the three important types of Web 2.0 collaborative tools. Lee, Olson, and Sang-Heui (2009) pointed out that these collaborative tools have in their favor, three powerful properties: openness, participation, and collaboration. Lee et. al. explained that 'openness' in the Web 2.0 era, meant that apart from its open source capability, it also encouraged innovation. For small businesses in PNG, this means that they can rely on interactive participation by multiple users to generate new and better solutions' For example a small business would use Web 2.0 tools such as blogs, mashups and wikis to gain audiences and then interact with this audience. As this interaction occurs, these small businesses will gain reaction, reflection and advice which will then lead to streamlining of their goods & services to suit specific customer needs.

Mashups, which uses a combination of two or more resources online, is useful as seen by Google maps and rental properties discussed earlier. Papua New Guinean small businesses could utilise this in areas such as a farmer trying to sell chickens on his rural farm and using google maps to show his location and details about chicken. Bell and Loane (2010) highlighted a significant aspect of mashups in Web 2.0 in that it had potential to become an 'increasingly disruptive technology'. By this, Bell and Loane, point out that Web 2.0 tools help its users 'circumvent internal boundaries and hierarchical barriers'. They explain that information and knowledge will flow more easily into and around a firm in all directions, offering greater potential for bottom-up and customer-driven innovation. This is very useful for niche markets such as bilum-making or PNG contemporary fashion accessories which could use Web 2.0 to market their products across provincial lines and even international borders. There may be concern about quality of goods marketed on Web 2.0 by Papua New Guineans, however, previous Informal Sector Skills expo has shown that Papuan New Guineans are able to produce quality products meeting international standards (Varey, 2007).

In improving small business in PNG, Web 2.0 collaborative tools should not be used on their own but rather in combination with financial inclusion (formal financial services such as credit and insurance plans) in a National Financial and Inclusion Literacy Strategy as suggested by recent research (Bank of Papua New Guinea, Institute of National Affairs, & World Bank, 2015). For example, financial inclusion programs by funded by Asian Development Bank (ADB) and the Bank of Papua New Guinea (BPNG) that enable rural villagers to understand the fundamentals of finances and open bank accounts already reached 80,000 people and will reach 130,000 people by 2018 (Asian Development Bank, 2015). For many small businesses in Papua New Guinea,

the ICT environment, together with the formal financial services infrastructure favour those who are located in the urban and peri-urban locations. Recent research findings from Morobe and Madang suggest that, without major development of the rural financial services infrastructure, bringing large numbers of Papua New Guineans, who are currently financially excluded, into the formal financial system will not be possible (Bank of Papua New Guinea et al., 2015). Mobile phone access is high (urban, township and rural areas) but often the capacity to use mobile phones for one such activity – phone banking, remains poor in rural areas (males 29.6%, females 9.8%) (Bank of Papua New Guinea et al., 2015).

With national documents such Medium Term Development Plans 2015-2017 pointing out that 30% of the PNG population (2.4 million subscribers) have access to a mobile phone with 3G capability (Department of National Planning and Monitoring, 2015), the potential to engage with Web 2.0 is possible.

While Web 2.0 is promoted and encouraged, in this paper, for small business to acclaim to a western and capitalist concept of profit and expansion, it is also mindful that sometimes Papua New Guinean small businesses may not follow the same order. One of the things that needs careful consideration is that many business ventures especially micro enterprises such as village trade stores, outboard motors and chain saw enterprises may often have a non-market objective. Curry (2005) explained that because Papua New Guineans are defined by their relationship with others, they are expected to contribute or distribute wealth to their kin and may see that having a micro enterprise as something to show prestige. He claims that the conventional understanding of business success is perhaps too narrow as it excludes the social dimensions such as culture and economic practises in the societies where these enterprises are based. Many enterprisers and even commercial banks may view rural businesses as prone to ‘failure’ as they do not make a profit. However, this is where Web 2.0 is certainly of value. Using mashup, wikis and blogs, micro enterprises and SMEs in PNG, can participate in recognising opportunities and create a common understanding of how small businesses in PNG operate. For niche markets such a basket making, the motive for a person weaving is not only to sell the product but to also explain the holistic aspect (significance of the item, traditional tools and paints and stories etc.) of basket making in the particular society. Collaborative Web 2.0 tools may open up the market to PNG products and services if more is known about Papua New Guinean diversity, social context and relationship to fellow kin as highlighted by Sharp (2015). Sharp (2015, p. 2) points out that this understanding is key to development programs that seek to improve ‘livelihood, increase productivity and cultivate entrepreneurial skills’ for Melanesians.

Conclusion

While there still needs to be greater emphasis on improving financial literacy and computer literacy among small businesses in PNG, Web 2.0 collaborative tools offer a potential pathway for digital marketing for niche market products. This use of technology supports the strategies outlined in the PNG

Development Strategic Plan 2010-2030 and may prove to be the catalyst for empowering small businesses.

The fact that many Web 2.0 collaborative tools are open source software, makes adoption by businesses a cost-effective option for digital marketing. With current government policies supporting the growth of small businesses including SMEs, Web 2.0 collaborative tools have the potential to bring isolated micro-enterprises and SMEs in PNG to accessible markets across the country and even along international lines.

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Glossary

GPS	Global Position System - a satellite navigation system used to determine the ground position of an object.
ICT	Information and Communication Technology - refers to technologies that provide access to information through telecommunication. It includes internet, cell phones and other communication mediums.
Long tail	a theory that describes an economical shift in focus from a relatively small number of products in the mainstream markets towards a large number of niche markets.
Micro-enterprise	operates in the informal economy and lack defined organizational structure. They are financed informally and rely on simple tools and techniques of production and marketing. They do not usually have paid employees, have no formal systems of accounting or planning and generally avoid contact with regulators or other authorities.
Niche market	is a market with specific product focus with the intention to satisfy specific market needs as well as the price range, production quality and the demographics that is intended to impact. It is also a small market segment.
ROI	Return of Investment-refers to principal payments back to capital owners (shareholders and partners) that exceed the growth (net income) of a business or investment.
Small business	has a turnover of less than K250,000. Small businesses may be participating in the informal economy as micro-enterprises or in the formal economy as small to medium enterprises (SME).

SME Small and Medium Enterprise - The PNG National Department of Community Development defines SMEs as an organization that operate mostly in the formal economy and have defined organizational structures.

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