NEXT GEN RETAILING: AN EMPIRICAL STUDY ON THE PARADIGM SHIFTS OF INDIAN RETAILING

1Priyanka Tripathy, Prof. P.K. Tripathy

1Research Scholar, School of Commerce and Management Studies, Ravenshaw University, Cuttack - 753003 & MIMTS, Khurda, Odisha, Ph – 09776083760,

2Head of the Department, P.G. Department of Statistics, Utkal University, Bhubaneswar –751004, Odisha, Ph – 09937132541

ABSTRACT
The Indian retail sector goes through a modification and therefore the emerging market is witnessing a significant change in its growth and investment pattern. Apart from the brick-mortar formats, brick-click and click-click formats are also increasingly visible on the Indian retail landscape. With a growing economy, improving income dynamics, rising awareness, and a youth-heavy client base, India is well on its way to become one among the foremost prospective markets for the domestic and international retailers. The Indian retail sector is undergoing a paradigm shift and ‘Next Generation Retailing’ has evolved with new standards and benchmarks set for the industry, with higher and sophisticated technology at one end and increasing client focus on the other. In view of the other, the present paper makes a noble attempt to define ‘Next-Generation Retailing’ and describe its characteristic features by using factor analysis and focuses on the benefits of Next Generation Retailers in the Indian context. The current paper seeks to spot and identify the drivers which affect the growth of the Indian retail market and look at the major factors affecting the retail business in India. For this purpose a structured questionnaire was constructed to gather shopping preferences from 300 respondents in Bhubaneswar. Descriptive Analysis, ANOM and ANOVA were also used to verify whether there is a significant difference between consumers’ buying behavior of shopping and convenience goods from different retail formats. The findings of the paper reveal that consumers’ prefer modern retail formats due its significant product attributes like improved quality, variety of brands and assortment of merchandise and store attributes like parking facility, trained sales personnel and complete security. The results show that socio-demographic variables such as age, education, accompany, and family size as well as packaging, store environment, and price of products have influence on retail format choice.

Keywords: Next Gen Retailing, Factor Analysis, Consumer’s Shopping Preference

1.INTRODUCTION
Retailing in the present context has become one of the key contributors to the economic growth of our country. It has emerged in multiple formats in the recent times thereby contributing to the economy. The Indian retail sector is going through a transformation and the emerging market is witnessing a significant change in its growth pattern. Both existing and new players are experimenting with new retail formats. These emerging retail formats provide wide variety to customers and offer an ideal shopping experience with an amalgamation of product, entertainment and service, all under a single roof. Changing tastes and preferences of consumers’ are leading to radical transformation in lifestyles and spending patterns and this in turn is giving rise to spurt in new business opportunities.

‘Next-Generation Retailing’ has a long and promising future ahead, as it has started late in India and is as yet in a nascent stage. Technology is going to be the crucial factor in the development of retail in India, which will get even stronger and the backend supply chain will also become more robust in the near future. There will be even more new formats, and focus on customer centricity will increase further. Customers would thereby enjoy the full benefits of ‘Next-Generation Retailing’ in India. ‘Next-Generation Retailing’ has evolved finally, and its important characteristic features are: High-end technology, experimenting with innovative formats and enhanced customer centricity for building a loyal clientele. India’s vast middle class and its almost untapped retail industry are key attractions for global retail giants wanting to enter newer markets.

2.LITERATURE REVIEW
India is being seen as a potential goldmine for retail investors from over the world and latest research has rated India as the top destination for retailers for an attractive emerging retail market. Recent studies on consumer behavior (Dittmar, Beattie, & Friese, 1996, Tauber 1972, Rook 1987) have indicated that although consumers have become very sophisticated these days, yet most of their decisions are driven by an irresistible urge to buy. Sahu (2010) describes that
a rise in consumer confidence, improvement in profitability and aggressive expansion plans signal better tidings for listed players in the organized retail space.

Gellner (2007) explains in this context that in most retail meetings and/or publications, hardly ever is there any talk on problems that modern retail formats are encountering doing business in India. There is a significant profitability challenge, to deliver the brand promise in terms of quality and geographic spread in line with the growth in consumer demand.

Nagesh (2007) describes that Indian retailing will see a sea of change in the next five years, driving consumption boom never seen in the history of any country. From a drought situation we will see a flood of modern retail, So Indian retail will be on a steady ground of sustained growth year after year and thereafter.

Biyani (2007) describes that we are on the cusp of change wherein a huge, multicultural India is transforming from a socialist economy to a consumption-led, creative economy. The scope and depth of change that is taking place due to the revolutionary retail market with a gigantic opportunity for marketers and retailers, not only in large cities but also in small towns. So retailing can play a significant role in creating the India of tomorrow.

India’s sunrise retail sector is witnessing a major transformation as traditional markets make way for modern and indigenously development retail formats. Standing on the threshold of a retail revolution and witnessing a fast changing retail landscape. Indian retail is still growing, and growing at an enviable rate.

OBJECTIVES

In this paper ANOVA analysis and ANOM have been applied to verify whether there is a significant difference between consumer’s buying behavior of shopping and convenience goods from different retail formats. In addition the ANOVA and ANOM are applied to study the buying behavior across different retail formats on the basis of income, age, qualification and occupation. This paper also tries to identify the factors affecting the Next-Gen retailing in Bhubaneswar.

METHODOLOGY

Both primary and secondary data has been carried out to find the consumer’s tendency towards Next-Gen retail. A sample of 300 consumers were surveyed to explore the characteristic features of ‘Next-Generation Retailing’ with the help of Factor Analysis. The rating was done on a five-point Likert scale. The survey data was analyzed using SPSS Version 20.0.

Using secondary data, the analysis of one and multifactor experimental designs has been traditionally carried out by Analysis of Variance (ANOVA) technique. ANOVA identifies factors and interactions that are statistically significant. ANOM is an alternative to ANOVA for factors involving random effects.

Ott (1967) developed ANOM because he felt that quality professionals are in need for a statistical procedure of critical importance for trouble shooting industrial processes and analyzing the result of experiment. Ott recognized critical importance of graphical displays in the data analysis process and used Shewhart’s control chart as a basis for ANOM.

Ott’s procedure is carried out by comparing sample mean values to overall grand mean about which decision lines have been constructed. If sample mean lies outside the decision lines, it is declared significantly different from the grand mean. The basic difference between control charts and ANOM is that the value of K (number of sample being compared) is usually as large as 20 or more in control charts to compute control limits, where as K>2 is used to compute decision lines in ANOM charts for process control. ANOM is useful for improvement of the quality rather than control of the quality. Prof. Ott observed that ANOVA was difficult to understand for a management scientist and the effectiveness of the procedure was limited because data plotting was not an integral part of the ANOM procedure.

ANOM is more effective than ANOVA because graphical display of data is a key part of ANOM procedure. Therefore, ANOM procedures with decision lines are vital aids in the search and identification process. For testing equality of several population means, Ott (1967) introduced Analysis of Means procedure, which is based on multiple significance test proposed by Halperin et al.(1955). Later, Nelson (1982) obtained exact critical points for $h(\alpha, k, \mu)$ and used decisions lines as

$$\bar{X} \pm h(\alpha, k, \mu) S \sqrt{\frac{k - 1}{kn}}$$

Where, $\bar{X}$ is average of $k$ sample means and $S^2$ is the pooled sample variance; $h(\alpha, k, \mu)$ is a critical point which depends on $k$ (number of sample points), $\mu$ (degrees of freedom in error sum of squares) and $\alpha$ (level of significance).

Nelson (1982) obtained exact critical values of for $\alpha = 0.01$ and $0.05$ in case of equal sample size. Later, Nelson (1983a) extended the tables of $h(\alpha, k, \mu)$ factor for $= 0.01$, when sample size is equal. Also by following Sidak (1967), he gave procedure for obtaining critical values for $h(\alpha, k, \mu)$ when sample sizes are unequal. The review paper of ANOM by Rao (2005) is worth reading for understanding the work of ANOM.
The data of the analysis to verify whether there is a significant difference between consumer’s buying behavior of shopping and convenience goods from different retail formats has been taken from the survey reports conducted in Bhubaneswar, Odisha on different retail formats. Seven case studies are considered here. In the first study, the aggregative results of consumers’ buying behaviour regarding convenience and shopping goods from different retail formats are taken. For the second study, consumers’ prefer speciality stores for buying various shopping goods like clothing, jewellery and furniture is taken. The third table deals with the different categories of tax payers visiting emerging retail formats. Similarly, the fourth and fifth table deals with age and education level of consumers and their acceptance to these new emerging retail concepts. The sixth table deals with occupation of the consumers. The last table deals with primary data related to consumers’ preferences of limited products across different retail formats are analyzed.

ANOVA tables are not always helpful in communicating outcomes of study to the operators, technicians and managers who may lack sufficient statistical training. Therefore, the graphical technique of ANOM in presented. ANOM can be applied to both variable and attribute data. In this paper, ANOM chart is computed for both the cases.

Case 1: Statistical Analysis of the aggregative results of consumers’ buying behaviour have impact on convenience and shopping goods from different retail formats.

The ANOVA chart are calculated as follows:

### Table 1: ANOVA for aggregative result of consumers’ buying behaviour

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Sum of Squares</th>
<th>F Ratio</th>
<th>Critical Value</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>6.186</td>
<td>5</td>
<td>1.237</td>
<td>14.514</td>
<td>2.437</td>
<td>0.05</td>
</tr>
<tr>
<td>Within Groups</td>
<td>3.280</td>
<td>42</td>
<td>0.085</td>
<td>3.521</td>
<td>0.01</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>9.466</td>
<td>47</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

We observe from Table 1 that F Ratio is more than critical value at 1% and 5% level of significance, hence we conclude that the aggregative results of consumers’ buying behaviour possess no serious impact on convenience and shopping goods from different retail formats. Using ANOM $\overline{X}$ – chart procedure given in Ramig (1983), the decision lines are computed as

$$CL = \overline{X} = 24.925$$

$$LDL = \overline{X} - h_{(x,k,\mu)}S\sqrt{\frac{k-1}{kn}} = 12.0684 (0.05)$$

$$UDL = \overline{X} + h_{(x,k,\mu)}S\sqrt{\frac{k-1}{kn}} = 37.7816 (0.05)$$

$$LDL = \overline{X} - h_{(x,k,\mu)}S\sqrt{\frac{k-1}{kn}} = 13.4734 (0.01)$$

$$UDL = \overline{X} + h_{(x,k,\mu)}S\sqrt{\frac{k-1}{kn}} = 36.3765 (0.01)$$

Where, $h_{(x,k,\mu)}$ is the critical value obtained from tables of Nelson (1983) for $k = 6$, $\infty = 0.05$ and $\infty = 0.01$ and $\mu = 48$ d.f. We prepare ANOM $\overline{X}$ - chart as in Fig.1 and Fig.2 and plot the points $\overline{X}_i$, $(i=1,2,3,4,5,6)$. 

![Fig. 1](image-url)
From Fig. 1 and Fig. 2, we observe that all points lie inside the decision lines. Hence, we conclude that there is no significant impact of the aggregative results of consumers’ buying behaviour on convenience and shopping goods from different retail formats.

Case 2: Statistical Analysis of consumers’ preferring specialty stores for buying various shopping goods like clothing, jewellery and furniture.

The ANOVA chart are calculated as follows.

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>Degrees of freedom</th>
<th>Mean Sum of Squares</th>
<th>F Ratio</th>
<th>Critical Value</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Among groups</td>
<td>2.126</td>
<td>5</td>
<td>0.425</td>
<td>6.036</td>
<td>2.445</td>
<td>0.05</td>
</tr>
<tr>
<td>Error</td>
<td>2.959</td>
<td>42</td>
<td>0.070</td>
<td>3.52</td>
<td>0.1</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>5.084</td>
<td>47</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

We observe from Table 2 that F Ratio is more than critical value at 1% and 5% level of significance, hence we conclude that consumers’ are not preferring specialty stores for buying various shopping goods like clothing, jewellery and furniture. Using ANOM \( \bar{X} \) – chart procedure given in Ramig (1983), the decision lines are computed as

\[
CL = \bar{X} = 25.535
\]

\[
LDL = \bar{X} - h_{(x, k, \mu)} S \sqrt{\frac{k-1}{kn}} = 20.1883 (0.05) ; UDL = \bar{X} + h_{(x, k, \mu)} S \sqrt{\frac{k-1}{kn}} = 30.8817 (0.05)
\]

\[
LDL = \bar{X} - h_{(x, k, \mu)} S \sqrt{\frac{k-1}{kn}} = 20.7726 (0.01) ; UDL = \bar{X} + h_{(x, k, \mu)} S \sqrt{\frac{k-1}{kn}} = 30.2974 (0.01)
\]

Where, \( h_{(x, k, \mu)} \) is the critical value obtained from tables of Nelson (1983) for \( k = 6, \alpha = 0.05 \) and \( \alpha = 0.01 \) and \( \mu = 48 \) d.f. We prepare ANOM \( \bar{X} \) - chart as in Fig. 3 and Fig. 4 and plot the points \( \bar{X}_i, (i=1,2,3,4,5,6) \).

![Fig. 2](image_url)


![Fig. 3](image_url)
From Fig. 3 and Fig. 4, we observe that all points lie inside the decision lines. Hence, we reaffirm that consumers do not prefer specialty stores for buying various shopping goods like clothing, jewellery and furniture.

Case 3: Statistical Analysis of consumers’ preferences across different retail formats depends on household income.

Table 3: ANOVA for household income’s impact on consumers’ preferences.

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Sum of Squares</th>
<th>F Ratio</th>
<th>Critical Value</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Among groups</td>
<td>0.0016</td>
<td>2</td>
<td>0.0008</td>
<td>0.001887327</td>
<td>3.68</td>
<td>0.05</td>
</tr>
<tr>
<td>Error</td>
<td>6.3582</td>
<td>15</td>
<td>0.42388</td>
<td>5.42</td>
<td>0.01</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>6.3598</td>
<td>17</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

We observe from Table 3 that the F Ratio is less than its critical value at 5% and 1 % level of significance. Hence, we conclude that household income possess impact on the consumers’ preferences across different retail formats. The decisions lines are computed for the ANOM $\bar{X}$ - charts as follows

$$\text{CL} = \overline{X} = 21.04$$

$$\text{LDL} = \overline{X} - h_{(x,k,\mu)} S \sqrt{\frac{k - 1}{kn}} = 21.0391 \text{ (0.05)}; \text{ UDL} = \overline{X} + h_{(x,k,\mu)} S \sqrt{\frac{k - 1}{kn}} = 21.0408 \text{ (0.05)}$$

$$\text{LDL} = \overline{X} - h_{(x,k,\mu)} S \sqrt{\frac{k - 1}{kn}} = 21.0389 \text{ (0.01)}; \text{ UDL} = \overline{X} + h_{(x,k,\mu)} S \sqrt{\frac{k - 1}{kn}} = 21.0410 \text{ (0.01)}$$

Where, $h_{(x,k,\mu)}$ is the critical value obtained from tables of Nelson (1983) for $k = 3$, $\infty = 0.05$ and $\infty = 0.01$ and $\mu = 17$ d.f. We prepare ANOM $\overline{X}$ - chart as in Fig.5 and Fig. 6 and plot the points $\overline{X}_{i},(i=1,2,3)$.
From Fig. 5 and Fig. 6, we observe that all points lie inside the decision lines. Hence, we conclude that household income possess impact on the consumers’ preferences across different retail formats. Case 4: Statistical Analysis of consumers’ preferences across different retail formats depends on age.

We observe from Table 4 that the F Ratio is less than its critical value at 5% and 1 % level of significance. Hence, we conclude that consumers’ preferring different retail formats depends on their age. The decisions lines are computed for the ANOM $\bar{X}$ - charts as follows

$$\text{CL} = \bar{X} = 21.03$$

$$LDL = \bar{X} - h_{(\alpha, k, \mu)}S\sqrt{\frac{k-1}{kn}} = 21.02973 (0.05); \ UDL = \bar{X} + h_{(\alpha, k, \mu)}S\sqrt{\frac{k-1}{kn}} = 21.03026 (0.05)$$

$$LDL = \bar{X} - h_{(\alpha, k, \mu)}S\sqrt{\frac{k-1}{kn}} = 21.02974 (0.01); \ UDL = \bar{X} + h_{(\alpha, k, \mu)}S\sqrt{\frac{k-1}{kn}} = 21.03025 (0.01)$$

Where, $h_{(\alpha, k, \mu)}$ is the critical value obtained from tables of Nelson (1983) for $k = 3, \ \alpha = 0.05$ and $\alpha = 0.01$ and $\mu = 17$ d.f. We prepare ANOM $\bar{X}$ - chart as in Fig.7 and Fig. 8 and plot the points $\bar{X}_i, (i=1,2,3)$.
Note: UDL = Upper Decision Limit; CL = Control Limit; LDL = Lower Decision Limit

From Fig. 7 and Fig. 8, we observe that some points lie outside the decision lines. Hence, we conclude that consumers’ preferring different retail formats depends on their age.

Case 5: Statistical Analysis of consumers’ preferences across different retail formats depends on education.

Table 5: ANOVA for education’s impact on consumers’ preferences.

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Sum of Squares</th>
<th>F Ratio</th>
<th>Critical Value</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Among groups</td>
<td>0.0011111</td>
<td>2</td>
<td>0.000555556</td>
<td>3.68</td>
<td>3.68</td>
<td>0.05</td>
</tr>
<tr>
<td>Error</td>
<td>8.1823333</td>
<td>15</td>
<td>0.545488889</td>
<td>5.42</td>
<td>5.42</td>
<td>0.01</td>
</tr>
<tr>
<td>Total</td>
<td>8.1834444</td>
<td>17</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

It is observed from Table 5 that the F Ratio is less than its critical value at 5% and 1% level of significance. Hence, we conclude that educational level of the customers affects consumers’ preferences of different retail formats. The decisions lines are computed for the ANOM $\bar{X}$ - charts as follows

$$CL = \overline{X} = 21.033$$

$$LDL = \overline{X} - h_{(x,k,\mu)}S\sqrt{\frac{k-1}{kn}} = 21.02759 (0.05); UDL = \overline{X} + h_{(x,k,\mu)}S\sqrt{\frac{k-1}{kn}} = 21.03840 (0.05)$$

$$LDL = \overline{X} - h_{(x,k,\mu)}S\sqrt{\frac{k-1}{kn}} = 21.03249 (0.01); UDL = \overline{X} + h_{(x,k,\mu)}S\sqrt{\frac{k-1}{kn}} = 21.03350 (0.01)$$

Where, $h_{(x,k,\mu)}$ is the critical value obtained from tables of Nelson (1983) for $k = 3$, $\infty = 0.05$ and $\infty = 0.01$ and $\mu = 17$ d.f. We prepare ANOM $\overline{X}$ - chart as in Fig. 9 and Fig. 10 and plot the points $\overline{X}_i, (i=1,2,3)$.

![Fig. 9](image9.png)

![Fig. 10](image10.png)

Note: UDL = Upper Decision Limit; CL = Control Limit; LDL = Lower Decision Limit

From Fig. 9 and Fig. 10, we observe that some points lie outside the decision lines. Hence, we conclude that educational level of the customers affects consumers’ preferences of different retail formats.

Case 6: Statistical Analysis of consumers’ preferences across different retail formats depends on occupation.

Table 6: ANOVA for occupation’s impact on consumers’ preferences.

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Sum of Squares</th>
<th>F Ratio</th>
<th>Critical Value</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Among groups</td>
<td>0.0019111</td>
<td>2</td>
<td>0.000955556</td>
<td>3.68</td>
<td>3.68</td>
<td>0.05</td>
</tr>
<tr>
<td>Error</td>
<td>8.55205</td>
<td>15</td>
<td>0.570136667</td>
<td>5.42</td>
<td>5.42</td>
<td>0.01</td>
</tr>
<tr>
<td>Total</td>
<td>8.5539611</td>
<td>17</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
We observe from Table 6 that the F Ratio is less than its critical value at 5% and 1% level of significance. Hence, we conclude that occupation of customers has impact on the preferences of different retail formats.

The decisions lines are computed for the ANOM $\bar{X}$ - charts as follows

$$CL = \bar{X} = 21.043$$

$$LDL = \bar{X} - h_{(x,k,\mu)}S\sqrt{\frac{k-1}{kn}} = 21.04211 (0.05); UDL = \bar{X} + h_{(x,k,\mu)}S\sqrt{\frac{k-1}{kn}} = 21.04388 (0.05)$$

$$LDL = \bar{X} - h_{(x,k,\mu)}S\sqrt{\frac{k-1}{kn}} = 21.04217 (0.01); UDL = \bar{X} + h_{(x,k,\mu)}S\sqrt{\frac{k-1}{kn}} = 21.04383 (0.01)$$

Where, $h_{(x,k,\mu)}$ is the critical value obtained from tables of Nelson (1983) for $k = 3$, $\alpha = 0.05$ and $\alpha = 0.01$ and $\mu = 17$ d.f. We prepare ANOM $\bar{X}$ - chart as in Fig. 11 and Fig. 12 and plot the points $\bar{X}_i, (i=1,2,3)$.

![Fig. 11](image1)

![Fig. 12](image2)

Note: UDL = Upper Decision Limit; CL = Control Limit; LDL = Lower Decision Limit

From Fig. 11 and Fig. 12, we observe that some points lie outside the decision lines. Hence, we conclude that occupation of customers has impact on the preferences of different retail formats.

Case 7: Statistical Analysis of consumers preferences of some shopping and convenience goods across different retail formats.

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>Degrees of freedom</th>
<th>Mean Sum of Squares</th>
<th>F Ratio</th>
<th>Critical Value</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Among groups</td>
<td>3735.704545</td>
<td>3</td>
<td>1245.234848</td>
<td>4.0818855</td>
<td>2.84</td>
<td>0.05</td>
</tr>
<tr>
<td>Error</td>
<td>12202.54545</td>
<td>40</td>
<td>305.0636364</td>
<td>4.31</td>
<td>0.01</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>15938.25</td>
<td>43</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

We observe from Table 7 that the F Ratio is greater than its critical value at 5% level of significance and F Ratio is less than its critical value at 1% level of significance. Hence, we conclude that there is a significant difference among consumer preferences of some shopping and convenience goods on different retail formats at 5% significance level and at 1% significance level there is no impact of consumer preferences of the shopping and convenience goods on emerging retail formats.

The decisions lines are computed for the ANOM $\bar{X}$ - charts as follows

$$CL = \bar{X} = 16.75$$

$$LDL = \bar{X} - h_{(x,k,\mu)}S\sqrt{\frac{k-1}{kn}} = 14.0107 (0.05); UDL = \bar{X} + h_{(x,k,\mu)}S\sqrt{\frac{k-1}{kn}} = 19.4892 (0.05)$$

$$LDL = \bar{X} - h_{(x,k,\mu)}S\sqrt{\frac{k-1}{kn}} = 14.3407 (0.01); UDL = \bar{X} + h_{(x,k,\mu)}S\sqrt{\frac{k-1}{kn}} = 19.1592 (0.01)$$
Where, \( h(x,k,\mu) \) is the critical value obtained from tables of Nelson (1983) for \( k = 4, \alpha = 0.05 \) and \( \alpha = 0.01 \) and \( \mu = 44 \) d.f. We prepare ANOM \( \bar{X} \) - chart as in Fig. 13 and Fig. 14 and plot the points \( \bar{X}_i \) (i=1,2,3,4).

Note: UDL = Upper Decision Limit; CL = Control Limit; LDL = Lower Decision Limit

From Fig. 13 and Fig. 14, we observe that some points lie outside the decision lines. Hence, we conclude that there is a significant difference among various items in terms of shopping from different retail formats. For identification of factors affecting organized retail, the data has been collected from 150 retailers in Bhubaneswar, Odisha through a self structured questionnaire. Stratified random sampling has been used. The overall reliability of the questionnaire as depicted by Cronbach alpha is .936. The study has used the descriptive statistics i.e. mean and standard deviation for analyzing the major drivers of retailing.

Table 8: Descriptive Statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sophisticated information management system</td>
<td>3.9600</td>
<td>.78142</td>
</tr>
<tr>
<td>Computerized inventory system</td>
<td>3.8000</td>
<td>.80812</td>
</tr>
<tr>
<td>Strong supply chain</td>
<td>3.7400</td>
<td>.89921</td>
</tr>
<tr>
<td>Electronic billing</td>
<td>3.8600</td>
<td>.83324</td>
</tr>
<tr>
<td>New and improved merchandise lines</td>
<td>3.9600</td>
<td>.83201</td>
</tr>
<tr>
<td>Strong logistics</td>
<td>3.7800</td>
<td>1.03589</td>
</tr>
<tr>
<td>Newer locations</td>
<td>3.9400</td>
<td>.86685</td>
</tr>
<tr>
<td>Assortments of merchandise</td>
<td>3.8200</td>
<td>.98333</td>
</tr>
<tr>
<td>Hygiene environment</td>
<td>3.8600</td>
<td>.90373</td>
</tr>
<tr>
<td>Attractive visual merchandising</td>
<td>3.9800</td>
<td>.79514</td>
</tr>
<tr>
<td>Customer friendly</td>
<td>3.8400</td>
<td>.93372</td>
</tr>
<tr>
<td>Exceeding customer expectations</td>
<td>3.8200</td>
<td>.89648</td>
</tr>
<tr>
<td>More value for money</td>
<td>3.8000</td>
<td>.92582</td>
</tr>
<tr>
<td>Safety</td>
<td>3.9200</td>
<td>.82906</td>
</tr>
<tr>
<td>Reputation</td>
<td>3.7000</td>
<td>.95298</td>
</tr>
</tbody>
</table>

Table 8 reveals the mean and standard deviation who participated in the survey. Looking at the mean, one can conclude that Attractive Visual Merchandising in Retailing is the most important variable that influence customers to buy the product. It has the highest mean of 3.98.

Table 9: Correlation Matrix

The determinant of the correlation matrix is shown at the foot of the table below:
Table 9 displays a rectangular array of numbers which gives the correlation coefficients between single variable and every other variables in the investigation. The correlation coefficient between a variable and itself is always 1. The correlation coefficients above and below the principal diagonal are the same.

Table 10: Rotated Component Matrix
Table 10 shows the rotated component matrix. After deducting the dimensions, the three factors which have been extracted are narrated hereby:

F1: While observing the results, variables like new and improved merchandise lines, attractive visual merchandising, assortment of merchandise and newer locations, have loadings of 0.721, 0.668, 0.555 and 0.427 on factor F1 respectively. Therefore, this factor can be interpreted as “Technological Advancement”.

F2: As it is clear from Table 10, statements like strong logistics, strong supply chain, sophisticated information management system, electronic billing and computerized inventory system, have loadings of 0.762, 0.677, 0.646, 0.415 and 0.398 represented by factor F2 and has been named as “Innovativeness on Format Decisions”.

F3: Table 10 indicates six statements, namely, reputation, exceeding customer expectations, safety, hygiene environment, more value for money and customer friendly has the loadings of 0.226, 0.686, -0.664, 0.646, 0.568 and 0.498 and thereby interpreted and named as “Customer Centricity”.

3. CONCLUSIONS

The statistical techniques of ANOVA and ANOM are applied to seven different case studies. Both methods of analysis disclose that there is a significant difference between consumer preferences and emerging retail formats. The ANOM chart reveals that the points are actually responsible for the variation on the border line of Upper Decision Limit. We have observed from Fig. 5 that the variation level of low tax payers group is high. Similarly, when compared to average level the adult customer group in Fig. 7 is below the Lower Decision Limit. This type of information is useful to the management who needs to take adequate measures to identify the anomaly observed in the specific variations in the shopping pattern of consumers. Hence, ANOM procedure gives additional information as compared to ANOVA specially when the null hypothesis is rejected in the analysis of retail format problem in identifying the specific factors which creates the actual difference in the study.

There are few findings which have been extracted while analyzing the data. The review of this study found that 'Next-Generation Retailing' has evolved from different stages and is expanding further with three important dimensions—technology, innovative format decisions, and customer centricity. The 'Next-Generation Retailers' are on the high edge of technology adoption and because of this, they are poised to expand rapidly as more of time and resources are saved by technology, and one can even get the exact pulse of the customers by using different information systems. Also, the 'Next-Generation Retailers' are at an advantage because of a wide variety of format options, thereby offering greater choice for customers and a wide range of products under one roof. The attractive and comfortable ambience would help to exceed customer expectations through better service delivery. The Indian Retail Industry is gradually inching its way towards becoming the next boom industry.

REFERENCES