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# RESEARCH ON IMPACT FACTORS OF VARIOUS RISK DIMENSIONS ABOUT ONLINE SHOPPING STUDYING THE INTENSIONS OF INDIAN YOUTH

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***Abstract***

*This research work is an attempt to develop a scale for exploring impact of various risk dimensions and trust factor on online shopping behaviour amongst the Indian youth in Western Maharashtra. Based on the previously published literature synthesis by the same authors, a conceptual model was designed, which was tested on a sample of respondents (n=123) falling in the age bracket of 15-35. The reliability score for the questionnaire stood at 0.957, indicating suitability of the instrument for the large scale research activity. With the help of Exploratory factor Analysis, three factors such as Financial and Convenience Risk (FCR), Perceived Trust (PT) and Product and Delivery Risk (PDR) were extracted, accounting for 54.8% of total variance explained. The study considered impact of six major risk dimensions and trust on behavioural intensions of youth online shopper. Due to its comprehensive coverage, the study expected to act as the foundation for future investigations in impact of various risk dimensions on online shopping behaviour in Indian context. Testing statistical significance of revised conceptual framework on a larger sample size would be the future agenda of research.*

***Keywords:*** *Perceived risk, Risk Dimensions, Trust, Financial risk, Product risk, online shopping behaviour*



**Introduction:** E-Commerce has been one of the rapidly growing business segments in developing countries such as India. As per a consultation paper by IBEF (India Brand Equity Foundation), India's e-commerce sector is expected to reach US$ 200 billion by 2026 from US$ 38.5 billion in 2017. This report also claims that, the Indian e-commerce market may surpass USA to become the second largest market globally by 2034. Growing internet penetration, steady rise in disposable income, young and affluent consumer base and

aggressive business strategies by e-commerce players would act as a catalyst for such a stupendous growth.

Online consumer behaviour has been one of the widely discussed research domains in western parts of the world. With the advent of e-commerce evolution in India, the need to explore India specific cultural and behavioural aspects in online shopping has aggravated. Across the globe, TAM (Technology Acceptance Model) by Davis (1989) is widely used to study the human-technology interaction. Researchers such as Lele (2018) and Gangwal and Bansal (2016) studied online shopping behaviour in Indian context by testing the TAM construct.

Other researchers such as Shukla (2016) explored impact of perceived risk on online shopping in India. However, majority of the studies considered either the perceived risk concept in totality or selected limited risk dimensions in the construct. Majority of the studies in Indian context are either hybrid (TAM and trust, risk) or explores limited number of risk dimensions in the construct.

Banerjee and Vidyasagar (2019) presented a synthesis of exiting literature on risk-intensions interplay and found six major risk dimensions (financial, product, privacy, time/convenience, delivery and performance) and presented a conceptual model of research. Based on this conceptual model, this research work aims at developing ascale which can be utilised further for a large size sample study to explore online shopping behaviour amongst the Indian youth (15-35 age group). Considering improvement in internet connectivity, lowered cost of smart phone acquisition and availability of online shopping services in Tier II, III cities in recent times, a detailed investigation in perceived risk dimensions and their impact on shopping behaviour has become inevitable. By developing India specific scale of risk dimensions and their interplay with behavioural intensions this research work would have significant contribution to the existing knowledge base

1. **Literature Review:**Online shopping and related behavioural aspects has attracted serious interest amongst the research fraternity globally. In order to understand the theoretical base, the researchers reviewed about 56 peer reviewed research papers which concentrate on various risk dimensions or on trust and their interplay in context of online shopping behaviour. The details of our observations and corresponding literature as quoted as below,

**1.1 Perceived Risk in Online Shopping**: Bauer (1960) defined risk as "the likelihood of unfavourable outcomes, and consequences" of one's actions. After the evolution of online shopping, the non store consumer perceived risk started getting the desired attention. According to Li and Huang (2009), the concept of perceived risk in online shopping can be divided into two parts such as, the probability of a loss and the subjective feeling of unfavourable consequences. Forsythe and Shi (2003) defined perceived risk in online shopping to be a subjective evaluation of expected loss due to online shopping. Hansen et al. (2018) explored the effectiveness of two models (Technology Acceptance Model by Davis; 1989) and Theory of Planned Behaviour by Ajzen; 1985) along with risk and trust in context of online shopping. It was observed that, perceived risk and trust acts as antecedents of a user's decision making in case of both the models. Similarly, Akram (2018) proposed and validated moderating role of perceived risk on relationship between four benefits (perceived convenience, product variety. Perceived control and perceived enjoyment) and online purchase intensions. The author also underlines the need to have detailed investigation of interplay between risk and intensions, especially in developing countries as the system infrastructure in these economies is yet to develop satisfactorily.

**1.2 Various Risk Dimensions:** The literature found evidences of various risk dimensions considered by the previous researchers. The discussion on these dimensions is as follows,

- **Financial Risk:** Derbaix (1983) defined financial risk as potential net loss of the money. This refers to the perceived financial loss or possibility of financial damage occurring from non delivery or delivery of the faulty product. Ariffin (2018) analysed impact of financial risk along with five other risk dimensions on a user's intension to continue with online shopping. The research found significant negative impact of financial risk on intensions to shop online. Similarly Masoud (2013) found negative impact of financial risk on behavioural intensions in different contextual settings.
- **Privacy Risk:** Miyazaki and Fernendez (2001) defined privacy risk as the user's concerns related with potential breach of privacy or improper usage of information for fraudulent activities. It also includes unsolicited communication via phone, SMS or mails. Hsu and Luan (2017) explored impact of four risk dimensions (quality risk, financial risk, private risk, and aftersale risk) on consumer's attitude and purchase intensions in Vietnam.

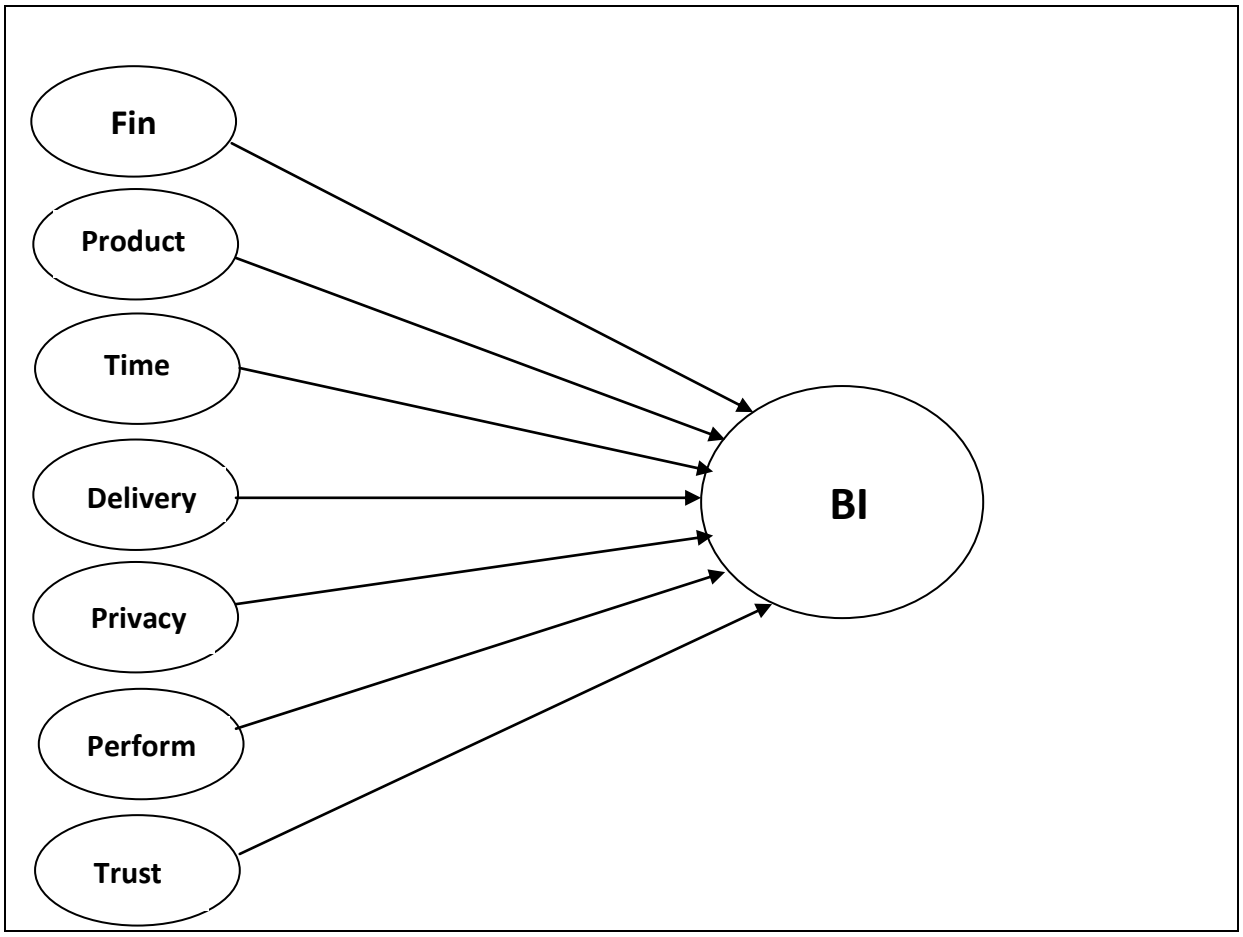
The research observed that, the perceived risk related with misuse of private information acts as a major obstacle in consumer's online shopping intensions. Similarly, studies such as Benazićand Tanković (2015) also found privacy risk to act negatively on a user's intension to shop online.

- **Time/Convenience Risk:** Forsythe and Shi (2003) defined time/convenience risk as the inconvenience caused to the user due to shopping process (extra time spent or delay in completion of the transaction). This definition also considers time lost in terms of delivery of the product (late delivery, delivery on wrong address, no delivery). Forsythe et al. (2006) found time or convenience risk as a strong predictor of behavioural intensions while, Masoud (2013) did not find significant impact of time or convenience risk on intension.
- **Product Risk:** A critical analysis of the existing literature base reveals that, the product risk is studied in two different contexts. The first approach deals with inconvenience caused to the user due to faulty product or the actual product not meeting to the specifications shown on the website. Another aspect is related with post purchase performance of the product. For this study, we have considered product performance as a separate factor altogether. Simonian (2012) proved that, product brand image acts as an antecedent of perceived product risk by the user, which in turn affects online apparel purchase intensions.
- **Delivery Risk:** Dan et al. (2007) defined delivery risk as "Potential loss of delivery associated with goods lost, goods damaged and sent to the wrong place after shopping". This aspect is related with a potential loss to the consumer due to wrong delivery of goods, goods sent to the wrong address or quantity of the goods ordered not matching to the goods delivered. Masoud (2013) and Martins (2015) found delivery risk to have significant negative impact of delivery risk on the shopping intensions of an online shopper.
- **Performance Risk:** According to Chu and Lee (2001), performance risk is defined as the loss incurred when the product chosen might not perform as desired. Some of the researchers clubbed the product performance and product risk together in a single construct. However, this research treated performance risk separately to unearth the specific risk dimensions perceived important by the users. Almousa (2011) and Lee and Park (2001) considered this element into their respective research models and validated significance of this factor in determining online purchase intensions.

**1.3 Trust and online shopping intensions:** Trust is one of the largely considered factors in online shopping behavioural studies. Many studies such as Kesharwani and Bisht (2012), Almousa (2011) and Lee and Park (2001) considered the interplay of risk and trust in online shopping context while, other experiments such as Lee (2009) considered Trust in an integrated construct along with TAM (Technology Acceptance Model). In all these studies, trust was found to have curtailing effect on perceived risk. In nutshell, as the trust of a user on system grows, the perceived risk in online shopping diminishes considerably.

2. **Research Model:** The conceptual model of the research is based on Banerjee and Vidyasagar (2019). This research work presented a conceptual model comprising of six dimensions of risk (financial, privacy, product, performance, delivery and time) and trust as determinants of online shopping behaviour. The proposed framework is presented as Figure 1. This research work would like to conduct a pilot survey to check suitability of this model and the instrument designed for a large scale survey in future.

**Figure 1: Research model**




BI= Behavioural Intensions.

The critical analysis of the existing research work on various risk dimensions and their respective impact on online shopping behaviour suggested that, six major risk dimensions such as financial, delivery, performance, product, privacy and time risk were considered by majority of the previous researches. In fact, most of them found these dimensions as the strong predictors of the intension to shop online. As a result these six risk dimensions are proposed as antecedents of online shopping behaviour. As discussed earlier, since Trust element was considered to have a curtailment effect on the perceived risk of an online shopper, this construct was added to the proposed research model. Although, the literature review suggests a good support for usage of TAM in understanding online shopping behaviour, this construct is not included in the research framework, as we try to analyse exact impact of various risk dimensions perceived by the users and not the usefulness or ease of use involved in online shopping process.

3. **Research Methodology:** This research is an attempt to develop a scale for analysing impact of various risk dimensions on online shopping behaviour amongst youth from western Maharashtra. For defining 'youth'**,** the operational definition was taken from the government of India norms (15 to 27 age bracket) and selected cities (Pune, PCMC and Satara) were considered for geographical boundaries of the research scope. For data collection and analysis, a systematic instrument development process was carried out, which is explained in next sub head.Non probability convenience sampling was adopted and it was ensured that, the sample would have adequate representation of various demographic classes such as age, gender, income, profession and previous experience of using online shopping.

4. **Instrument development process:**in any empirical research, it is important to have an instrument which can be tested on a data collected from the respondents. The researcher has two options to exercise, either to use previously validated scale or to develop own instrument by using a standardised procedure. Since this research aims to explore impact of various risk dimensions and trust on online shopping behaviour amongst the Indian youth, it was decided to develop a customised scale for conducting the research further.

**Pooling of the statements:** Banerjee and Vidyasagar (2019) presented literature synthesison existing research work available on risk dimensions and trust and its corresponding impact on online shopping behaviour (in Indian or in global context).Taking a clue from this research, a

conceptualised model for the research was developed. For developing a new scale, all papers which considered various risk dimensions and Trust as the determinant of online shopping were studied and items from previously validated scales such as Lele(2018), Masoud (2013), Martins (2012), Dash and Saji, (2008) were collated together. After pooling all relevant items from various scales, a draft questionnaire was developed.

**Expert Opinion Method:**In order to check the face validity of the instrument, the draft questionnaire was sent to a panel of experts for their valuable suggestions. A team of 5 research scholars from online customer centricity domain and a team of five digital marketing from e-commerce industry were selected for the review. All the experts were briefed about the objectives of the said study and were explained about the rationale behind selecting these variables. The involvement of the experts in this task was voluntary and no remuneration was offered to them for this assignment. All the experts were asked to rate the items on the basis of their perceived importance (1 = most significant and last being the least significant). On the basis of mean ranking of the each statement, a threshold was set and the items were selected for the questionnaire. Based on the inputs by the experts, necessary changes in wording of the instrument were incorporated and the draft questionnaire was prepared. Variables studied and final count of items under each of the variable is presented as Table no.1

**Table 1: Variables considered for the study**

| Sr. No | Name of the construct | Construct Code | No. of Items |
|---|---|---|---|
| 1 | Perceived Trust | **T** | **5** |
| 2 | Financial Risk | **FR** | **5** |
| 3 | Time & Convenience Risk | **TR** | **6** |
| 4 | Privacy Risk | **PRV** | **5** |
| 5 | Product Risk | **PR** | **5** |
| 6 | Delivery Risk | **DR** | **4** |
| 7 | Performance Risk | **PRF** | **5** |
| 8 | Behavioural Intensions | **I** | **5** |
| | **Total Items** | | **40** |

A total of 40 statements related with eight variables were taken together for formulation of the draft questionnaire.

5. **Sampling details and data analysis:**The sample was collected in such a manner that, it would have adequate representation of all socio-economic classes from the universe. Since the study is aimed at exploring impact of various risk dimensions and trust factor on online shopping behaviour, the sample frame was arranged accordingly. Data was collected from 135respondents (Indian online shoppers in the age group of 15-35), out of which 12 incomplete sets were dropped and 123 questionnaires were utilised for the pilot study analysis. The demographic details of the sample are discussed as Table 2

**Table 2: Demographics of Pilot Study Sample (n=123)**

| Parameter | Numbers | | Percentage | |
|---|---|---|---|---|
| **Gender** | Male | 67 | Male | 54% |
| | Female | 56 | Female | 46% |
| | **Total** | **123** | **Total** | **100%** |
| **Age Group** | 19 to 22 | 45 | 19 to 22 | 37% |
| | 23 to 25 | 48 | 23 to 25 | 39% |
| | 26-27 | 16 | 26-27 | 13% |
| | 28 to 35 | 14 | 28 to 35 | 11% |
| | **Total** | **123** | **Total** | **100%** |
| **Profession** | Student | 87 | Student | 71% |
| | Self Employed | 5 | Self Employed | 4% |
| | Working professional | 31 | Working professional | 25% |
| | **Total** | **123** | **Total** | **100%** |
| **Yearly Income** | Not Disclosed | 57 | Not Applicable | 46% |
| | Below 4 lakhs | 33 | Below 4 lakhs | 27% |
| | 4 to 8 lakhs | 20 | 4 to 8 lakhs | 16% |
| | 8 lakhs above | 14 | 8 lakhs above | 11% |
| | **Total** | **123** | **Total** | **100%** |
| **Religion** | Hindu | 107 | Hindu | 87% |
| | Muslim | 8 | Muslim | 7% |
| | Christian | 2 | Christian | 2% |
| | Others | 6 | Others | 5% |
| | **Total** | **123** | **Total** | **100%** |

| | | | | |
|---|---|---|---|---|
| **Online food delivery experience** | Less than a | 16 | Less than a | 13% |
| | 1 to 2 years | 20 | 1 to 2 years | 16% |
| | 2 to 3 years | 24 | 2 to 3 years | 20% |
| | More than 3 | 63 | More than 3 | 51% |
| | **Total** | **123** | **Total** | **100%** |

Out of the total respondents, 54% were male. 39% of the total group belongs to 23-25 age bracket, followed by 37% from 19-22 age group. 87% of them belong to Hindu religion 71% of the respondents are students while 25% are working professionals. 51% of the respondents are using online shopping for more than 3 years and 20% are shopping online for last 2-3 years. The respondents hail from cities representing western Part of Maharashtra such as Pune, Pimpri-Chinchwad and rural parts surrounding to these cities.

**5.1 Reliability of the instrument:**Reliability Analysis is the first step conducted in any quantitative survey based research. Reliability of the instrument refers to the degree at which the study is expected to deliver stable and consistent results. Peter (1979) defined Reliability as 'the degree to which measures are free from error and therefore yield consistent results'. Seminal work by Cronbach (1951) is considered as the base for reliability calculations by a large set of researchers and is called as Cronbach's Alpha. The statistical analysis on the data collected indicates that, the overall instrument reliability stands at 0.957, which is way above the threshold limits (equal to or greater than 0.7) prescribed by Nunally (1967). These results indicate that, the instrument is appropriate for data collection and analysis on a larger sample size.

**Construct wise Reliability:**Construct wise reliability refers to reliability score calculated for each of the construct or variable considered in the conceptual model of research. The calculations indicate that, all factors considered in the research model have reliability score above the threshold of 0.7prescribed by Nunally (1967). The results indicate appropriateness of the data for further analysis.

**Table 3: Construct wise reliability**

| Sr. | Variable | No. Of Items | Reliability Score |
|---|---|---|---|
| 1 | Perceived Trust | 5 | **0.865** |
| 2 | Intensions | 5 | **0.810** |

| | | | |
|---|---|---|---|
| 3 | Financial Risk | 6 | **0.770** |
| 4 | Product Risk | 5 | **0.727** |
| 5 | Time Risk | 6 | **0.805** |
| 6 | Delivery Risk | 4 | **0.724** |
| 7 | Privacy | 5 | **0.743** |
| 8 | Product Performance risk | 5 | **0.734** |
| | **Total** | **40** | |

**5.2 Exploratory Factor Analysis (EFA):** EFA is a statistical technique used to reduce the data to a smaller set of summary variables and to explore the underlying theoretical structure of the phenomena. This technique helps the researcher to unearth the latent structure underlying a large set of data. Although, there are various methods under EFA, Principal Component Factor Analysis (PCA) was used in this research. Under PCA, factors are arranged according to the descending order of variance explained. This means, the first component denotes maximum variance and so on.

The research model for the study included seven variables with 35 corresponding items. EFA was conducted by using Varimax rotation and the factors were extracted through rotated component matrix.KMO (KaiserMeyer Olkin Measure of Sampling Adequacy) is used as a measure of adequacy. This indicator tells us the common variance amongst the variables included in the study. High value of KMO that is between 0.5 and 1 indicates the appropriateness of the factor extracted. The results of KMO test and factor analysis are as follows,

**Table 4: KMO Results**

| **KMO and Bartlett's Test** | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | 0.901 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 3333.2 |
| | Df | 630 |
| | Sig. | 0.000 |

The KMO indicator for the study stands at 0.901, which is within acceptable range as per the KMO threshold prescribed by Cemi and Kaiser (1977). Bartlett's test of Sphercity is a measure to prove a significant relationship among the variables considered under the study. According to this indicator, value of significance below 0.05 is considered to be the fit (Bartlett, 1950). As the data analysis indicates Bartlett's Test of Sphericity value as 0.00, the data is highly suitable for statistical analysis.

## 6. Analysis and Discussion

**Table 5: EFA Results**

**Total Variance Explained**

| Component | Initial Eigen values | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 14.065 | 39.068 | 39.068 | 14.065 | 39.068 | 39.068 | 9.279 | 25.775 | 25.775 |
| 2 | 4.680 | 13.000 | 52.069 | 4.680 | 13.000 | 52.069 | 6.544 | 18.178 | 43.953 |
| 3 | 2.259 | 6.276 | 58.345 | 2.259 | 6.276 | 58.345 | 3.938 | 10.938 | 54.891 |
| 4 | 1.468 | 4.079 | 62.423 | 1.468 | 4.079 | 62.423 | 1.824 | 5.065 | 59.956 |
| 5 | 1.247 | 3.465 | 65.888 | 1.247 | 3.465 | 65.888 | 1.653 | 4.592 | 64.549 |

**Factor loading of the emerged factors:** Based on the EFA results, five factors were extracted, accounting for 64.5% of the total variance. While selecting items for the emerged items, a threshold of 0.6 was considered for the rotated factor loading. In case of 4$^{th}$ and 5$^{th}$ factor minimum three items with more than 0.6 factor loading did not emerge and hence dropped from the analysis. Details about factors emerging out of the process are as follows

**Factor 1: Financial and Convenience Risk (FCR) -** based on the regrouping under EFA, some items from Time & Convenience Risk and from Financial Risk got merged to form a new factor, named as Financial and Convenience Risk (FCR). This factor considers all perceived risk elements felt by a user in terms of complications in completing a transaction, time loss for set up of online shopping mechanism and financial worries such as possible financial damage due to online shopping and possible misuse of debit/credit card details. This factor has25.7% contribution to the total variance.

**Factor 2: Perceived Trust (PT)–**In line with the results of literature review, Perceived Trust emerged as the second largest factor with 18.1% contribution to the total variance. Previous researchers such as Gefen et al. (2003) have observed that, the purchase intensions are positively influenced by the Trust on system. Trust on e-vendor to handle the transactions successfully and faithfully, ability to deliver the goods as per the exact specifications and intent of e-shopping website/app to keep the interest of online shopper intact are some of the facets of this factor.

**Factor 3: Product & Delivery Risk (PDR)-** Since product and product delivery forms a critical part of the online shopping value delivery,the respondents seems to have given more priority to issues related with product and delivery issues. Under EFA, items from these two risk dimensions got merged, which was named as Product & Delivery Risk (PDR). This stood at the third largest factor with 10.9% contribution to the total variance explained. The factor considers issues such as the speed of delivery, fitting or measurement of the product (especially apparel) and product defects, which may be troublesome to the users.

**Table 6: Factor wise rotated loading (EFA)**

| Factor | Code | Items Description | Loading |
|---|---|---|---|
| **Financial & Convenience Risk** | TCR1 | The procedure to shop online is too complicated | 0.865 |
| | DR1 | I might not receive the product ordered online | 0.847 |
| | TCR4 | The possible time loss from having to set-up and learn how to use online shopping is high | 0.835 |
| | FR3 | The chances of losing money if I use online shopping are high | 0.832 |
| | FR1 | I feel that my credit/Debit card number may not be secure if I shop online | 0.809 |
| | TCR5 | I feel, traditional shopping methods are much convenient when compared with online shopping | 0.742 |
| **Perceived Trust** | PT5 | I trust the website will deliver what I ordered. | 0.840 |
| | PRF2 | I am confident that, the product performance would be as per the standards expected | 0.827 |
| | PT1 | The Internet retailer can be trusted to handle online transactions faithfully | 0.779 |
| | PT2 | The web site of this web-retailer is trustworthy and honest. | 0.767 |

| | | | |
|---|---|---|---|
| **Product & Delivery Risk** | PT4 | I do believe that, my online store keeps my best interest | 0.692 |
| | DR3 | The speed of delivery will affect my decision to revisit online shopping website | 0.717 |
| | PR5 | Especially in clothing, the size offered may not be perfect fit | 0.638 |
| | TCR6 | Products purchased online have high risk of being defective or not as per my expectations | 0.601 |

7. **Conclusions:** Based on the previously conceptualised research model by Banerjee and Vidyasagar (2019), this research paper aimed at developing and validating a scale based which analyses impact of various risk dimensions and trust on online shopping behaviour. Six risk dimensions such as financial, product, privacy, time & convenience, performance and delivery were considered in the construct. It was proposed that, these six dimensions along with trust would act as determinants of online shopping behaviour amongst the Indian Youth from Western parts of Maharashtra. The conceptual model was proposed and draft questionnaire was tested on a sample of 123online shoppers falling in age bracket of 15 to 35. Cronbach's Alpha reliability score for the draft questionnaire stood at 0.957, indicating suitability of the instrument for larger sample collection and analysis. To explore the latent structure underlying the large data, EFA was conducted and the process extracted three factors such as Financial and Convenience Risk (FCR), Perceived Trust (PT) and Product and Delivery Risk (PDR). These five factors accounted for a total variance of 54.8%. Based on the results of factor analysis, a revised conceptual model was proposed.

The proposed conceptual model theorises that,these three emerged factors (FCR, PT and PDR) would act as determinants of online shopping behaviour amongst the Indian youth from Western Maharashtra. As a thumb rule, the sample size should be at least 5x of the number of questionnaire items to carry out CFA (Confirmatory Factor Analysis) and path testing using SEM (Structural Equation Model). Since the sample size for this study stands at 123 respondents, (which is not sufficient enough to carry out CFA, SEM), the researcher wishes to carry out a survey on a larger sample size and to seek validation of the proposed model by using CFA and SEM to check the model fit and to examine the casual relationship amongst various determinants and online shopping behaviour. The results from such an exercise are expected to have a significant contribution towards existing knowledgebase in this taxonomy.

Although, pastresearchers such as Lele (2018) andArora and Rahul (2018) have studied impact of perceived risk on online shopping in India, the intended study would focus on newly emerged dimensions of risk and trust and their respective impact on a user's online shopping intent. The outcomes from intended research are expected to act as the foundation for further researches in this domain.

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