Investigating the Impact of Product Innovation and Product Quality on Brand Loyalty: Mediating Effect of Affordability. An Empirical Study on Smartphone users in Malaysia

Athifah Najwani Shahidan1, and Dr. Muhammad Zulqarnain Arshad2

1 Universiti Teknologi MARA, Cawangan Perlis

2 Universiti Utara Malaysia (UUM), Malaysia

Abstract

The purpose of this paper was to investigate the impact of product innovation and product quality on the brand loyalty of smartphone consumers in Malaysia and determine the mediating effect of affordability. For this purpose, survey was conducted from 309 smartphone users in Malaysia and data was analyzed through SmartPLS was used in which PLS-SEM technique was used. Furthermore, the findings of the study suggest that product innovation and product quality have positive and significant impact on brand loyalty and that affordability also positively and significantly mediates that impact of product innovation and product quality on the brand loyalty. This also reveals that brand loyalty among the smartphone users in Malaysia is subject to affordability level irrespective of product innovation and product quality. Therefore, it is recommended that smartphones should be priced and marketed as per the demographics and affordability level of the users. It is because, the consumers' loyalty with brand may be subject to affordability and it is also not appropriate to exceed level of affordability of consumers. Therefore, smartphone flagship models with multiple variants could be a way to maintain loyalty of consumers with brand.

Keywords: innovation, smartphone, quality, loyalty, Malaysia.

Introduction

In contemporary business environment, businesses are trying to survive and become a successful in long-term. Consumers are able to have consistent information through advertisement on social media, pop-ups, banners and also traditional means of advertisement (Lindstrom, 2011). This provides consumers multiple choices to fulfil their needs which has also fueled market with intense competition. In a highly competitive marketplace, it is critical for the businesses to distinguish itself from other competitors in the market and achieve a competitive advantage. In this regard, product innovation could play a vital role to achieve that position and this has also been considered a key factor behind success of various businesses (Salero et al., 2015). The product innovation includes the technical specifications, different components, materials included in the product, functional features, and user-friendly interface and also functional features in integrated software (OECD, 2005).

In addition to, quality refers to the perception of consumers that does not only depends on the quality of products and services but also depends on the quality of relationship between the consumers and business (Asshidin, Abidin and Borhan, 2016). Therefore, product quality cannot be neglected in a highly competitive marketplace that has strategic importance to give a competitive advantage to business. The product quality has to be impressive to attract and retain customers with the product specifications; because the product gives emotional and positive impressions to the target market which become beliefs and thoughts of the consumers (Kudeshia and Kumar, 2017). Similarly, brand loyalty refers to the act of repurchasing and customers loyalty with the brand is psychological decision-making in which one's behavioral response towards single product out of many alternatives is expressed based on the predeveloped loyalty with the brand through bad and good experiences (Hew, Badaruddin and Moorthy, 2017).

Product innovation and product quality are two factors that play an important role in customers satisfaction and lead positive and negative impressions, beliefs and thoughts in minds of consumers. Therefore, this paper aims to investigate the how innovation and quality of product affects brand loyalty amongst the users of smartphone in Malaysia and determining the role of affordability (Kiumarsi, Isa and Jayaraman, 2015). The significance of the study lies on the phenomena that is brand loyalty is subject to affordability or the it is independent from affordability and consumers loyal to brand care about the price of product or they have entirely blind trust on the brands (Zhang, Zhao and Gupta, 2018). Therefore, this study could draw implications for the marketers and smartphone manufacturers with respect to marketing strategies and pricing strategies respectively.

Literature Review

To develop and maintain a competitive advantage in the market the production innovation capability is used. This capability is derived from ability of the firm to develop new products and align innovative behaviors and processes with the strategic innovative orientation. It is also critical for growth and survival in a highly competitive market as smartphone industry. Smartphone industry is highly competitive marketplace in which various international brands compete with each other based on the features and technologies (Matulessy and Adiansunyani, 2016). These features and functionalities have to be to so creative and attractive to improve customer experience with the product and develop an experience driven relation which tend to become a loyalty later. Similarly, as per Kaplan (2009) production innovation is a driving force for organization to develop brand equity and in previous studies such as Saridan et al., (2008) have stated product innovation as a most significant factor to strengthen the success of brand. The innovativeness improves the image of brand and increase brand awareness because the this leaves a positive perception on the consumers that brand has innovativeness and value added in a particular design.

Therefore, product innovation has been considered vital for the building brand equity and majority of the time it extends and reinforce the meaning of brand. Brands that involve into the innovation activities are more likely to have higher performance and stronger growth as related to those organizations that do not involve into the innovation (Hanaysha and Abdullah, 2015). Hence, brands with innovativeness are successful to have improved brand awareness and attract greater number of consumers. According to Holland, Schekleton and Na (2011) consumers evaluate the innovativeness of the brands with the product design and product quality which could be termed to send a tactical message on the performance of product to consumers. The brand awareness increases as the flow of information from brand to consumers increases with respect to the attributes, origin, design, features and other functionalities. This becomes a favorable condition for the brand awareness and brand image. Similarly, Hamid et al., (2012) investigated the interrelation between the product innovation and brand awareness and authors concluded that there is a strong positive relation and as per the findings of Hanaysha and Hilman (2015) the impact of product innovation has positive and significant on brand image.

Wang et al., (2017) further found that product innovation in the China's mobile phone industry has a positive impact on the brand image. On the other hand, Ebrahim et al., (2016) has stated that another important factor that play a role in influencing the consumer experience and enhance brand image is the product quality. As study conducted by Hameed (2013) that product quality has positively influence the brand loyalty of the consumers. The product quality does not include the apparent design but also consists of reliability, design, features, software, and hardware performance (Hsiao and Chen, 2018). These factors are being considered by the users of smartphones when purchase the smartphone. However, once a brand loyalty is developed with a

certain brand then consumers become obsessed with the brand and have a trust on brands. According to the Hameed (2013) there can be two categories of the consumers; those have developed a brand loyalty with the brand and they are obsessed with brand may be irrational in purchase decision. Secondly, there are other consumers those are not obsessed with brand even though they have loyalty but they make rational decision. Therefore, this leaves a phenomenon that how does affordability of the consumers affects the brand loyalty and that how does impact of product innovation and product quality on the brand loyalty is mediated by affordability.

Hypotheses

H0: Brand loyalty has not been significantly affected by the Product innovation.

H1: Brand loyalty has been significantly affected by the Product innovation.

H0: Brand loyalty has not been significantly affected by the Quality product

H1: Brand loyalty has been significantly affected by the Quality Product

H0: Affordability significantly does not mediate effect of innovation and quality of product on brand loyalty

H1: Affordability significantly mediate effect of innovation and quality of product on brand loyalty

Methodology

In empirical investigation, methodology play an imperative role to establish link between the quantitative variables. Methodology is a comprehensive framework through empirical tests are to be conducted to test the hypothesis of the study. The first and foremost requirement of the paper was data collection for which non-probability sampling technique in which the convenience sampling technique was adopted. The population of the study was 18.4 million smartphone users in Malaysia and if the probability sampling technique would have employed then there was higher possibility that sample size of the study would have extremely high and author may have failed to achieve the sample requirement (Hair, 2015). Therefore, convenience sampling technique was applied in the study in which 500 questionnaires were sent to different people from Malaysia through e-mail, social media and also physically people were surveyed. However, cumulatively 309 responses were received that were in appropriate form to be used for survey, hence response rate of the survey was 61.80%.

Furthermore, the study has confirmatory factor analysis (CFA) in which partial least square (PLS) and structural equation model (SEM) was used to test the hypotheses that how product innovation and product quality affects the brand loyalty and that what role does affordability plays in mediating that effect. However, before testing hypothesis the preliminary diagnostic tests were analyzed to assess the reliability, convergent validity and discriminant validity of instrument that does instrument is reliable and valid to be used for the survey and that data collected is reliable and valid. Therefore, for the purpose of reliability of the instrument, Cronbach's alpha and composite reliability techniques were used. Meanwhile, average variance extracted (AVE) was used to assess the validity of the questionnaire that does it measures what it was intended to measure. On the other hand, to evaluate the conceptual measurement by questionnaire, the discriminant validity was checked through HTMT ratio.

Results

Factor Loading and Reliability & Validity

Table 1 provides factor loadings, Cronbach's, composite reliability and average variance extracted (AVE). Factor loadings of the each of question represents the variance explained by the each of the factor for variable and a factor with value less than 0.6 is dropped due to lack of power to explain variance. However, in following study the value of all factors was greater than 0.6 hence all factors were retained indicating that they are well explaining the variance of variables (Tho, 2015). Furthermore, the coefficient of Cronbach's alpha and composite reliability are for each of the construct is greater than suggested threshold of 0.7; hence this suggests that there is internal consistency within the data collected and construct comply with the scholarly practices

(Yudhoatmojo et al., 2015). Therefore, it is determined that data collected through instrument is reliable to use since construct produces consistent results. Furthermore, referring to the validity of the construct, it is mainly measured through average variance extracted (AVE) and it has been suggested by scholarly practices that value of AVE should be greater than 0.5 in order to claim that construct is theoretically correct and its compliance with the convergent validity (Shau, 2017). Meanwhile, the value of AVE is greater than threshold 0.5 hence there is sufficient evidence that instrument measures what it was intended to measure and that measures that should be related to are actually related. Therefore, it is determined that instrument used for the data collection is valid which also makes data valid to be used for empirical analysis.

Table 1 Factor Loadings, Reliability and Validity

	Factor Loadings	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Affordability		0.894	0.934	0.826
AFR1	0.892			
AFR2	0.936			
AFR3	0.898			
Brand Loyalty		0.885	0.929	0.813
BL1	0.896			
BL2	0.935			
BL3	0.873			
Product Innovation		0.873	0.907	0.661
PI1	0.786			
PI2	0.825			
PI3	0.779			
PI4	0.833			
PI5	0.839			
Product Quality		0.907	0.931	0.731
PQ1	0.866			
PQ2	0.902			
PQ3	0.864			
PQ4	0.891			
PQ5	0.743			

Discriminant Validity

The discriminant validity is used to evaluate the constructs used in the survey and it attempt to assess measurement of concepts that construct that should not be related are actually unrelated. There are multiple variables that represents a different concept and the construct measures multiple concepts that are unrelated. Therefore, to confirm distinctiveness of the concept measurement, Heterotrait-Mototrait Ratio (HTMT) is used in following study. In accordance with work of Henseler, Ringle and Sarstedt (2015) authors have used the threshold 0.85 that value of HTMT should not exceed the threshold 0.85 in order to confirm that there is discriminant validity. Table 2 presents HTMT ratio for each of the construct

Table 2 Discriminant Validity

HTMT Ratio	Affordability	Brand Loyalty	Product Innovation
Affordability			
Brand Loyalty	0.577		
Product Innovation	0.490	0.509	
Product Quality	0.588	0.603	0.732

The HTMT ratio of all constructs is less than 0.85; hence this indicates discriminant validity prevails. It can be said that constructs that should not be related are actually unrelated and that each construct measures different concept and there is no conceptual issue in instrument.

Predictive Prevalence and Path Coefficients

Table 3 presents the estimation power of the models and path coefficients explaining the effect that each of the variable have on observed variable. The coefficient of determination which is also termed as R-Square of the indirect model (Affordability) is 0.301 which means 30.1% variance of the brand affordability can be explained by the product innovation and product quality. However, remaining variance is residual which could not be explained by variables included in the model. Similarly, the R-square of the second model (Brand Loyalty) is 0.372 which means 37.2% variance of the model could be explained by product innovation and product quality and remaining is residual that could be explained by other factors influencing the brand loyalty (Hoła et al., 2015). The coefficient of determinations for two model are sufficient and shows at some extent variance is being explained by independent variables of the study.

Table 3 Predictive Prevalence and Path Coefficients

	Original Sample (O)	T Statistics	P Values
Affordability -> Brand Loyalty	0.299	4.619	0.000
Product Innovation -> Affordability	0.182	2.461	0.014
Product Innovation -> Brand Loyalty	0.119	1.826	0.068
Product Quality -> Affordability	0.414	5.273	0.000
Product Quality -> Brand Loyalty	0.305	4.625	0.000
R Square			
Affordability	0.301		
Brand Loyalty	0.372		

The impact of product innovation on brand loyalty is positive and not significant as suggested by C = 0.119, t statistics 1.826, P= 0.068. This implies that effect of product innovation is positive but not statistically significant at 0.05 or 5% but it is significant at 0.1 or 10% margin of error. Therefore, it is determined that if the product innovation increases then it could positively influence brand loyalty among the consumers but at significance of 10% and this also rejects first hypothesis of the study. On the other hand, impact of product quality on the brand loyalty is found to be positive and significant as C=0.305, t statistics= 4.625 and p= 0.00. This implies that if product quality improves then it could also increase the brand loyalty among the consumers of smartphone and this also rejects second null hypothesis. This also indicates that smartphone users are more inclined towards quality of smartphone that could be in form of software, hardware or design. These features play an central role in inducing behavior of consumers to develop a loyalty towards a brand. Lastly, it has been found that impact of affordability on the brand loyalty is positive and significant as C= 0.299, t statistics 4.619, p= 0.000, therefore it can be claimed that if a brand remains within the affordability level of consumers then it could also improve the brand loyalty of the users of smartphones and this also rejects third null hypothesis.

Indirect Effect

The indirect effect tries to determine the mediating impact of innovation and quality of product on brand loyalty of the consumers in Malaysia. Table 4 presents result of mediation as follows

Table 4 Indirect Effect

	Original Sample	T Statistics	P Values
Product Innovation -> Affordability -> Brand Loyalty	0.054	2.192	0.028
Product Quality -> Affordability -> Brand Loyalty	0.124	3.305	0.001

The affordability mediates the effect of innovation on the brand loyalty positively and significantly since C=0.054, t statistics = 2.192 and p= 0.028, this implies that if the smartphones remains within the affordability of consumers then product innovation also improves brand loyalty. Similarly, affordability also mediates the effect of quality on the brand loyalty positively and significantly since C=0.124, t statistics = 3.305 and p= 0.001, this also implies that if the smartphones remains within the affordability of consumers then product

quality also improves brand loyalty. In contrast, it can also be interpreted as that if smartphones become out of affordability of consumers then innovation and quality of product could not influence the brand loyalty.

Conclusion and Recommendations

The aim of this paper was to investigate the impact of innovation and quality of product on the brand loyalty of smartphone consumers in Malaysia and determine the mediating effect of affordability. For this purpose, survey was conducted from smartphone users in Malaysia and for empirical tests, SmartPLS was used in which PLS-SEM technique was used. It has been found that innovation of product positively and significantly affects the brand loyalty at 10% but not at 5%. Meanwhile, product quality positive and significantly affects the brand loyalty. This suggests that product innovation and product quality have a critical role to increase brand loyalty of the smartphone users in Malaysia. In addition to, the empirical analysis has also revealed that affordability positively and significantly mediates the effect of innovation and quality of product on brand loyalty of smartphone users in Malaysia. Hence, it can be claimed that brand loyalty of consumers in Malaysia is subject to affordability of the consumers irrespective of product innovation and product quality. Therefore, it is recommended that smartphones should be priced and marketed as per the demographics and affordability level of the users. It is because, the consumers' loyalty with brand may be subject to affordability and it is also not appropriate to exceed level of affordability of consumers. Therefore, smartphone flagship models with multiple variants could be a way to maintain loyalty of consumers with brand. Furthermore, it is suggested for future researchers that this study could be extended by inclusion of other developing countries to generalize findings over developing countries and draw implications for practical application.

References

Asshidin, N.H.N., Abidin, N. and Borhan, H.B., 2016. Perceived quality and emotional value that influence consumer's purchase intention towards American and local products. Procedia Economics and Finance, 35(3), pp.639-643.

Ebrahim, R., Ghoneim, A., Irani, Z. and Fan, Y., 2016. A brand preference and repurchase intention model: The role of consumer experience. Journal of Marketing Management, 32(13-14), pp.1230-1259.

Hair, J.F., 2015. Essentials of business research methods. ME Sharpe.

Hameed, F. 2013, "The Effect of Advertising Spending on Brand Loyalty Mediated by Store Image, Perceived Quality and Customer Satisfaction: A Case of Hypermarkets", Asian Journal of Business Management, Vol.5, No.1, pp.181-192.

Hanaysha, J.R. and Abdullah, H.H., 2015. Strategic effects of product innovation, service quality, and relationship quality on brand equity. Asian Social Science, 11(10), pp.56-72.

Henseler, J., Ringle, C.M. and Sarstedt, M., 2015. A new criterion for assessing discriminant validity in variance-based structural equation modeling. Journal of the academy of marketing science, 43(1), pp.115-135.

Hew, J.J., Badaruddin, M.N.B.A. and Moorthy, M.K., 2017. Crafting a smartphone repurchase decision making process: Do brand attachment and gender matter?. Telematics and Informatics, 34(4), pp.34-56.

Hoła, J., Sadowski, Ł., Reiner, J. and Stach, S., 2015. Usefulness of 3D surface roughness parameters for nondestructive evaluation of pull-off adhesion of concrete layers. Construction and Building Materials, 84, pp.111-120.

Holland, R., Schekleton, J., & Na, K. J. 2011. The influence of product design on establishing brand equity. Unpublished PhD Theses, Brunel University, UK.

Hsiao, K.L. and Chen, C.C., 2018. What drives smartwatch purchase intention? Perspectives from hardware, software, design, and value. Telematics and Informatics, 35(1), pp.103-113.

Kaplan, M. D. 2009. The relationship between perceived innovativeness and emotional product responses: A brand oriented approach. Innovative Marketing, 5(1), 39-47.

Kiumarsi, S., Isa, S.M. and Jayaraman, K., 2015. Determinants of service quality on service loyalty: the mediating role of customers' satisfaction and brand equity. Problems and perspectives in management, (13, Iss. 2 (spec. iss.)), pp.345-356.

Kudeshia, C. and Kumar, A., 2017. Social eWOM: does it affect the brand attitude and purchase intention of brands?. Management Research Review.

Maghzi, A., Abbaspour, B., Eskandarian, M., & Hamid, A. B. A. (2011). Brand Trust in Hotel Industry: Influence of Service Quality and Customer Satisfaction. Paper presented at the 2nd International Conference on Business, Economics and Tourism Management, Singapore

Matulessy, A. and Adiansunyani, N.L., 2016. Brand Image, Customer Satisfaction and Brand Loyalty of Blackberry Mobile Phone. International Journal of Business and Management Invention, 5(9), pp.49-52.

OECD 2005. Oslo Manual: Guidelines For Collecting and Interpreting Innovation Data (3th Edition), Paris: A joint publication of OECD and Eurostat.

Riyadh, Hosam Alden, Afrizal Tahar, Arum Indrasari, Salsabila Aisyah Alfaiza, Abdulsatar Abduljabbar Sultan, Mohammed T. Abusharbeh, and Shadi Emad Areef Alhaleh. "A Comparative Analysis of E-Banking Usage and Technology Acceptance in Iraqi and Indonesian Banks." (2020).

RIYADH, HOSAM ALDEN, SALSABILA AISYAH ALFAIZA, ABDULSATAR ABDULJABBAR SULTAN, LINDA MARLINDA, SRI RUSIYATI, WIRUMA TITIAN ADI, RACHMAN KOMARUDIN et al. "The Effects Of Technology, Organisational, Behavioural Factors Towards Utilization Of E-Government Adoption Model By Moderating Cultural Factors." Journal of Theoretical and Applied Information Technology 97, no. 8 (2019).

Salerno, M.S., de Vasconcelos Gomes, L.A., da Silva, D.O., Bagno, R.B. and Freitas, S.L.T.U., 2015. Innovation processes: Which process for which project?. Technovation, 35, pp.59-70.

Saridan, A. B., Mohamed, S., & Intan, O. 2008. Enterprise Strategies Contributing to the Success of Malaysian Biotechnology SMEs. In Oxford Business & Economics Conference Program. Oxford, UK. 22-24 June, 2008

Shau, T.V., 2017. The Confirmatory Factor Analysis (CFA) of Preschool Management Model in Sarawak. International Journal of Academic Research in Business and Social Sciences, 7(6), pp.221-231.

Sultan, A. A. (2019). Factors Influencing the Adoption of Mobile Banking Service among Cihan Bank Customers in the Kurdistan Region of Iraq. International Journal of Advanced Science and Technology, 27(1), 289-301.

Sultan, A. A., & Noor, S. M. (2017). Absorptive capacity, civil conflict and e-commerce adoption among Iraqi firms. Advanced Science Letters, 23(8), 7992-7995.

Sultan, A. A., Noor, S. M., & Nasirun, N. (2018). Technological factors and e-commerce adoption among small medium enterprises in Kurdistan, Iraq. Int. J. Eng. Technol, 7(3.5), 98-101.

Sultan, A. A., Noor, S. M., & Nasirun, N. (2018). Technological factors and e-commerce adoption among small medium enterprises in Kurdistan, Iraq. Int. J. Eng. Technol, 7(3.5), 98-101.

Tho, N.D., 2015. Human Capital Resources and Quality of Work Life of Marketers: FSQCA and SEM Findings. CORPORATE SOCIAL RESPONSIBILITY AND SUSTAINABLE BUSINESS DEVELOPMENT, p.125.

Wang, B., Gao, Y., Su, Z. and Li, J. (2017), "The Structural Equation Analysis of Perceived Product Innovativeness Upon Brand Loyalty Based on The Computation of Reliability And Validity Analysis", Springer Science- Cluster Comput, pp.1-11

YILDIZ, E. and Koçan, M., 2018. Impact of Product Innovation and Product Quality on Brand Loyalty: An Empirical Study on Smartphone Users. ICPESS 2018 PROCEEDINGS Volume 2: Ecomonic Studies,

p.51.

Yudhoatmojo, S.B., Wicaksana, M., Kumaralalita, L., Hidayanto, A.N. and Phusavat, K., 2015. Determinants of Employee's Knowledge Sharing Behavior: A Social Cognitive Theory Perspective. UNDIKSHA PRESS, p.209.

Zhang, H., Zhao, L. and Gupta, S., 2018. The role of online product recommendations on customer decision making and loyalty in social shopping communities. International Journal of Information Management, 38(1), pp.150-166.