The appraisal of Facebook online community:

An exposition of mobile commerce in social media reviews

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Abstract

Social Commerce is a growing upshot of electronic commerce in Nigeria. It is influencing the existing value networks and turning around the global economy. Many authors have impacted the body of knowledge in the context of mobile commerce and social media as a separate research domain, but the fusion of mobile commerce and social media still need more scholars' attention most especially in the developing nations. This study applies the hybrid technique to sort out social commerce customers' reviews, appraise the quality of the extracted data and identify the opinion that transpired between online retailing merchants and online customers. The appraisal theory used for the pairing of mobile commerce and social media explain how attitude and graduation connect engagement in mobile commerce products and services review. The equilibrium of mobile commerce and Facebook stands to improve customer service. This study offers some managerial implications to the social commerce and electronic marketing practitioners.

Keywords: Facebook, Social Media, Sentiment, Mobile Commerce, Review, Appraisal

1 Introduction

In Nigeria, studies have shown social media's influence in different sectors such as education (Ezeani and Igwesi, 2012; Asemah, Okpanachi, Edegoh, 2013), health promotion (Carter, 2014), security issues (Chiluwa and Adegoke, 2013), political participation (Ifukor, 2010; Nnanyelugo and Nwafor, 2013). Fink, Kopecky, Bos and

Thomas, (2012) described how certain aspects of an online population can be characterized. However, there is a paucity of research in the context of social commerce which is the focus of this study. Nigeria has a potential for social media and mobile commerce as the Facebook users in Nigeria increased to 16,000,000 (Internet World Stats, 2017) which account for 8.4% of its population. This datum makes Nigeria one of the leading Facebook users in Africa. Also, Nigeria is advancing in mobile commerce, and its ultra-connected population is impacting the revenue of the mobile commerce merchants. Averagely, Nigerians are online once every hour and 20% use the internet at least ten times a day (Nwokpoku, 2015).

Mobile commerce is growing with innovative add-on feature that is influencing the existing value networks and turning around the global economy (Pousttchi, Tilson, Lyytinen and Hufenbach 2015). One of the leading appurtenances of mobile commerce is social media. The union of mobile commerce and social media is multifarious and involves different actors such as online retailers, customers, service and content providers and regulators across various business sectors (Wang, Yuan, Ture and Tu 2015). Mobile commerce entails mobile devices, social media and mobile applications (Pelet and Papadopoulou 2015). Kaplan and Haenlein (2010) classified social media into six groups such as social networking sites (Facebook), virtual social worlds (second life), blogs, collaborative projects (Wikipedia), content communities (YouTube) and virtual game worlds (World of Warcraft).

In 2009, the estimation of Facebook active users reached 175 million (Kaplan and Haenlein 2010) but according to the Facebook active users real-time counts on the internet in February 2017 the user's number has soared to 1.8 billion. In the space of eight years between 2009 and 2017, there was an increase of 1.6 billion Facebook active users. This is more than the population of many countries in the world, for example, China, whose population is now 1.3 billion. This implies justifications of fusing mobile commerce with social media because of its capability to hold a large online community. The sudden surge of Facebook active users is an interesting insight for mobile commerce vendors to capitalize on for customer's engagement, sales conversation and profit making.

Some authors have impacted the body of knowledge in the context of mobile commerce in Nigeria (Inegbedion, Obadiaru, and Bello 2016, George, Ogunkoya, Lasisi and Elumah (2015) and social media as a separate research domain (Chiluwa and Adegoke 2013, Carter, 2014) but the fusion of mobile commerce and social media needs more study especially in the developing nations. Pournarakis, Sotiropoulos and Giaglis (2017) discovered a gap in social media data collection and analysis and came up with a computational model that combined the strength of topic and sentiment classification to draw out consumer perception on important subjects in social media. On the other hand, Kaplan and Haenlein (2010) endeavoured to clarify the notion about the real meaning of social media in comparison with close concepts like Web 2.0 and User Generated Content and apprise the companies that wish to adopt social media with the major points of advice. Despite the contribution of recent studies (Pelet and Papadopoulou 2015; Makki and Chang 2015; Hew et al. 2016; Tan et al. 2016), there is still need for more academic impact in the research stream of social commerce.

The different researches that focused on the topics relating to the union of mobile commerce and social media are rare and statistical reputation in the developing country such as Nigeria actuate further study of mobile social commerce. Studies have fused social media and mobile commerce (Pelet and Papadopoulou, 2015, Tan, Teo, Tan and Yang, 2016). This study seeks to use hybrid approach that combines different methodology and data analysis techniques. We used netnography, a form of online participant-observational technique (Kozinets, 2010). The study also employed sentiment analysis for mobile commerce Facebook followers' opinions, sentiments, evaluations, appraisals, attitudes, and emotions towards entities such as products and services (Bing, 2012). This paper is guided by a general objective to analyse the interwovenness of mobile commerce and social media with these specific objectives: (1) to state the importance of social media in online shopping, (2) to analyse online Facebook reviews, sentiment and examine customer service (3) to develop an explanatory theory that associates mobile commerce with social media.

2 Theoretical Framework

Appraisal theory claims that people evaluate the personal meaning of an exciting event or events before emotional responses are generated (Cherng and Timmy, 2015). The appraisal theory of emotion has been used to examine the relationships between appraisals, consumption emotions and post-consumption behaviors (Bougie *et al.*, 2003; Nyer, 1997; Soscia, 2007). The form and emergence of emotions depend on cognitive appraisal process which are their byproducts (Bagozzi *et al.*, 1999; Lazarus and Lazarus, 1994).

Bloom (2011), said the theory of appraisal shift sentiments classification further and considers the assessment expression as a basic grammatical unit by which an opinion is expressed. Opinion are classified in previous studies mainly to their polarity as positive, negative or neutral besides which appraisal expressions covers additional attributes of opinions that extend the core description of the expressed opinion (Šimko and Korenek, 2014). The basic attributes attitude, which are engagement and graduation are complementary with polarity/orientation (Martin and White, 2005).

The identified attributes of appraisal theory are:

Attitude – Attitude is the essence of emotion the appraiser conveys about the product or services. It is about a talk on how it affects the appraiser's feeling such as anger, fear, jealousy, excitement, hostility, satisfaction or appreciation. Emotions or attitudes that can be expressed in appraisal groups, such as: "It's such a wonderful day!". In more formal contexts such as news articles, expressions such as "This policy will not work" are considered appraisal groups conveying attitude.

Graduation – Graduation refers to the strength or force of emotion and attitude in each appraisal group. Adverbs such as "fairly" or "soulfully" indicate graduation. Words used to express attitude can also contain an indication of graduation, for example, "dislike" versus "detest".

Engagement – Sentiment can be expressed directly or indirectly, or attributed to another

source. Engagement is the way speakers or writers express appraisal or engage in the argument. The engagement is monoglossic if the speaker/writer has directly expressed the appraisal, e.g. "The President has no idea what he is talking about". It is heteroglossic if the speaker/writer has either attributed to another source or has tried to use other methods to prove the point or make it more credible, for example, "Data from previous studies show there is little hope that his strategy will work" (Christopher, Khoo and Jin-Cheon, 2012).

Orientation – It recognizes if a term is positive or negative. Some studies refer to this attribute as polarity (Pandey and Iver 2009). In contrast, the polarity attribute represents the fact that a sentimental term can be unmarked or marked. That means that the term "orientation" can be influenced by an expression that negates the meaning of the phrase or a sentence. If a term contains such a negation (not, never), it is labelled as marked.

According to Šimko and Korenek (2014), the main advantage of using the appraisal theory in sentiment classification is that it helps to take a look deeper inside the mind of authors who wrote texts and find out their real meaning using linguistic and psychological analysis of their texts.
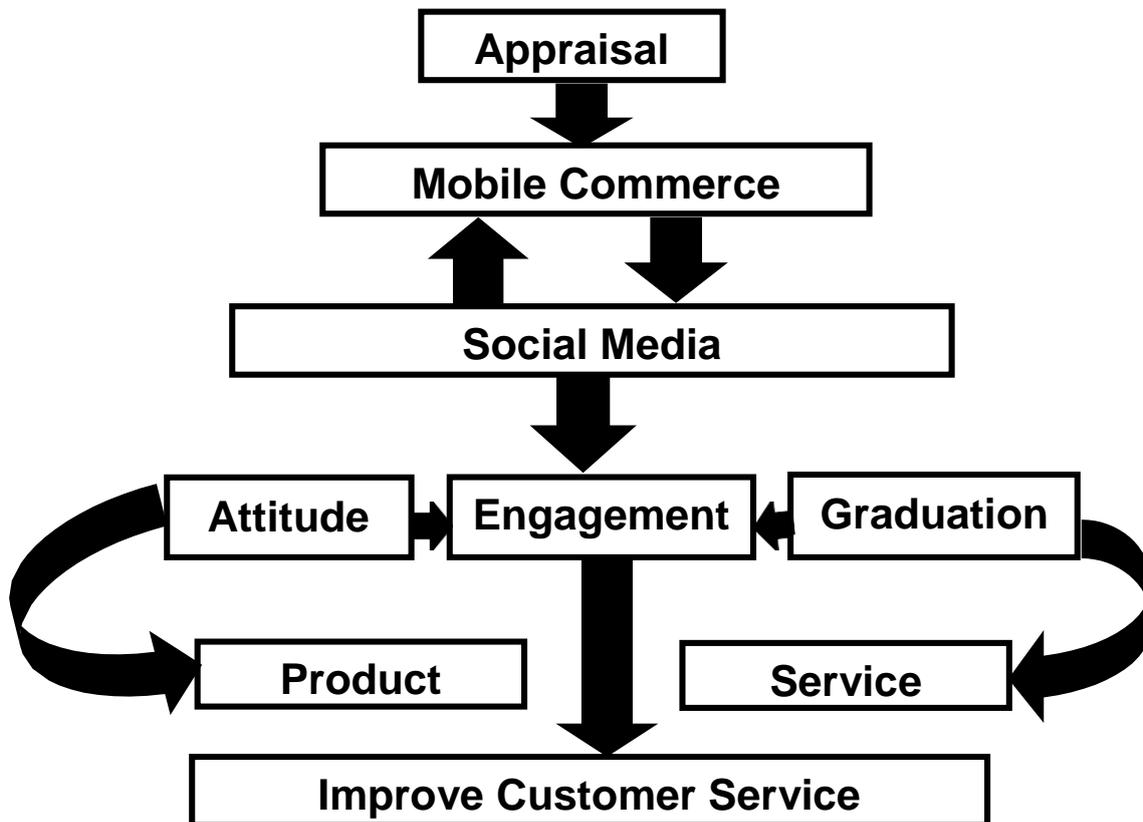

Figure 1: Social Commerce Model

3   Methodology

The growth of technology most especially in the area of social media is aiding the researchers to adopt different research methodology. This paper seeks to use a hybrid approach that combines different methodology and data analysis techniques such as entity and aspect-level sentiment, manual techniques, data mining, text mining and netnography to overcome some of the problems that existing researchers had identified concerning sentiment analysis of social media in their studies. Some of the authors have identified the problem of using slangs, disjointed words, incomplete phrase or sentence and buzz words that lack proper understanding and meaning. Kozinets (2010, p.1) defined netnography as "a form of ethnographic research, adopting the participant-observational approach and taking online interactions as its fieldwork". Netnography preponderates tourism research stream (Wu and Pearce 2014), but Kozinets (2015) recommends Netnography methodology to researchers that work with social media and other online platforms.

The study followed five-stage outlines mapped out by Kozinets (2010) to extract data from electronic commerce Facebook online community as a participant-observer. We planned the data collection, the extraction and the coding to get insight from the data. One of the authors represented himself on the e-commerce Facebook online community as an observer, and we extracted the data with NCapture, a browser plug-in that allows us to capture the data of e-commerce product and service reviewers. We opted for NCapture among others because of its file transfer compatibility with NVivo 11 Plus that we adopted for data coding. For this study, we used NVivo 11 Plus for e-commerce merchants' classifications and aspect-level sentiment analysis with observance of relevant ethical issues.

We also used NVivo 11 Plus for data, text mining and complement it with LikeAlyzer, an online Facebook analysis tool to calculate the Facebook online community engagement rate based on the following formula: $\frac{p}{l}$ = *E.* P: represent People Talk About This (PTAT – Facebook Followers), L: depicts Likes (Facebook Fans) while E: equals Engagement Rate (Tables 1, 2 and 3 illustrate the engagement rate of 10 General Ecommerce Merchant Retailers, 15 Specialty Retailers and 8 Agency Retailers respectively).

4   Sentiment Data Analysis

The emergence of the social media has turned things around in mobile commerce. In social media, retailers can only measure their Return on Investment (ROI) through advertisement in form of sales but to appraise the sold-out products and services rendered to the customers, is a bit challenging. Through online reviews and posts on social media like Facebook, it is easy for online community members to learn from one

another, state their experience, express their opinion and synchronise cultures. We adopted five steps process posited for sentiment analysis from the work of Nikumbh, Nikumbh and Gaikwad, (2016). We skipped data collection and text preparation postulated by Nikumbh et al. (2016) because we had earlier used Netnography approach but we used NVivo with manual techniques for sentiment detection, sentiment classification and output presentation. We exported data extracted with NCapture to the NVivo which consists 15,790 General Merchants Retailers reviews, 1,559 Specialty Retailers reviews and only 256 Agency Retailers reviews. All together for 33 electronic merchants in Nigeria, we had 17,605 Facebook reviews. We used the word query to analyse the most frequent one thousand words. The result gave us a clue to the keywords that are necessary for coding to discover emerging themes from the data. We also performed word frequency clustering analysis for the General Merchant Retailers, Specialty Retailers and Agency Retailers (See figure 2 for thematic analysis in details).
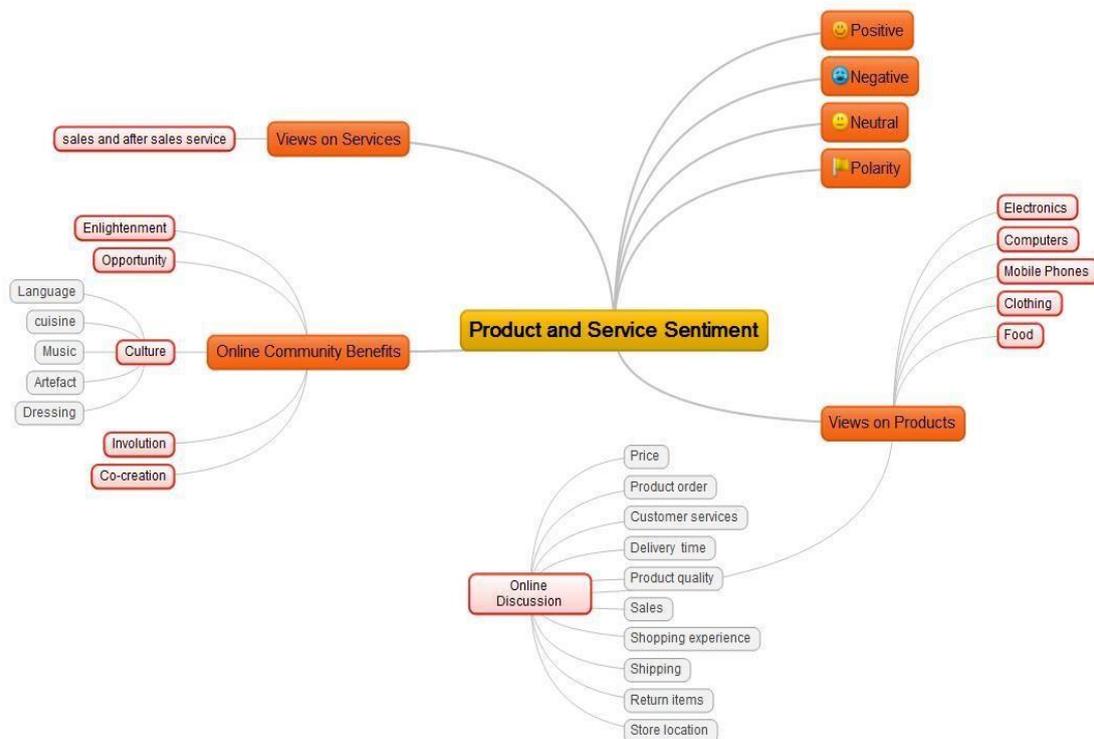

Figure 2: NVivo 11 Plus Thematic Analysis

We performed Jaccard similarity coefficient analysis between positive and negative review of Facebook online community reviews for e-commerce products and services. We performed Jaccard statistic test with NVivo 11 Plus to compare the similarity and diversity of positive and negative online community sample. If the sets data result would be 100% similar, it means the closer to 100% signify the intensity of the similarity, and in comparison, 80% will be more similar than 70%. NVivo generates Jaccard's coefficient result of 0.038961 based on 7235 positive and 1783 negative references. We multiplied the result by 100, and it gives us 4%. The word similarity of positive and negative reviews is 4%. To get the dissimilarity of the positive and negative review, we subtract the Jaccard index from 100% (100-4 = 96%). The Jaccard distance between the positive and negative reviews is 96%.

4.1 Facebook Online Community Engagement Rate

The tables below show the mobile commerce engagement rate on Facebook online community in Nigeria.

No.	Page (Status)	Likes	PTAT	ER	Like Rank
1.	Shoprite	1,192,581	10,191	0.85%	77
2.	Konga	1,521,848	3,538	0.23%	64
3.	Jumia	6,841,120	31,743	0.46%	74
4.	Yudala	16,975	360	2.12%	61
5	Katadeals	840	675	80.36%	82
6	Gloo	27,199	12	0.04%	59
7	Payporte	262,786	33,823	12.87%	86
8	Spar	38,078	755	1.98%	53

Table 1: General Merchant Retailer

No.	Page (Status)	Likes	PTAT	ER	Like Rank
1.	Atunnise	496	1	0.2%	15
2.	Ajebomarket	68,206	209	0.31%	50
3.	Ohmashoes	7,336	888	12.1%	77
4.	Coliseum	70,053	176	0.25%	39
5.	Fashpa	54,510	22	0.04%	38
6.	Fastforward	2,427	0	0%	21
7.	Jumia Foods	308,024	762	0.25%	53
8.	Easyappepite	2,403	2	0.08%	12
9.	Mamtus	2,324	5	0.3%	49
10.	PCPlant	37,188	96	0.26%	50
11.	Slot	284,408	488	0.17%	56
12.	Teeday	1,778	2	0.11%	17
13.	Shopaholic	9,513	6	0.06%	27
14.	Buyright	55,482	29	0.05%	35
15.	Shopkudi	13,013	5	0.04%	39

Table 2: Specialty Retailer

No.	Page (Status)	Likes	PTAT	ER	Like Rank
1.	Mystore	56,629	6	0.01%	25
2.	PEP	62,445	1,337	2.14%	39
3.	Mannastores	23,738	6	0.03%	49
4.	MallforAfrica	189,580	4,120	2.17%	73
5.	LoyalBonus	5,650	21	0.37%	42
6.	Jiji	676,478	120,228	17.77%	80
7.	Dealdey	177,518	268	0.15%	46
8.	Domestico	11,287	890	7.89%	79

Table 3: Retail Agency

As shown in the tables 1, 2 and 3 above, the Engagement Rate is calculated by taking the total PTAT (people talking about this) and divide by the total number of 'likes'. Surveys show that to have success on Facebook, an engagement rate greater than 7% should be met as revealed by Facebook LikeAlyzer tool. In the GMR categorization, it shows that only two of the mobile commerce successfully engaged their customers with 80.36% and 12.87% respectively. All the specialty retailers sampled shows very low engagement with their clients while two of the retail agencies sampled indicated that they recorded success in engaging their customers at 17.77% and 7.89%. This result reveals that generally, most of the Merchants and Vendors do not actually engage their customers. It is very important to note that it is not sufficient to have many 'likes' but to have many 'PTAT' as well. Many 'likes' and low 'PTAT' yields a very low engagement rate as seen for example in Shoprite, Jumia and Konga. Recording a high or low 'PTAT' and a corresponding number of 'likes' will yield a very high engagement rate as evidenced in Katadeals, Payporte and Jiji. It is not enough to have millions of 'likes' on the Facebook platforms of mobile commerce while 'PTAT' is very low as it is crucial for a successful engagement rate with customers.

Our results, based on sentiments detection from the reviews on the e-commerce merchant social media platform (Facebook) are classified under four headings. These are: views on Products and Services, Online Discussion, Merchant's Response and Online Community Benefits. These classifications identified the attributes of appraisal which include attitude, graduation, engagement and polarity. All these constructs are interlinking in the expressed opinions of consumers on products or services.

4.2 Product and Service Sentiment

The analysis starts by investigating polarity, which is useful for determining the overall sentiment orientation or bias of a document or person towards an object or services. Consumers shared their views on products such as electronics, computers, mobile phones, clothing and food items. We extracted the reviews of product and services from the Facebook page of mobile commerce platforms. The excerpts below depict the mind of the reviewers:

Positive: I love GMR (FS, Male, Lagos, January 16. 2017)

I like RA stores (UAO, Female, Owerri, January 26, 2017)

Negative: GMR is selling products that are of low standard, inferior and low quality because I bought a 32-inch Sharp TV and after two weeks the TV couldn't power on. (FP, Male, Lagos, January 4, 2017).

Neutral: …I have never had any issues with GMR… (AA, Male, Lagos, January 4, 2017). People have been talking about GMR but I never patronize them (IBF, Male, Abeokuta, November 24, 2016).

Polarity: The delivery is awesome but, 800 naira is too much within Lagos, I ordered for 6 different items, and they charge me 800 naira for each, which is very bad (AS, Male, Lagos, November 20, 2016).

I enjoyed the Lenovo tab I bought from them just that it doesn't have flash so painful (BIR, Female, Ilorin, November 15, 2015).

The above quotes from the online shoppers depict their experience and show their positive, negative, neutral and polarity comments on products and services rendered to them by the General Merchant Retailers and Retails Agency.

4.2 Online Discussion

The most discussed topic that generated contributions from consumers on the e-commerce platforms as identified are price, product order, customer services, delivery time, product quality, shopping experience, shipping, return items, store location. This is evidenced in figure 2 above. The excerpts below express the mind of the reviewers:

Price: …how can your price of shipping be more than the goods or items being Bought…If you keep going like this, it will get to a stage where no one will buy anything from GMR (NI, Female, Kano, September 8, 2016).

Product Order: Very poor. You place an order and never get a response.

If a large company like Amazon with millions of daily orders can easily manage them, why can't… (BA, Male, Lagos, January 9, 2016).

Customer Services: The attitude of your rep AO is appalling. He is rude, arrogant and treat customers call with disdain. Please I need my order-xxxxxxxxx delivered tomorrow unfailingly (AMA, Male, Lagos, December 6, 2016).

Delivery Time: Customer care was wonderful. GMR especially could work on their delivery time too (JD, Male, Port Harcourt, July 15, 2016).

Product Quality: …GMR selling products that are of low standard, inferior and low in quality. (FP, Male, Lagos, January 4, 2017).

Shopping Experience: …I have a very terrible experience with SR in Abuja. If they offer you warranty or screen insurance, beware and run for your pocket (OO, Male, Abuja, November 1, 2016),

Shipping: GMR started well. I lost confidence in their products after they shipped me fake LG microwave and Havell toaster…(SN, Male, Nasarawa, November 13, 2015).

Return Items: I bought two short from RA for my baby at their store in Akure but was too small for him. Please can I return it for exchange (OAI, Female, Ekiti, December 27,2015).

Store Location: I haven't Patronize RA so I don't know what to say about them (JM, Female, Lagos, May 12, 2016).

The expression as seen in price shows the engagement aspect of appraisal with the statement being attributed to another source which shows heteroglossic engagement. In product order, the statement "very poor" shows negative polarity as the next sentence is attitudinal, and further statement expressed heteroglossic engagement. Consumer service review depicts attitude as well as negative like product quality review. For delivery time, the reviewer express graduation with the word "wonderful" used and the review for shopping experience shows negativity and heteroglossic engagement aspect of appraisal. Under shipping, the statement is categorized as polarity reviews made under the return items, and store location is neutral.

4.3 Online Community Benefits

The authors deduced certain advantages for the mobile shoppers as evidenced from their Facebook page reviews under the headings of enlightenment, opportunity, involution and co-creation.

Enlightenment: How To Make A Teddy Bear Out Of A Towel (RA, January 30, 2017).

Lovely. I will try to make one for my grandchildren. Practice makes perfect (CO, Female, Lagos, January 31, 2017).

Opportunity: Business opportunity!

…We are currently Leading an Expansion of a global fuel company and we are competing against the Trillions in Revenue … (OD, Male, Lagos, May 29, 2014).

Involution: DO NOT SHOP ON GMR!! Product Quality always totally different from description their coupon doesn't work either they still charge the same amount even after using the coupon...crap!!! Don't do it please! (AA, Male, Lagos, January 4, 2017).

Culture: This include language, cuisine, music, artefact and dressing. The cultural display shows the interplay of various culture represented on the platform due to ethnic diversity of Nigerian states.

Co-creation: To maximize customers experience, SR should incorporate a 'trade-in' program. I have a good idea on how this can double the current turnover of SR business. Reach me via 080XXXXXXXX or xxxx@aol.com in case the business is interested in this idea (IA, Male, Iwo, July 13, 2014).

Enlightenment as a benefit brings about passing knowledge about something to others. This is shown in the statements made by the reviewers under enlightenment, teaching others how to do new things. Customers advertises, exchange ideas and present business opportunities for other customers alike.

4.4 Merchant's Response

The merchant response is very important for whatever brand to communicate, engage the customers or consumers and redeem the image or solve issues relating to patronage and many more. Some of the excerpts below are from merchant responses to comments on their products and services.

> …So sorry for this experience. Sadly, the item delivered is the item ordered. Since the seal has been broken, we'll be unable to retrieve the item. An agent has been assigned to contact you regarding this. Thank you (GMR Representative, December 21, 2016).

> We're delighted to receive your feedback and are super glad that you enjoyed our service. (GMR Representative, December 30, 2016).

> Thank you for your kind words VO, quite appreciated. Please spread the word... And we welcome referrals… (SR Representative, April 2, 2015).

The first response given above represent the attitude and the information passed as evident in the merchant comment reveals that the terms and condition of the agency is not known by the consumers as alluded to in the comment. The other responses received encouraging feedbacks about their product and services and they appreciated them. Going by the reviews generally, the rate of reply of the merchant to the reviewers is slow as there are complaints about response rate. It seems there is no personnel designated to answer the queries of customers.

5 Conclusion and Implication

Despite the prevalence of e-commerce, mobile commerce and social media as an interwoven study in diver disciplines (Huang and Benyoucef 2015), it is noted that few scholars in the field of electronic marketing have fully explored the connectedness of mobile commerce and social media for customers' service improvement. This study applies the hybrid technique to sort out

social commerce customers' reviews, appraise the quality of the extracted data and identify the opinion that transpired between online retailing merchants and online customers. The unicity of this study lies in the accessibility of large dataset of online multiculturalism douse with emotion. Although this study is an overture of social commerce in the context of developing countries such as Nigeria, we are able to gain insight into the sentiment of online shopping. Due to this development, it is viewed that this study will set a pace for online shopping customer engagement through social media in electronic marketing. It makes this study one of the foremost in Nigeria. Our study contributes to the literature of electronic marketing in several ways. This study demonstrated the importance of social media in e-commerce in a new way by identifying the benefits of online community reviews and exhibited reviewers' emotions. Though our findings were based on Facebook data generated from 2014 to 2017, the result reflects how online shopping experiences ensued emotion in Facebook Commerce reviews. The study reveals the intensity of positive, negative, neutral and polarity sentiments. This study furthermore emphasized the explanatory power of theory for the union of mobile commerce and social media. The appraisal theory used for the pairing of mobile commerce and social media explain how attitude and graduation connect engagement in the context of products and services review. The equilibrium of mobile commerce and Facebook social media stands to improve customer service.

Some managerial implications were offered as it advocates the significance of social media in mobile commerce to the electronic marketing practitioners due to its vastness. Many online consumers have turned Facebook into their second home, and it will be easy for the mobile commerce merchants to reach them for feedback in real-time. The study also emphasizes the importance of Facebook followers and clarify the differences between the Facebook 'likes' and 'PTAT' as the determinant of customer's online engagement. The engagement rate is one of the useful metrics for Merchants that uses Facebook online reviews. This study is not without limitations, and its explanation should be treaded carefully. It is a common argument that social media data validity is not a clean-cut (He et al. 2014, Panger 2016) but (Rife et al. 2016) recommends heterogeneous Facebook users and generalized result as a standard for online data validity. Rife et al. (2016), testify to the viability of Facebook data over traditional samples. Demographic data is hard to extract, but we limit the quotes to the reviewers that make their name, sex, domicile available on their Facebook page. There were more positive reviews (80%) than the negative (20%), the neutral and polarity were scanty. Another limitation was that the sample represents general merchants retailing, specialty retailing and agency retailing and only 33 of the mobile commerce retailers were available for this study. According to Fink et al. (2012), social media is a viable means of getting enriching social and cultural data for studying the developing nations. Future studies should endeavour to examine online reviews of social media such as Twitter, Instagram, Google+ and Pinterest regarding mobile commerce as a comparative study.

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