sciendo

Management Theory and Studies for Rural Business and Infrastructure Development
eISSN 2345-0355. 2023. Vol. 46. No. 2: 142-151
Article DOI: https://doi.org/10.15544/mts.2023.15

SERVING RURAL MARKET VIA E-COMMERCE: A STUDY FOR CONSUMER DURABLES

***Punit Kumar Mishra*[1]**

[1] *Assistant Prof., Symbiosis Centre for Management Studies, Symbiosis International "Deemed University", Pune, India, E-mail address: punitkmishra@gmail.com*

Received 01 06 2023; Accepted 01 06 2023

Abstract
Rural distribution and promotion have always been challenging for consumer durable marketers. There are emerging and innovative distribution options available, but none of them has been found sustainable when scaled up to serve the masses. Off late, e-commerce is growing at an unprecedented pace, and rural India, with a 20% more user base than urban, opened great opportunities and set higher expectations among marketers. This study attempts to understand the impact of factors influencing online purchase decisions for consumer durables via E-commerce. A total of 604 respondents from 12 rural districts of Jharkhand (India) using quota sampling are selected. Stepwise multiple regression and ANOVA are used in the study. Results reveal that the most important factor is product quality, and it is followed by product variety, service quality, and price assessment.

Keywords*: E-commerce, Rural Distribution Channel, Customer Decision Making, and Consumer Durable, Internet.*
JEL Codes: *R1, M31, O30.*

Introduction

In the past few years e-commerce sector has been growing at an unprecedented pace and business organizations can't ignore it. According to a report, the Indian e-commerce market will reach $111.40 billion by 2025 (Singh, 2022). Neilson has reported that rural India has 20 percent more internet users than its urban counterparts (Jha, 2022). However, e-commerce penetration in the rural market couldn't reach in a big way. In the rural e-commerce space, big brands like Amazon, Flipkart, and Meesho have been striving to get inroads, and there are specific starts ups like Boonbox, StoreKing, Vakrangee, etc. with particular focus on rural and semi-urban markets.

E-commerce fundamentally changed the way business transactions happen. It is instrumental in providing the opportunity to sell products anywhere, reducing spatial discrepancies (Khan, 2016). It has been found that e-commerce has changed the retail sector. For differentiated products, e-commerce can replace brick-and-mortar distribution on the higher side compared to technologically complex products (Schöder, Ding & Campos, 2016). In a study, it has been found that "e-commerce villages" boost sales of both agricultural and non-agricultural products. More demand is coming from smaller cities and remote areas in China, leading to consumer gain in rural areas (Couture, Faber, & Liu, 2021). So, it shows the potential of e-commerce in the rural market, particularly for consumer durables. It is important to note that developing sustainable last mile delivery for rural e-commerce market is a complex task considering various uncertain factors (Liu, 2020; Zeng et. al., 2022)

This study attempts to assess the importance of factors influencing rural consumer durable purchase decision and role of e-commerce in rural retailing.

sciendo
Management Theory and Studies for Rural Business and Infrastructure Development
eISSN 2345-0355. 2023. Vol. 46. No. 2: 142-151
Article DOI: https://doi.org/10.15544/mts.2023.15

Literature Review

Distribution is one of the essential functions of marketing your product or services. It becomes more critical when you are serving the rural market. Various factors impact customer preference for consumer durable where distribution channels can play a role. Studies observe that product features, product quality, service quality, product variety, price assessment, and after-sales services are important factors in the decision-making that retailing impact directly.

In marketing, product & service quality and its link with customer satisfaction and/or loyalty is a very popular topic. Studies observe that there is a natural link between them (Huang, Lee & Chen, 2019). An empirical study by Cruz observed that product quality and customer satisfaction have a direct link that can be predicted (Cruz, 2015). Several factors impact customer satisfaction or purchase decision, they are durability, serviceability, aesthetics and perceived quality. It has been found that serviceability and perceived quality have relatively more impact on customer satisfaction and loyalty (Hoe & Mansori, 2018). In the case of purchases via e-commerce or online, consumers are more concerned about product quality and customer services than web transactions (Kidane & Sharma, 2016). E-commerce platforms have some standard features which facilitate users to navigate and find the products/services they are looking for. Since every platform is more or less similar, therefore, e-commerce features have no positive impact on satisfaction (Çelik, 2021). However, poor features may affect customer satisfaction negatively. Moreover, E-Supply Chain Management (E-SCM), has four major dimensions, i.e., management support, supplier interaction, process control, and customer focus. They are found to have a positive impact on service quality and customer satisfaction with online shopping (Abdirad & Krishnan, 2022).

The feature is an attribute of the product/service. Product attributes (features) information, product quality and price have an affirmative impact on purchase intention in online purchases. It has been found that product attribute has a positive impact on purchase willingness and it stems from enhancing consumer background knowledge about product (Lee, Cheng & Shih, 2017). Product features, let's say for smartphones, include both hardware and software and in the purchase decision-making of smartphones, it plays an important role (Laohakosol & Sharma, 2018). Durability or product lifetime is another important feature for consumer durable products. There are three types of product life, intended lifetime, ideal lifetime and predicted lifetime. In the study Oguchi et al., the ideal lifetime is longer than the intended and predicted lifetime (Oguchi, et. al., 2016).

Maintaining product variety at retail stores or online platforms always helps you to get a competitive edge. Managing inventory for variety at all product levels is a challenging and complex task. The major challenges are uncertain demand and temporal discrepancies. The temporal decision includes three important aspects they are optimal timing, location and extent of additional investment (Tripathi, & Kochhar, 2016). In order to handle product variety, a PVMS (product variety management strategy) is instrumental.

A study attempted to understand the relationship among supply chain adaptability, product variety management strategy, cost efficiency, supply chain agility, and customer service. It was found that a product variety management strategy helps optimize cost through supply chain agility and leads to better customer service through an adaptable supply chain (Um, et. al, 2017).

It has been observed that price assessment plays an important role in consumer decision-making and for rural consumers. In the case of online purchases, lower prices, consumer ability to navigate and easily find a product on the e-commerce platform, paucity of time and product variety have a major role to play (Baubonienė & Gulevičiūtė, 2015). Consumers, while making

a purchase on an E-commerce platform, tends to maximize value, whereas seller tries to maximize customer satisfaction. As the perceived price of a product moves from low to high, the values consumers associate with that is high to low (Ali &Bhasin, 2019). It is interesting to note that perceived value also depends on how fast the product is delivered to the consumer and the price. When it comes to the question 'When do consumers prefer to purchase things from E-commerce?', it can be said that when the same product is available at a lower price on such online platforms (Išoraitė&Miniotienė, 2018). In a study, it has been found that customer satisfaction improves if the e-commerce platform provides price comparison tools and multiple payment methods and options (Dospinescu, Dospinescu&Bostan, 2021).

Research Gap & Methodology

There are several studies on E-commerce and its role in distribution channels and customer satisfaction. However, very few studies are available for specific challenges faced in the rural e-commerce market. In Indian scenarios, such studies are rarely available that deals with e-commerce for consumer durable distribution channel and decision-making. There are several factors that impact decision-making, like product features, availability of product variety, product quality, service quality (both pre and post), and ability to assess price through the distribution channels. This study is an attempt to explore rural e-commerce and its ability to serve consumers for durable products.

Objectives of the study:

- To assess the impact of factors influencing purchase decisions via online;
- To explore how it varies across various age groups, income groups and levels of education.

Hypothesis of the study:

- H1a: There is a linear relationship between the overall impact of the internet on purchase decisions and Product features, Product quality, Product variety, service quality, Price assessment, after-sales service;
- H2a: There is a significant difference among different age groups using the internet as a source of information to assess factors influencing purchase decision;
- H3a: There is a significant difference among education levels using the internet as a source of information to assess factors influencing purchase decision;
- H4a: There is a significant difference among different income groups using internet as a source of information to assess factors influencing purchase decision.

Scope of the study

The study covers entire Jharkhand state. This study includes all types of consumer durables i.e., white goods, brown goods and consumer electronics. Primarily eight different categories of consumer durables considered for the study. It includes Refrigerator, Washing Machine, TV, Cooler, Fan, Iron, Mixer/Grinder and Mobile.

Sampling Strategy

Geographical representation has been ensured through the selection of rural districts of different categories classified as Leader, Contender, and Laggards based on consumer durable ownership. Considering the Jharkhand's economic situation and proper representation of the state's rural district, quota sampling is used. The total sample size of the study is 604 (Table-1) for the consumer survey. The selected number of respondents from leader districts 161, contender districts 104, and laggard districts 339. Data is collected from twelve (12) rural districts i.e. Ranchi, Ramgarh, Hazaribagh, Latehar, Chatra, Garwha, Palamu, Khunti, Simdega, Lohardaga, Bokaro, and East Singhbhum. To make the study valid and reliable geographical representation has been ensured through the selection of rural districts of different categories classified as Leader, Contender, and Laggards based on consumer durable ownership (Nigoshkar & Kapoor, 2012). Since, there is only one study available talks about classification of district based on consumer durables and there is no sampling frame available. Therefore, author decided to go for quota sampling. Many researchers observed that quota sampling provides similar result as probability sampling methods

sciendo

Management Theory and Studies for Rural Business and Infrastructure Development
eISSN 2345-0355. 2023. Vol. 46. No. 2: 142-151
Article DOI: https://doi.org/10.15544/mts.2023.15

(Cumming, 1990; Brick, 2011). Table 1 (respondents' profile) shows the sample size and different factors considered while deciding the representative sample from the Jharkhand consumer durable rural market.

Table 1. Respondents Profile

District Types*	Age (in years)	Income
Leader-161, Contender-104, Lagards-339	18-30: 230; 31-40: 194; 41-50: 161; 50+: 19	<Rs15000/month: 388; Rs. 15000-30000: 136; Rs. 30000-50000:51; Rs. 50000 and above: 29

**Source: Survey respondents of the study.*
***Notes: Classification of district based on consumer durable ownership, a study by Avizure.*

Scale Reliability and internal consistency

Generally, Cronbach alpha above 0.7 is considered good, if it is more than 0.8 then considered better and if it is more than 0.9 then it is the best (Vaske, Beaman, & Sponarski, 2017. In this study, Cronbach alpha value is 0.89 which shows that the selection of a three-point scale in the questionnaire worked well because in the rural market, many consumers are illiterate, therefore author decided to opt for a 3-point scale instead of five points.

Statistical Tools for Analysis

To achieve the objectives of the study it was decided to use stepwise regression and ANOVA. Stepwise regression analysis is used as an alternative of linear regression. It is possible that overfitting may occur when the regression model attempts to follow individual observation instead of the overall pattern and may lead to spurious result and poor prediction. Therefore, a method that takes iterations and includes or remove variable in stepped manner is quite helpful to understand the contribution of each variable (Wang, et. al., 2016). Multi-collinearity is one major issue in stepwise multiple regression. Tolerance and VIF (Variance Inflation Factor) are prevalent criteria to test multi-collinearity in the study. When VIF>10, then it is a serious matter of concern (Hair et. Al., 2010). A study by Menard observes that tolerance less than 0.20 is also serious which translates to VIF> 5, this also called rule of 5 (Menard, 2001).

ANOVA (Analysis of variance) is a prevalent method that is used when we compare more than two groups and how at least one of the groups is significantly different from others (Hair et. Al., 2010). In this study, it is an attempt to understand the usage of the internet/online for consumer durable purchases and how different groups vary on the basis of age, income, and education.

Results and Discussion

The objective of the study is to assess impact of factors influencing purchase decision via online. Stepwise regression analysis and ANOVA is used for the purpose here. The first hypothesis of the study to check whether linear relationship between overall impact of online on purchase decision and factors like Product feature, Product quality, Product variety, service quality, Price assessment, and after sales service. Looking at the R^2 values (Table 2), we can say that there is a linear relationship between dependent and independent variables.

Table 2. Model Summary[g]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.854[a]	.729	.728	.374	.729	1616.056	1	602	.000	
2	.909[b]	.826	.826	.299	.098	338.951	1	601	.000	
3	.932[c]	.869	.869	.260	.043	195.877	1	600	.000	
4	.939[d]	.882	.881	.247	.013	65.232	1	599	.000	
5	.943[e]	.889	.888	.240	.007	36.976	1	598	.000	
6	.947[f]	.896	.895	.232	.007	42.265	1	597	.000	1.847

a. Predictors: (Constant), Product Quality

b. Predictors: (Constant), Product quality, Product variety

c. Predictors: (Constant), Product quality, Product variety, service quality

d. Predictors: (Constant), Product quality, Product variety, service quality, Price assessment

e. Predictors: (Constant), Product quality, Product variety, service quality, Price assessment, after-sales service

f. Predictors: (Constant), Product quality, Product variety, service quality, Price assessment, after-sales service, Product Features

g. Dependent Variable: Overall impact of Internet on purchase decision

**Source: SPSS Stepwise regression results.*

Table 3. Multiple regression results using Confirmatory Estimation Approach (Coefficients[a])

	Model (B)	Unstandardized Coefficients	Standardized Coefficients	t	Sig.	Correlation	Tolerance	VIF
(Constant)	.068	.036		1.888	.059			
Product quality	.256	.022	.269	11.591	.000	.854	.396	2.526
Product variety	.185	.022	.198	8.522	.000	.820	.324	3.088
service quality	.254	.019	.267	13.061	.000	.817	.416	2.407
Price assessment	.102	.022	.116	4.679	.000	.818	.282	3.543
after sales service	.116	.017	.123	6.680	.000	.697	.320	3.121
Product Features	.126	.019	.136	6.501	.000	.771	.510	1.961

a. Dependent Variable: Overall impact of internet on purchase decision.
**Source: SPSS Regression Results.*

Table-2 shows, product quality being the most important factor while purchasing consumer durables. Then the next important factor is product variety wherein as per their budget they select the product. Service quality and price assessments are supported well by online platforms which impact their decision. The correlation value and beta value (Table-3)

sciendo
Management Theory and Studies for Rural Business and Infrastructure Development
eISSN 2345-0355. 2023. Vol. 46. No. 2: 142-151
Article DOI: https://doi.org/10.15544/mts.2023.15

clearly shows the importance of first four factors which is having more importance while purchase decision taken by consumer. It is worth to note that the misconception which says rural consumer only go for cheaper option is found wrong even on online purchase, they give more importance to product quality. However, rural consumer doesn't find after sales services that effective. One major reason is unavailability of such service and difficulty in assessing using online platform about the same. It has been observed that though rural consumers find online platforms moderately useful while assessing product features but have lesser importance when they make purchase decisions of consumer durable, the main reason behind this is rural consumer don't want unnecessary features which increases the product price which will not be used by them. Table-3 also shows that there are no multi-collinearity issues because all VIF (<5) and tolerance values (>0.20) shows no serious problem with variables. Table-3 also shows that Durbin Watson statistics is in the normal range of 1.5 to 2.5 (Hair et. Al., 2010) which is 1.847. It shows positive correlation between dependent and predictor value.

The second, third and fourth hypotheses check whether there is a significant difference among consumers as far as using the internet as a source of information to assess factors influencing purchase decisions. Table-4, Table-5, and Table 6 reject the null hypotheses and accepts the alternative hypotheses. Yes, there is a significant difference among various groups in terms of age, education and income. Younger people from 18 to 40 years find the internet a useful source of information be it product quality, features, service quality, price assessment, product variety and after-sales services. As far as income groups are concerned, people with incomes less than Rs. 30000 and more than Rs. 50000 perceive internet helps across all aspects of consumer durable purchases be it product features, product and service quality, variety, or after sales services. Across income categories price assessment and product variety can be assessed better using internet. Now let us come to education, so those who are graduates or postgraduates or have even higher education prefer internet to assess various aspects before purchasing consumer durables. As more millennial live in rural India, shows better scope for e-Commerce companies, increasing income and education level and or ability to handle ecommerce application when its penetration further improves will be very helpful to serve rural India through e-commerce.

Table 4. ANOVA by age

		Sum of Squares	df	Mean Square	F	Sig.
Product Features	Between Groups	31.874	3	10.625	19.199	.000
	Within Groups	332.051	600	.553		
	Total	363.925	603			
Product Quality	Between Groups	21.493	3	7.164	13.407	.000
	Within Groups	320.618	600	.534		
	Total	342.111	603			
Service Quality	Between Groups	18.848	3	6.283	11.653	.000
	Within Groups	323.497	600	.539		

	Total	342.344	603			
Price assessment	Between Groups	24.994	3	8.331	13.294	.000
	Within Groups	376.026	600	.627		
	Total	401.020	603			
Product Variety	Between Groups	36.935	3	12.312	23.201	.000
	Within Groups	318.394	600	.531		
	Total	355.329	603			
After-sales service	Between Groups	45.868	3	15.289	30.169	.000
	Within Groups	304.072	600	.507		
	Total	349.940	603			

**Source: SPSS ANOVA results.*

Table 5. ANOVA by Education

		Sum of Squares	df	Mean Square	F	Sig.
Product Features	Between Groups	36.546	2	18.273	33.545	.000
	Within Groups	327.380	601	.545		
	Total	363.925	603			
Product Quality	Between Groups	19.082	2	9.541	17.752	.000
	Within Groups	323.028	601	.537		
	Total	342.111	603			
service quality	Between Groups	24.296	2	12.148	22.955	.000
	Within Groups	318.049	601	.529		
	Total	342.344	603			
Price assessment	Between Groups	64.531	2	32.265	57.629	.000
	Within Groups	336.489	601	.560		
	Total	401.020	603			
Product Variety	Between Groups	44.459	2	22.229	42.976	.000
	Within Groups	310.871	601	.517		
	Total	355.329	603			
After-sales service	Between Groups	33.572	2	16.786	31.888	.000
	Within Groups	316.369	601	.526		
	Total	349.940	603			

**Source: SPSS ANOVA results.*

sciendo
Management Theory and Studies for Rural Business and Infrastructure Development
eISSN 2345-0355. 2023. Vol. 46. No. 2: 142-151
Article DOI: https://doi.org/10.15544/mts.2023.15

Table 6. ANOVA by Income

		Sum of Squares	df	Mean Square	F	Sig.
Product Features	Between Groups	26.447	3	8.816	15.674	.000
	Within Groups	337.478	600	.562		
	Total	363.925	603			
Product Quality	Between Groups	21.785	3	7.262	13.602	.000
	Within Groups	320.326	600	.534		
	Total	342.111	603			
service quality	Between Groups	29.206	3	9.735	18.654	.000
	Within Groups	313.138	600	.522		
	Total	342.344	603			
Price assessment	Between Groups	12.018	3	4.006	6.179	.000
	Within Groups	389.002	600	.648		
	Total	401.020	603			
Product Variety	Between Groups	5.894	3	1.965	3.373	.018
	Within Groups	349.436	600	.582		
	Total	355.329	603			
After-sales service	Between Groups	5.572	3	1.857	3.236	.022
	Within Groups	344.368	600	.574		
	Total	349.940	603			

**Source: SPSS ANOVA results.*

Conclusion

E-commerce is emerging as one of the important ways to connect with the rural market for consumer durable products. It is important to note that younger consumers adapt to changes faster than older counterparts, and it is true even for shopping. Results suggest that people who are educated with moderate income and below 40 years of age use e-commerce more compared to others. In the days to come upper limit age will keep increasing, and new and younger customers will prefer it more. Since all the rural e-commerce start-ups give importance to last-mile delivery through local partners as affiliates/ agents, retailers, or franchises will change the rural retailing discourse for consumer durable products. When rural consumer purchase durable products via e-commerce, the most important factor is product quality, it is followed by product variety, service quality, and price assessment. Product quality can be better assessed through e-commerce platforms by going through consumer ratings, and feedback which is not that easy in the case of offline retailing. After-sales services have always been ignored side

for the rural consumer durable market, though as of now it is not proven that e-commerce may help in improving it. However, local e-commerce partners can support durable companies to identify mechanics and deliver better after-sales services to rural consumers. In this study, after-sales services received lesser importance which influence purchase decisions, it is because consumers have not yet set that level of expectation like urban counterparts at least for consumer durable products. It is interesting to note that assessing product feature through online platform is moderately useful but have lesser importance when it comes to the purchase decision factor. The main reason behind this is rural consumer don't want unnecessary features which increases the product price that will not be used by them.

Consumer not only uses e-commerce platforms but also online sources like YouTube, blogs, and customer reviews to assess all these. The lesser-educated consumer normally collects information through retailers, affiliates, and franchise owners. Overall, it can be concluded that e-commerce has a bright future and it will change rural consumer durable retailing in a big way.

Limitations and Future Scope of the Study

It was not feasible to take all consumer durable into consideration, therefore only eight product categories, refrigerator, washing machine, TV, cooler, fan, iron, mixer/grinder and mobile have been taken. Respondents, participated only from Jharkhand (India), therefore, generalising it for whole the country will be misleading. Aspects like gender, type of town/rural market (because of varying infrastructural facilities), cultural factors that affect E-commerce, and its impact on promotion can be studied in a detailed fashion.

References

Abdirad, M., & Krishnan, K. (2022). Examining the impact of E-supply chain on service quality and customer satisfaction: a case study. *International Journal of Quality and Service Sciences*., doi: 10.1108/ijqss-08-2020-0131.

Ali, A., & Bhasin, J. (2019). Understanding customer repurchase intention in e-commerce: Role of perceived price, delivery quality, and perceived value. *Jindal Journal of Business Research*, *8*(2), 142-157. https://doi.org/10.1177/2278682119850275

Baubonienė, Ž., &Gulevičiūtė, G. (2015). E-commerce factors influencing consumers 'online shopping decision. *Social technologies*, *5*(1), 62-73. https://doi.org/10.13165/ST-15-5-1-06

Brick M. (2011) 'The Future of Survey Sampling', *Public Opinion Quarterly* (Special Issue) 75 (5), p. 872–888. doi: https://doi.org/10.1093/poq/nfr045

Çelik, K. (2021). The effect of e-service quality and after-sales e-service quality on e-satisfaction. *Business & Management Studies: An International Journal*, *9*(3), 1137-1155. https://doi.org/10.15295/bmij.v9i3.1898

Couture, V., Faber, B., Gu, Y., & Liu, L. (2021). Connecting the countryside via e-commerce: evidence from China. *American Economic Review: Insights*, *3*(1), 35-50.
https://www.nber.org/system/files/working_papers/w24384/w24384.pdf

Cruz, A. V. (2015). *Relationship between product quality and customer satisfaction*. Walden University https://scholarworks.waldenu.edu/cgi/viewcontent.cgi?article=2402&context=dissertations. Retrieved on 1st December 2022

Cumming R. (1990) 'Is probability Sampling Always Better? A Comparison of Results from a Quota and Probability Sample Survey', *Community Health Studies* 14 (2), p. 132–137. pp. 132-137, 2010, doi: 10.1111/j.1753-6405.1990.tb00033.x.

Dospinescu, O., Dospinescu, N., &Bostan, I. (2021). Determinants of e-commerce satisfaction: A comparative study between Romania and Moldova. *Kybernetes*. vol. 51, no. 13, pp. 1-17, 2021, doi: 10.1108/k-03-2021-0197.

Dustin Schöder, Feng Ding, Juliana Kucht Campos (2016) The Impact of E-Commerce Development on Urban Logistics Sustainability. *Open Journal of Social Sciences*,04,1-6. doi: 10.4236/jss.2016.43001

Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. (2010). Multivariate data analysis (7th edition). *Harlow: Pearson Education Limited*. pp -200-202.

Hoe, L. C., &Mansori, S. (2018). The effects of product quality on customer satisfaction and loyalty: Evidence from Malaysian engineering industry. *International Journal of Industrial Marketing*, *3*(1), 20. , doi: 10.5296/ijim.v3i1.13959 https://www.macrothink.org/journal/index.php/ijim/article/view/13959

eISSN 2345-0355. 2023. Vol. 46. No. 2: 142-151
Article DOI: https://doi.org/10.15544/mts.2023.15

Huang, P. L., Lee, B. C., & Chen, C. C. (2019). The influence of service quality on customer satisfaction and loyalty in B2B technology service industry. *Total Quality Management & Business Excellence*, *30*(13-14), 1449-1465. https://doi.org/10.1080/14783363.2017.1372184

Išoraitė, M., &Miniotienė, N. (2018). Electronic commerce: Theory and practice. https://mpra.ub.uni-muenchen.de/91034/1/MPRA_paper_91034.pdf accessed on Nov. 13, 2022

Jha, L. (2022, May 6). *Rural India has 20% more internet users than urban areas: Nielsen Mint.* Retrieved December 18, 2022, from https://www.livemint.com/: https://www.livemint.com/news/india/rural-india-has-20-more-internet-users-than-urban-areas-nielsen-11651812524529.html

Khan, A. G. (2016). Electronic commerce: A study on benefits and challenges in an emerging economy. *Global Journal of Management and Business Research*. https://globaljournals.org/GJMBR_Volume16/3-Electronic-Commerce-A-Study.pdf

Kidane, T. T., & Sharma, R. R. K. (2016, March). Factors Affecting Consumers' purchasing Decision through ECommerce. In *Proceedings of the 2016 International Conference on Industrial Engineering and Operations Management Kuala Lumpur, Malaysia* (Vol. 8, No. 10, pp. 159-165). http://ieomsociety.org/ieom_2016/pdfs/52.pdf (accessed: Nov. 14, 2022).

Laohakosol, W., & Sharma, A. (2018). Impact of product-related and social factors on purchase intention of smart-phone buyers in Nepal. *The Sankalpa: International Journal of Management Decisions*, *4*(1) pp. 223-229, 2017, doi: 10.1016/j.apmrv.2017.07.007.

Lee, W. I., Cheng, S. Y., & Shih, Y. T. (2017). Effects among product attributes, involvement, word-of-mouth, and purchase intention in online shopping. *Asia Pacific Management Review*, *22*(4), 223-229. https://doi.org/10.1016/j.apmrv.2017.07.007

Liu, W. (2020). Route optimization for last-mile distribution of rural E-commerce logistics based on ant colony optimization. *IEEE Access*, *8*, 12179-12187. doi:10.3390/su11143937

Menard, S. (2001). Applied Logistic Regression Analysis: Sage University Series on Quantitative Applications in the Social Sciences. 2nd edition Sam Houston State University, USA, University of Colorado, USA: SAGE Publications, Inc.

Nigoshkar, D. & Kapoor, H. (2012). The 'Leaders' and the 'Contenders' – The way districts stack up. *PHD Chamber Bulletin, AvzareSolutions,Gurgoan, India.* pp, 51

Oguchi, M., Tasaki, T., Daigo, I., Cooper, T., Cole, C., & Gnanapragasam, A. (2016, September). Consumers' expectations for product lifetimes of consumer durables. In *2016 Electronics Goes Green 2016+(EGG)* pp.1-6. IEEE. doi:10.1109/egg.2016.7829850.http://irep.ntu.ac.uk/id/eprint/28621/7/PubSub_6142_a315_Cole.pdf.

Singh, S. (2022, September 7). *Key E-commerce trends in 2022 to accelerate your business.* Retrieved December 17, 2022, from retail.economictimes.indiatimes.com: https://retail.economictimes.indiatimes.com/blog/key-e-commerce-trends-in-2022-to-accelerate-your-business/94053908

Tripathi, V., & Kochhar, P. (2016). Determinants of Effective Inventory Management A Study of Consumer Durable Retailers. *Bonfring International Journal of Industrial Engineering and Management Science*, *6*(2), 53-58. doi: 10.9756/bijiems.10448

Um, J., Lyons, A., Lam, H. K., Cheng, T. C. E., & Dominguez-Pery, C. (2017). Product variety management and supply chain performance: A capability perspective on their relationships and competitiveness implications. *International Journal of Production Economics*, *187*, 15-26. doi: 10.1016/j.ijpe.2017.02.005

Vaske, J. J., Beaman, J., & Sponarski, C. C. (2017). Rethinking internal consistency in Cronbach's alpha. Leisure sciences, 39(2), 163-173. doi: 10.1080/01490400.2015.1127189.

Wang, M., Wright, J., Brownlee, A., &Buswell, R. (2016). A comparison of approaches to stepwise regression on variables sensitivities in building simulation and analysis. *Energy and Buildings*, *127*, 313-326. DOI: 10.1016/j.enbuild.2016.05.065

Zeng, M., Liu, R., Gao, M., & Jiang, Y. (2022). Demand forecasting for rural e-commerce logistics: a gray prediction model based on weakening buffer operator. *Mobile information systems*, *2022*. https://doi.org/10.1155/2022/3395757