Antecedents and Consequences of Social CRM on Indian Online Retail Industry: A Neural Network Approach

Prasad Kulkarni* and Joel Gnanapragash**

ABSTRACT

Indian e-tail industry has entered into the merger and acquisition era. Thus, it has become inevitable for both small and big players in the e-tail domain to entice prospects, retain customers, and develop brand advocates. To achieve this objective, Indian e-tailers are predominantly using social media. However, the clutter in the social media and their impact on target customers debated. Online interview techniques using questionnaire instrument used for collecting the responses from 1111 customers. The processed data set analyzed using the neural networks multilayer perceptron method. The data arranged in training, testing and holdout samples.

The output layer had 7 dependent variables and 14 numbers of units. Model summary exhibits those incorrect predictions in training (32.5%), testing (30.6%), and Holdout (35.8%) were similar. The area under the ROC curves is below expected 0.6 for consequence variables like trust, Loyalty, repeated purchase, knowledge, and sharing information.

Keywords: Social CRM; E-Tailing; Neural network; ROC curve; Normalized importance.

1.0 Introduction

Indian e-tailing industry is at the strategic inflection point. The industry that experienced phenomenal growth in recent times is experiencing consolidation. At this juncture, acquiring and retaining customers become more important than in the past. Thus, e-tailers are embracing social media to convey their market offering to the target customers. Due to its inherent characteristics like collaboration, creation and

*Corresponding Author; Assistant Professor, KLS, Gogte Institute of Technology, Belagavi, Karnataka, India (E-mail: pvkulkarni@git.edu)
**Associate Professor, CHRIST University, Bengaluru, Karnataka, India (E-mail: joel.gnanapragash@christuniversity.in)

communities, e-tailers could reduce their cost, and time required to reach the target customers. They are providing company, product and brand information on different social networking sites. Further, they also educate the customer; involve them in social co-creation and social buying. To be on top of the mind, e-tailers are sending personalized messages, societal messages and general messages to customers to allure them. Added to this, Social media vehicles like Facebook, Twitter, and LinkedIn etc…used to engage customers through contests and games. The content offered by e-tailers is in the text, picture and video formats. E-tailers are requesting customers to like, tweet, subscribe, follow, pin, and share the content. Apart from this, social media used for customer service functions like acknowledging the co-creation, order delay, return information and return reply.

2.0 Literature Review

2.1 Customer awareness

Indian e-tailers are adopting social media for their customer service and relationship management. These e-tailers adopt numerous strategies to create the customer awareness. To build customer awareness, they develop the brand page in social media vehicles. Using these social profiles, e-tailers announced their new products (Tsimonis and Dimitriadis 2014) (Qureshiet.al, 2014). Further, e-tailers generated hash-tags and request the social groups to share among their peer network (Jose and Jose 2016). A few e-tailers used teaser campaigns, challenges the fans, and creating the countdown. However, identifying the right strategy and the target customer is the challenge on the social media

The customer education play vital role in generating the awareness. According to the social media examiner website, 29% of customers use social media to see the product information (Redsicker 2014). Thus, It is necessary for modern e-tailers to provide product information on the social media (Digitalintelligencetoday.com, 2010) (Quresh et.al, 2014). E-tailers used videos extensively to create the customer awareness. These product videos on Facebook, Twitter and YouTube had higher influence on the customer (Social media survey,2009). Further, a good video gets better customer awareness by making them to relax (eTail Asia 2015,2017); (Olapic,2017)

2.2 Customer experience

Creating the multiple touch points to the customer to experience the company service has become the important strategy. E-tailers embraced social media to provide the better experience. Customers are now using buy buttons of e-tailers on the social

networking sites to purchase the product (eMarketer, 2017). Among these sites, the majority of orders for e-tailers came from the Facebook store (Shopify, 2017);. Further, social media touch point used by e-tailers to reduce their reverse logistics effort. They have put positive posts on the site of company and products to reduce the negative impact and thus ensuring reduction in reverse logistics effort (Walsh, et al, 2016).

2.3 Customer engagement

Retaining the existing customer is the big challenge in the social media era for the e-tailers. They strive hard to engage them continuously to reduce the churn rate. E-tailers have put the customer past purchase history on the social media to build trust among the shoppers. To achieve this objective, they embraced live chats to address the customer complaints rapidly and personally in the social media (Cho, Im and Hiltz, 2003). However, due to unforeseen circumstances, e-tailers could not deliver as they promised earlier. In such instances, e-tailers have apologized in the social mediaand popularly known as transactional apologizes. A Few e-tailers apologize due to the fear of social media's inherent viral characteristics (Relations 2017). These apologies are necessary for building the brand on the social media. A few e-tailers consider that apology on company failure on order execution will have the positive impact (Shukle 2017) and turn customers into advocates. Further, this initiative helps organizations reduce dissatisfaction.

E-tailers' customer engagement strategies utilized for generating the new product ideas.;(Chui, et.al, 2012). These customer ideas acknowledged promptly and quickly (Code My Own Road., 2010). Further, According to Social Media Today website Twitter and Facebook are used for providing product comments, and reviews.

2.4 Customer service and relationship management

Personalized messages to customers' enhanced their satisfaction. E-tailers like Amazon used them to send on customers' special occasions with right social media channel (Personalics, 2016).The personalized message's content vary from e-tailers to e-tailers. They provided jokes on the social media to build brand awareness and image (Shopify, 2017); (Plus 2017). Brands like Sega, Sainsbury, Tesco, old spice, Netflix, Taco Bell and Smart car used humorous content to increase customer service of the organization (Smart Insights, 2015). These messages on the special days gave better brand image (Plus 2017).

Games and contests are widely used in the social media to build the customer relationship. E-tailers used social media contests to understand their customers (Srinivasan 2014). Further, e-tailers asked customers to like, share, subscribe and tweet

their contest information (Shopify 2017). Apart from this, online gaming is a tool used by many online retailers in India to drive the sales (Mrutyunjayappa 2015). Added to this, a few of them conducted quizzes on social media to get customer attention.

Social media emerged as the major platform for providing loyalty benefits to the customer. .E-tailers offered loyalty benefits such as discounts, coupons, and cost savings (Accenture, 2017). Social media's viral characteristics enticed e-tailers. They request the customer to write about society and its problems on their social profile ((Plus 2017) and share it in the peer network. This general content like societal messages helped e-tailers to get customer attention.

2.5 Consequences of social CRM

Every customer has desired that e-tailers listen to their opinions, ideas, reviews, recommendations, and grievances. A few times, it creates the status among the groups and circles in the social media (LaDuque 2010). Further, Individuals share the interesting content on the social media (Hajli 2014)*, (*Zhang.et al., 2014*), (*Critical, 2013) which is the key characteristics of social commerce (Kim and Park 2013). Sharing the company, product, and brand information has the significant impact in creating the trust among the customers in the social commerce (Kim and Park 2013). (Hajli, 2014). However, In India, trust is the major concern for online retailers. Further, loyalty programs conducted by e-tailers on social media have ascended the sales.

According to the website social media today, 71% of customers who liked the post in the social media more likely to buy it. This pattern has observed more in the Facebook, Linked in and YouTube than other social media vehicles (Flitter and Flitter 2009)

3.0 Research Methodology

The conclusive research data collected from both primary and secondary data. Researchers used online interview method using questionnaire instrument to collect the response from 1111 customers across 178 cities in India and 22 cities in the abroad. Simple random sampling method adopted to collect the data. The collected data cleaned and validated using Cronbach Alpha reliability, Composite reliability, Normality, Linearity, Variance Inflation Factor (VIF) and construct validity. Further, processed data converted to Training, testing, and holdout samples. Researchers used standardized rescaling method, hyperbolic tangent function, Softmix activation, and entropy error function in the research. The data analyzed on multi-layer perception neural networks' ROC curves and normed importance outputs.

4.0 Results and Discussions

Table 1 results of the Multi-layer perception case processing summary, 70.1% of cases are assigned to training, 19,2% assigned to testing, and 10.7% cases assigned to holdout. No value from the dataset excluded.

Table 1: Case Processing Summary

		N	Percent
Sample	Training	784	70.1%
	Testing	215	19.2%
	Holdout	120	10.7%
Valid		1119	100.0%
Excluded		0	
Total		1119	

Source: Primary Data

The neural network analysis was having 19 numbers of units. The research has used standardized rescaling method. The number of hidden layers observed is 1 and number of hidden layers I unit was 8. The hyperbolic tangent function applied to activate the hidden layers. The output layer had 7 dependent variables and 14 numbers of units. Softmax activation function adopted for the output layer. The researcher also applied the cross entropy error function
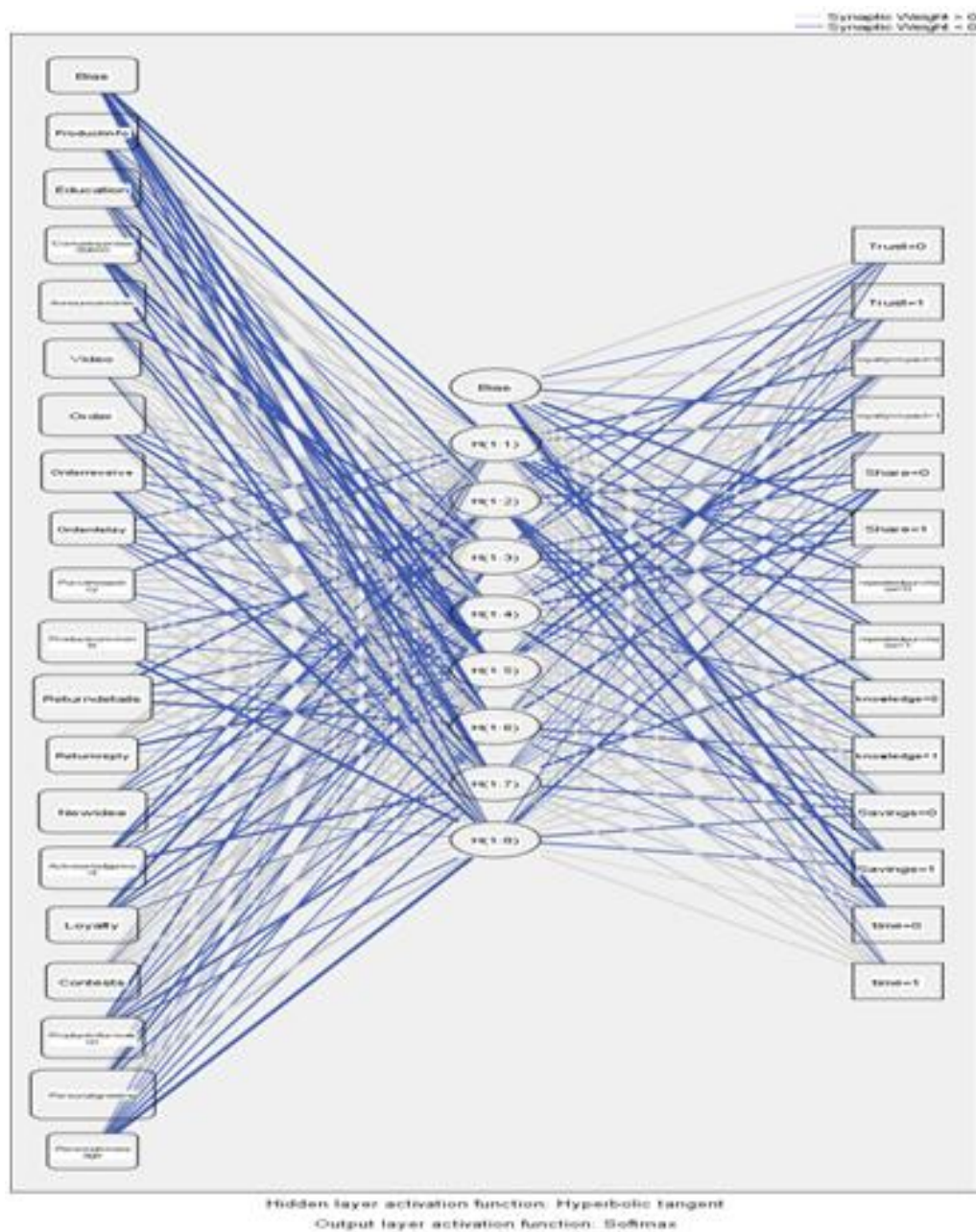
Figure 1 is the graphical representation of neural network analysis. Table 2 of the Model summary exhibits those incorrect predictions in training (32.5%), testing (30.6%, and Holdout (35.8%) were similar.

Table 2: Model Summary

Training	Average Percent Incorrect Predictions	32.5%
Testing	Average Percent Incorrect Predictions	30.6%
Holdout	Average Percent Incorrect Predictions	35.8%
a. Error computations are based on the testing sample.		

Source: Primary Data

Figure 1: Multi-Layer Perceptron Neural Network Structure

Hidden layer activation function: Hyperbolic tangent
Output layer activation function: Softmax

Source: Primary Data

Table 3: Classification

Variable	Training				Testing			Holdout		
	Observed	No	Yes	Overall percent	No	Yes	Overall percent	No	Yes	Overall percent
Trust	No	473	12	97.5%	135	5	96.4%	70	2	97.2%
	Yes	290	9	3.0%	74	1	1.3%	46	2	4.2%
Loyalty	No	627	0	100.0%	170	0	100.0%	94	0	100.0%
	Yes	157	0	0.0%	45	0	0.0%	26	0	0.0%
Sharing Information	No	660	0	100.0%	186	0	100.0%	103	0	100.0%
	Yes	124	0	0.0%	29	0	0.0%	17	0	0.0%
Repeated Purchase	No	224	206	52.1%	68	43	61.3%	42	29	59.2%
	Yes	160	194	54.8%	49	55	52.9%	23	26	53.1%
Knowledge	No	212	186	53.3%	62	47	56.9%	29	41	41.4%
	Yes	160	226	58.5%	43	63	59.4%	30	20	40.0%
Saving Money	No	596	0	100.0%	167	1	99.4%	88	0	100.0%
	Yes	188	0	0.0%	47	0	0.0%	32	0	0.0%
Time	No	8	295	2.6%	3	76	3.8%	1	52	1.9%
	Yes	8	473	98.3%	1	135	99.3%	3	64	95.5%
Overall percentage		67.5%			69.4%			64.2%		

Source: Primary Data

5.0 ROC Curves

Receiver Operating curves depends on true positive rate and false positive rate. The true positive rate is called as sensitivity and false positive rate known as fall out. The area under the ROC curves has used for model evaluation.

The area under the ROC curves (Table 4) is below expected to be 0.6 and above. Thus it can conclude that antecedents of social CRM were not able to have consequences on Trust, Loyalty, and Repeated purchase sharing information, Knowledge, saving money and saving time. Though curves values are close to acceptance range, researchers decided to reject the assumptions (Table 3).

Table 4: Area Under the Curve

		Area
Trust	No	.539
	Yes	.539
Loyalty	No	.550
	Yes	.550
Sharing Information	No	.585
	Yes	.585
Repeated purchase	No	.556
	Yes	.556
Knowledge	No	.563
	Yes	.563
Saving Money	No	.566
	Yes	.566
Time	No	.561
	Yes	.561

Source: Primary Data.

Table 5: Independent Variable Importance

	Importance	Normalized Importance
Personal Greeting	0.082	100.00%
Return Details	0.075	91.30%
Idea Development	0.063	76.10%
Product Comments	0.062	75.20%
Product Announcements	0.06	73.40%
Social Ordering	0.059	71.70%
Idea Acknowledgement	0.059	72.20%
Order Information in Social Media	0.056	68.50%
General Information	0.056	67.90%
Customer Education	0.049	59.20%
Video	0.049	59.90%
Company Presentation	0.046	56.20%
Contests	0.045	54.90%
Product Information	0.042	51.20%
Return Reply	0.042	51.50%
Loyalty Benefits	0.042	51.50%
Societal Messages	0.042	50.70%
Order Delay Information	0.035	42.00%
Purchase Policy	0.034	41.30%

Source: Primary Data

Normalized Importance: Variable important to the research identified through normalized importance. Table 5 and Figure 2 depicts that Personal greeting, reverse logistics, social co-creation, and product comments, reviews, and recommendations by customers are widely popular in the social media. Further, exclusive launches, social order management have also gained customer attention. However, customer awareness strategies and customer service strategies to build the CRM had their own limitations. This had impacted on negative consequences in the output model of the research.

Figure 2: Normalized Importance
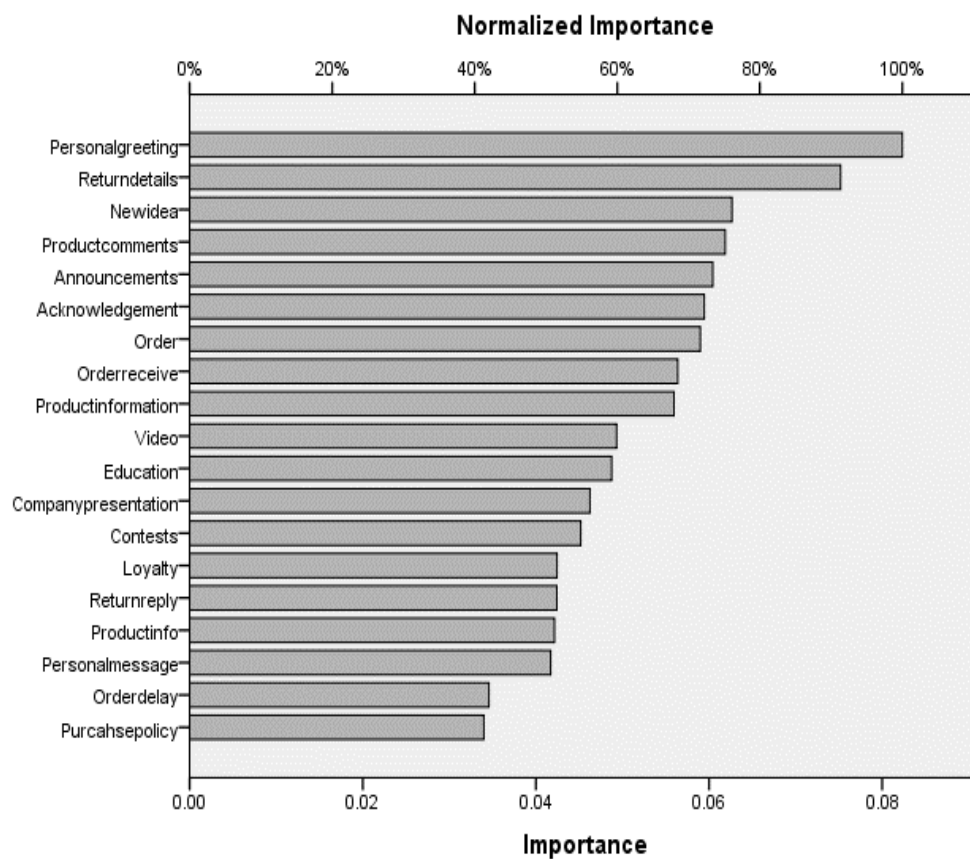
6.0 Conclusions

The findings of the research depicted that e-tailers are striving hard for creating the customer awareness, customer experience, customer engagement, customer service, and customer relationship management. However, their efforts has gone in vain as they could not build trust, loyalty, repeated purchase intention, sharing information and saving money in the customer groups. This is due to industry and media are the sun rising and have clutter. Apart from this, e-tailers adopted the discount model that resulted in transaction management than the relationship management.

7.0 Limitations and Future Research

The research suffered the geographical spread and consolidations in the industry. Recently Wal-Mart has acquired Flipkart and Myntra acquired by Flipkart etc... The industry heavily depended on start-up also seen closure of a few of them. The research considered e-tail and social media space in general and researchers recommend specific e-tailer or social media vehicles based research on social media influence on customer relationship in the e-tail domain can be conducted.

References

Accenture.com. (2017). Retrieved from https://www.accenture.com/t20161102T06080 0Z__w__/us-en/_acnmedia/PDF-28/Accenture-Salesforce-Retail-Exploring-Loyalty-ebook.pdf.

Digitalintelligencetoday.com. (2017). Retrieved from https://digitalintelligencetoday.com/documents/IBM2009.pdf.

Cho, Y., Im, I., & Hiltz, R. (2003). The impact of e-services failures and customer complaints on electronic commerce customer relationship management. *Journal of Consumer Satisfaction, Dissatisfaction and Complaining Behavior, 16,* 106.

Chui, M., Manyika, J., Bughin, J., Dobbs, R., Roxburgh, C., Sarrazin, H., & Westergren, M. (2012). The social economy: Unlocking value and productivity through social technologies. McKinsey Global Institute, 4.

Critical, V. (2013). New data on how social media drives purchasing - Vision Critical Blog. Vision Critical.Retrieved from https://www.visioncritical.com/new-data-how-social-media-drives-purchasing/

Ding, Y., Xu, H., & Tan, B. C. (2016, June). Predicting Product Return rate with"Tweets". In PACIS (p. 345).

Flitter, J., & Flitter, J. (2009). Customer service vs. social CRM? Social Media Today. Retrieved from 5 November 2017, https://www.socialmediatoday.com/content/customer-service-vs-social-crm.

Hajli, M. N. (2014). The role of social support on relationship quality and social commerce. *Technological Forecasting and Social Change, 87*, 17-27.

How Social Media Influences Shopping Behavior - eMarketer. (2017). Emarketer.com. Retrieved from https://www.emarketer.com/Article/How-Social-Media-Influences-Shopping-Behavior/1013718.

How to Use Social Media for a Product Launch | Simply Measured. (2016). Simply measured. Retrieved from https://simplymeasured.com/blog/how-to-use-social-media-for-a-product-launch/#sm.0000421pblhpqf5ls2j2ggug6p0m0.

Jose, M., & Jose, M. (2016). 10 tactics for launching on social media and generating buzz, inspired by companies who've done it [with free templates] – Learn. Learn. Retrieved from https://www.canva.com/learn/10-tactics-for-launching-a-product-using-social-media/

Kim, S., & Park, H. (2013).Effects of various characteristics of social commerce (s-commerce) on consumers' trust and trust performance. *International Journal of Information Management, 33*(2), 318-332.

LaDuque, J. (2010). Get more leads, engage customers with social media. *Franchising World, 42*(7), 23-25.

Mrutyunjayappa, R. (2015, February 25). Relevance of CRM in online retail. Retrieved from http://retail.economictimes.indiatimes.com/re-tales/Relevance-of-CRM-in-online-retail/510.

Personalization 2.0: How the Best Online Retailers Are Winning With Personalization - Personalics. (2016). Personalics. Retrieved from https://www.personalics.com/2016/08/20/personalization-2-0-best-online-retailers-winning-personalization/

Plus., F. (2017). How to humanize your e-commerce business with personalized messages. Retrieved from https://blog.kissmetrics.com/humanize-ecommerce/

Qureshi, U. A., Solangi, A. R., Memon, S. Q., &Taqvi, S. I. H. (2014). Utilization of Pine Nut Shell derived carbon as an efficient alternate for the sequestration of phthalates from aqueous system. *Arabian Journal of Chemistry*, *7*(6), 1166-1177.

Redsicker, P. (2014). 5 Ways you can influence consumer purchasing decisions: New Research. Socialmediaexaminer.com. Retrieved from https://www.socialmediaexaminer.com/5-ways-brands-can-influence-consumer-purchasing-decisions/

Relations, A. (2017). When should a company apologize on social media? Axiapr.com. Retrieved from http://www.axiapr.com/blog/when-should-a-company-apologize-on-social-media

Sales Strategy: A Greeting That Will Get You On Your Customer's Good Side - Code My Own Road. (2010). Code My Own Road. Retrieved from http://www.codemyownroad.com/sales-strategy-greeting-customers/

Shukle, R. (2015). How to handle customer complaints via social media. Socialmediaexaminer.com. Retrieved, from https://www.socialmediaexaminer.com/how-to-handle-customer-complaints-via-social-media/

Social Commerce: Which Social Media Platforms Drive the Most Sales? (2017). Shopify. Retrieved from https://www.shopify.in/infographics/social-commerce.

Srinivasan, A. (2014, June 24). To engage with customers, e- tailers log in to Twitter. Retrieved from http://articles.economictimes.indiatimes.com/2014-06-24/news/50825868_1_amazon-india-fashion-portal-myntra-flipkart.

The Visual Transformation of Retail Marketing: Lessons from eTail West | Olapic | Visual Commerce & Marketing Platform. (2017). Olapic | Visual Commerce &

Marketing Platform. Retrieved from http://www.olapic.com/resources/future-retail-marketing-recap-etail-west_blog-p1aw-g1lo-v-re/

Tsimonis, G., & Dimitriadis, S. (2014). Brand strategies in social media. *Marketing Intelligence & Planning*, *32*(3), 328-344.

Types of online personalisation for retail ecommerce. (2015). Smart Insights. Retrieved from http://www.smartinsights.com/ecommerce/web-personalisation/types-ecommerce-personalisation/

Walsh, G., Albrecht, A. K., Kunz, W., & Hofacker, C. F. (2016). Relationship between online retailers' reputation and product returns. *British Journal of Management, 27*(1), 3-20.

What insights digital marketers could take home ateTail Asia 2015. (2017). Mediabuzz.com.sg. Retrieved from http://www.mediabuzz.com.sg/companies-campaigns-2015-march/what-insights-digital-marketers-could-take-home-at-etail-asia-2015

Zhang, H., Lu, Y., Gupta, S., & Zhao, L. (2014). What motivates customers to participate in social commerce? The impact of technological environments and virtual customer experiences. *Information & Management, 51*(8), 1017-1030.