

Understanding Digital Customer Satisfaction in the Era of 4th Industrial Revolution

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Abstract

Industrial revolution 4.0 has inevitable impact on production and Business. In business, customer satisfaction is pivotal and significant. In this technological advancement and revolution, digital customer satisfaction trend can be definitely transformed over the time. This study would like to find out the several factors which have diversified impact on digital customer satisfaction in the era of 4th industrial revolution in developing country like Bangladesh. The major 8 divisions have been targeted as population for covering the context of this study. Traditional buyer and digitalized customer are identically differing in this digitalized world. Digital customers know better their need and usage of technology. Though digitalization is a fact now, customer satisfaction can be diversified by several factors. There have been several impactful variables whose have significantly influenced customer satisfaction. This study has found five major latent constructs- Digital literacy, perceived benefits, perceived risk, quality factors and customer attitude for understanding. This factor contains several variables which also play very pivotal role for customer satisfaction. Therefore, these variables have been examined by exploratory factor analysis and confirmatory factor analysis. Using Likert method, a questionnaire was prepared for survey along with some demographic information. The survey has been executed on small size of sample. Responses from survey were used to analyze the factors using SPSS and smart PLS. As for analysis, factors have been loaded using Oblique method of rotation. In such way, underlying latent factors for consumer satisfaction have been explored and explained. The selected variables have been positively correlated and the entire developed hypotheses are being accepted by the alternative. In CFA model the variables direct relation has been examined and projected. Finally, several practical and theoretical implications have been drawn along with direction for future researcher in the later part of this paper.

Keywords: Digital Customer Satisfaction, 4th Industrial Revolution, Exploratory Factor Analysis, Confirmatory Factor Analysis, Digitalization etc.

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1. Introduction

In the era of digitalization, customer market and business are being intertwined significantly with data and internet. Though Industry 3.0 introduced computer and nuclear energy. But in the 4th industrial revolution the use of technology has initialized tremendously. So, the nature and pattern of customer satisfaction has changed immensely due to the digital platforms. Islam et al., (2018) have discussed in their paper regarding the impact of 4th Industrial revolution in developing countries like Bangladesh. They have coined that Industry 4.0 generally focus on the manufacturing and management process of production for those countries which mainly depends on industrial countries. The major developing countries like India, Pakistan, Nigeria, Vietnam and Bangladesh are depending on the developed countries for production as they are lagged behind in advanced production and manufacturing. Besides the lack of production, management, leadership, Infrastructural lacking, absence of significant workforce diversity etc are blocking to utilize the opportunities of 4th Industrial revolution. Lasi et al., (2014) suggested that the production can be increased if the countries integrate technologies in production and business. Moreover, the significance of Industry 4.0 is here because of the Internet, Technology and Digitalization. However, there have been many studies regarding Industry 4.0 revolution, it's impact on different sectors, opportunities and drawbacks etc. There should be a study to conduct regarding Digital customer satisfaction in the era of 4th Industrial revolution. There is no such research regarding this issue which is actually very important to identify and understand. Bangladesh is already trying to adapt this new technological innovation and introducing several business and production opportunities. Several Business has grabbed these opportunities and try to create new business and product ideas for covering the new digitalized customer needs.

Hooria et al., (2014) conferred in their study that in 4th Industrial revolution the influx of internet and big data have actually transformed the total business environment and consumer buying behavior followed by consumer satisfaction to loyalty pattern. Consumers are now more conscious about several digital media and information. They have many alternatives channel to purchase and the augmented reality has substantially changed the total consumer experience. They

are now more inclined with digital purchasing option, personalized information and product assortment, easy digital payment and fast delivery. Business and marketers have to rethink their strategies so that they can satisfy this new digital customer.

4th Industrial Revolution

A society and economy which have developed and transformed significantly can be referred as Revolution. In the 4th Industrial revolution the word “Revolution” is indicating the advancement or development of industrialization change. Bosch (2013) has said that at present, we find ourselves at the beginning of this fourth stage, which is characterized by so-called “Cyber-Physical Systems” (cps). This “Cyber-Physical System” is actually the combination of sustainable production and self-driven intelligent network system for ensuring ultimate customer satisfaction (Gartner, 2011).

Min Xu et al., (2018) have nicely coined that the different changes in different industrial revolution and its impact on economy and human life is surprising. In first industrial revolution a handcrafted and agrarian economy was being the 1st economical domination which is being replaced by industry and machine based manufacturing over the time. In the second industrial revolution, the usage of oil and electricity based manufacturing and production had been developed. Information technology and automate production had been introduced and facilitated the manufacturing and business in the third industrial revolution. Although each industrial revolution is often considered a separate event, together they can be better understood as a series of events building upon innovations of the previous revolution and leading to more advanced forms of production. In 4th IR, the big data, cloud computing, augmented and virtual reality, IoT platforms, GPS, Mobile advancement have significant impact on production and manufacturing and finally to the ultimate end users.

4th Industrial Revolution and Business

Genkin et al., (2020) have recently explained that understanding customer preference in this changing digitalized environment, marketer and business have to follow a changing trend to use digital technologies especially “Artificial Intelligence”. Through AI business can easily strengthen the relationship with

customer and create a competitive advantage. Not only to the Business to customer relationship, in business-to-business sector, with the help of technologies, quick client problem solving, client capital structure and sourcing also become a lucrative source for business. Besides with the blessing of big data and real time information any B2C and B2B can handle better their clients and create long term relationship. With the advantage of Industrial revolution 4.0 individualized service, engagement and empathy, the customer satisfaction and loyalty can climb up significantly. Eventually, thriving for innovation and more customized service, better customer database is becoming a point of parity now. Business and company cultures, in general, are changing towards the need for innovative leadership and self-perception in the structure of their organization (individual mental integration into the company), which implies the formation of an innovative culture in the company, the ability to generate and quickly implement effective innovative projects. Opportunities are expanded and project financing is accelerated.

4th Industrial Revolution and Digital Customer

As a developing country, Bangladesh is trying to adapt with the digitalization and 4th industrial revolution. Though we are lagged behind in many sectors from the first world country, The Covid-19 has pointed the significance of online and digitalization of market. Customers have unfortunately not enough knowledge for digital literacy and online shopping. Even marketers have lesser knowledge about online store and online quality assurance. Bangladesh has taken several schemes for digital Bangladesh, but the proper implication is not happening. Marketer and customer relationship, proper digital and online business knowledge, customer perceived benefits and risk etc. have to be addressed properly. Though several researchers are trying to find out the factors related with the customer attitude for online shopping, there are still several factors which are closely related for digital customer satisfaction. This paper would like to find out some significant factors for digital customer satisfaction. So, the major research question is here- what are the factors that influence digital customer satisfaction?

2. Objective of the Study

- I. To seek out the several factors that influence digital consumer's satisfaction in this 4th industrial revolution era.

3. Literature Review

In the era of the 4th Industrial Revolution customers are becoming more aware about new products and services. Due to the diversity of product selection and the increased digital channels. The way customers search for information and purchase, it is changing innovatively. So, the customer journey in the digital age is more complicated than the traditional store. Mou, J., & Beyonce, M. (2021) have discussed the increasing relationship with consumer and network. Consumers behave differently and some factors actually influence them to behave differently through social networking.

Customer Satisfaction

Kotler (2000) defined satisfaction as: “A person’s feelings of pleasure or disappointment resulting from comparing a product’s perceived performance (or outcome) in relation to his or her expectations”. Gao et al. (2020) have discussed that digital consumers are those who actually use digital platform and devices for their purchasing. In addition, from Kim and Johnson (2016) paper, Digital consumer pays an active role in digital and internet media. They have greater interaction in different social media site like facebook , twitter, YouTube subscription, e-WOM, user generating content creation etc. Moreover, Srinivasan et al. (2016) have coined that most digital customers search for website and do research before purchase. They also look for coupons and blogs, views and other consumer ratings.

Digital Customer

Schultz (2016) has discussed in simple term that customers who use technology for buying and selling product and services are known as digital customer. As in the digital era, customer active role and proactive behavior have created several opportunities for business in this 4th industrial revolution. Azar et al. (2016) have shown in their study that Marketers should focus on the digital customer satisfaction based on their distinctive response compare to general customer in different marketing stimuli.

H1: Consumer digital literacy has relation with the digital customer satisfaction

Table 1: Predictors from Previous Literature

| Predictors | Endogenous Construct | Previous Literature | Factors |
|----------------------------------|--|---|--|
| Customer digital Literacy | Online shopping behaviour and satisfaction | <i>Sang Hee Jung and ByoungGyu Chung (2020)</i> | Functional skills e-safety Ability to find and select information Critical thinking Digital knowledge Internet literacy |
| Perceived benefits | Digital consumer satisfaction | <i>Nupurarora, AanchalAggarwal, (2018)</i> | Convenience Simplicity Price comparison feature Broader assortment of products and services |
| Quality factor | Online shopping behavior and loyalty | <i>Bhatti, A., & Ur Rahman, S. (2019)</i> | Fast delivery Easy payment Cash on delivery Huge Information personalized |
| Attitude towards online shopping | Customer satisfaction | <i>Youssef Chetioui and Hind Lebdaoui(2021)</i> | Hedonic (shopping enjoyment, available option new online store impulsive buying Relative advantage |
| Perceived risk | Customer satisfaction | <i>KokWai THAM et al. (2019)</i> | Security Financial Psychological Privacy Fraud |

These above studies have found several factors for customer satisfaction and customer attitude building separately. Though they have drawn very influential factors and variables for online customer shopping and benefits of customer satisfaction, there is no single study in Bangladesh which actually put the light on digital customer satisfaction in the perspective of 4th industrial revolution. This major gap has created an opportunity to find out the digital customer satisfaction influential factors and impact on business in Bangladesh.

Customer Digital Literacy

Brown et al., (2013) have discussed that Digital customer experience means customer's emotions, reactions and behaviors that occur in the process of online communication (i.e., search, question, review, evaluation, change of personal information) or trading (i.e., purchase and payment, return, charge and gift, open a bank account, transfer, etc.) with companies using digital devices (i.e., Smartphone, tablets, PCs, etc.) that customers have. According to Daurer et al., (2015) Consumer digital literacy can create an impact on customer satisfaction. Better functional skills and ability to search information in digital platforms can influence customer satisfaction. In other words, digital customer experience is a collective term for customer's emotions, reactions, and behaviors in the process of communication and trading using digital device. On the other side, Sang hee Jung et al., (2020) have analyzed the importance of self-effectiveness and cognition can help any person to use any innovation. Besides, proper understanding regarding digital safety and internet literacy can give confidence to the user to activate and operate information technology. Therefore, the following hypothesis does posit here:

Perceived Benefits

In the context of online shopping, Choudhury and Karahanna (2008) revealed that consumers generally like the traditional shopping experience and they only prefer online shopping whereas any superior facilities. Hsiao (2009) suggests that customers will be willing to switch to online shopping only if they are satisfied with the additional benefits (e.g. superior quality, more features, lower costs, etc.). The relative advantage can be created if there is convenience, lower costs, time and/or effort, better quality (Akroush et al., 2015). From the different literature, online shopping can be attracted and increased by if it is time saving, price comparison, large assortment of products, simple and easy, convenience and other personal enthusiastic factors (Ranganathan and Jha, 2007). Customer

put significant importance on shopping convenience when they name themselves as digital customer (Easterbrook, 1995; Lohse and Spiller, 1999; Degeratu et al., 2000; Colwell et al., 2008; Bednarz and Ponder, 2010). Online marketers need to ensure online shopping process easy and simple and ensure maximum customization (Jarvenpaa& Todd, 1997; Lohse et al, 2000). Forsythe et al. (2006) suggest that the main advantages of online shopping comprise shopping convenience, product selection, ease/comfort of shopping and hedonic/enjoyment. In that context, Arora and Aggarwal (2018) suggest three key advantages associated with online shopping, namely price, convenience and recreational benefits. Therefore, this study has put forward the following hypothesis:

H2: Perceived benefits have influenced digital customer satisfaction

Quality Factor

Batti et al. (2019) have explained several perceived benefits which indicate the quality factor for digital consumer satisfaction determination. The easy payment method along with digitalized payment system and smooth delivery can attract digital consumer for purchasing. Besides the vast information regarding product, price and competitors create an extra impact on consumer. Due to the augmented reality the personalized service for consumer can easily build customer loyalty (Brüseke 2016). Therefore, this study has put forward the following hypothesis:

H3: Quality factors have impact on digital customer satisfaction

Customer Attitude

Chetioui and Lebdaoui (2021) have recently discussed in their study regarding several variables which have impact on customer attitude towards online shopping and digital business. Relative advantage indicated the benefits consumer can get from digital platform purchasing than the traditional store (Rogers, 2003). A better-quality product, security and Caputo and Wallezky (2017) have added that new online store and large assortment of product (Sathiyarajet al., 2015), hedonic motivation and involvement (Kim et al., 2007), impulsive buying behavior (Kukar-Kinney et al., 2016) can have positive relation with customer attitude building to online shopping and create great satisfaction. Therefore, this study has put forward the following hypothesis:

H4: Positive attitude towards online shopping has influenced digital customer satisfaction.

Perceived Risk

Abrar et al., (2017) have coined that several risk factors are also associated with online shopping for the consumer perspective. This includes the privacy and the security and financial risk. In addition, KokWai THAM et al., (2019) have discussed in their study regarding the perceived risk containing financial and fraudulence activities which can influence consumer satisfaction. Chen, L. (2010) also argues that consumer psychological risk is also included for perceived risk for digital consumer. Li, C. Y. (2019) reveals that though consumer trust is very sensitive factor for digital shopping, different informational drivers, social presence and different business familiarity can also influence the perceived risk. Therefore, this study has put forward the following hypothesis:

H5: Perceived risk have impact on digital customer satisfaction

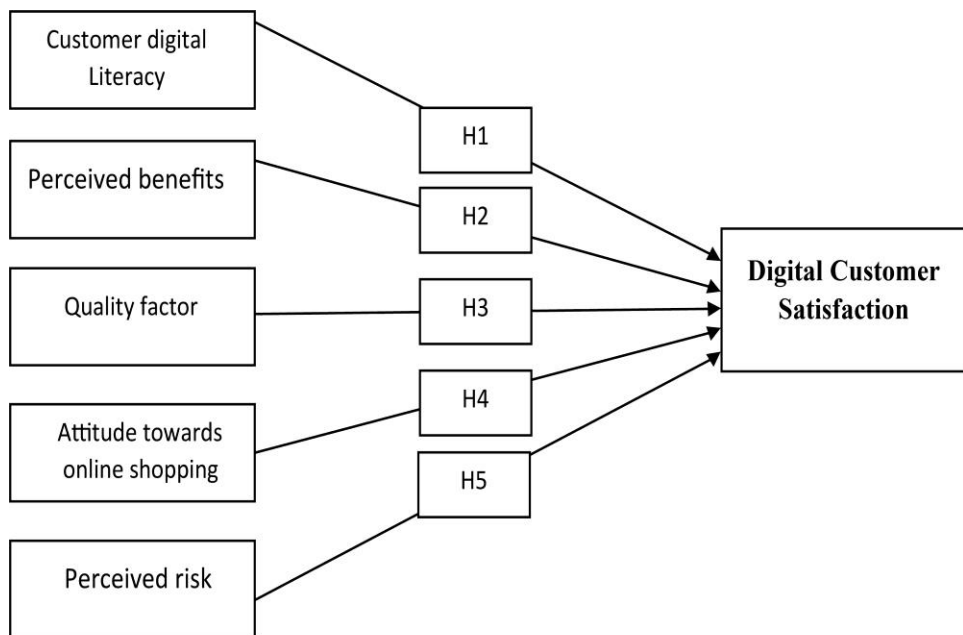


Figure 1: Research Model

Source: Adapted from Sang Hee Jung and ByoungGyu Chung (2020), Nupurarora, Aanchal Aggarwal, (2018), Bhatti, A., & Ur Rahman, S. (2019), Youssef Chetioui and Hind Lebdaoui (2021), KokWai THAM et al. (2019).

4. Research Methodology

This research would primarily focus on exploratory factor analysis and Confirmatory Factor Analysis to partition the available factors into underlying latent factors in quantitative manner. The sample size was 267 which is being calculated by 95% confidence level and 5% margin of error for unknown population size. A structured questionnaire is being developed and distributed through Google form containing some demographic information and all the factors related questions. On a 5-point Likert scale, the response ranged from 1= strongly disagree to 5= strongly Agree. A convenience sampling technique is being used for the study.

4.1 Data Analysis

Data has been analyzed using SPSS Version 25 for Exploratory Factor Analysis (EFA), while SmartPLS (version 3.3.5) has used for the Confirmatory Factor Analysis (CFA) model development. As recommended by Chou and Bentler (1995), the first step involved identifying the standard normal distribution by verifying that the kurtosis (< 7) and skewness (< 2) were in acceptable ranges. The overall reliability was 0.866, which was above the minimum acceptable reliability of 0.70, as recommended by Wells and Wollack (2003). In the initial factor analysis (EFA) phase, data were screened using the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy (> 0.5). Bartlett's Test of Sphericity (< 0.05) (Tabachnick and Fidell, 2001; Taherdoost et al., 2014). The parallel analysis, with Principal Component Analysis, would be conducted to identify the number of factors to be retained in the model (Wood et al., 2015). 34 items with 6 demographic items and the sample size of 267 were computed, and factors with Eigenvalue > 1 were considered (Wood et al., 2015). Confirmatory Factor Analysis (CFA) was conducted to validate the factors associated with digital customer satisfaction from literature review, and a number of indices were used to identify the extent of the model fit. According to Hooper et al. (2008), it is essential to choose fit indices that indicate the best fit, In this study, the model was assessed by Chi-square goodness of fit statistics ($p > .05$).

Table 2: Item Statement (Factors)

| Detailed reliability of the instrument. | Cronbach's Alpha | Item details | Item Code |
|---|------------------|------------------------------|-------------------------|
| Functional skill to use digital platform for shopping influence my satisfaction | .863 | DL Funtional_Skill | DL1=Digital Literacy |
| Ability to find and select information influence my satisfaction | .861 | DL_information | DL2=Digital Literacy |
| e-safety is good for customer | .862 | DLe-safety | DL3=Digital Literacy |
| I have enough Digital Knowledge | .867 | DL Digital Knowledge | DL4=Digital Literacy |
| I can interpret different digital understanding | .861 | DL critical thinking | DL5=Digital Literacy |
| I have enough internet knowledge to shop | .862 | DL internet knowledge | DL6=Digital Literacy |
| I use digital platform as it's Convenience | .861 | PB_Convenience | PB1= Perceived Benefits |
| I use digital platform as I can compare different product price | .861 | PB_price_compare | PB2= Perceived Benefits |
| I use digital platform as it's Simple | .862 | PB_simple_process | PB3= Perceived Benefits |
| I use digital platform as it's | .862 | PB_Huge_Product_availability | PB4= Perceived |

| | | | |
|---|------|---------------------|---|
| having huge product assortment | | | Benefits |
| Digital shopping has Fast delivery | .858 | QF_Fast_delivery | QF1= Quality Factors |
| Digital shopping has Easy payment | .862 | QF_Easy_payment | QF2= Quality Factors |
| Digital platform provides Huge Information | .859 | QF_Huge_Information | QF3= Quality Factors |
| Digital shopping provides customer personalized information | .862 | QF_personalized | QF4= Quality Factors |
| Digital shopping has easy cash on delivery | .862 | QF_cash_on_delivery | QF5= Quality Factors |
| Digital shopping has Digital Payment | .861 | QF_Digital_Payemnt | QF6= Quality Factors |
| I use digital platform if it has relative advantage from physical store | .860 | A relative_adv | A1= Customer Attitude to digital shopping |
| I use digital platform as if it has better quality from physical store | .861 | A better quality | A2= Customer Attitude to digital shopping |
| I use digital platform as I'm an impulsive buyer | .859 | A impulsive buyer | A3= Customer Attitude to digital shopping |

| | | | |
|--|------|--------------------|---|
| I use digital platform as it has new online store | .860 | A new Online_store | A4= Customer Attitude to digital shopping |
| Better online security increases my satisfaction | .863 | PR security | PR1= Perceived Risk |
| Better online privacy increases my satisfaction | .862 | PR privacy | PR2= Perceived Risk |
| I have concern for my mental wellbeing while using digital platform | .861 | PR Psychological | PR3= Perceived Risk |
| I have concern for financial loss while using digital platform | .862 | PR- Financial | PR4= Perceived Risk |
| I have concern for fraudulence activities while using digital platform | .861 | PR Fraud | PR5= Perceived Risk |

Table 2 has shown the factors statement and code for CFA model development and all the variables have Cronbach's Alpha value more than 0.80 which indicated a good reliability.

5. Results

5.1 Demographic Characteristics

For understanding any study, demographic characteristics is very significant. From **Table 3**, this study shown that 54.3% female participated in this study and 152 private job holder and Dhaka residence 149 respondent were participated. The age mean value is 31.23 years and family monthly income mean value is 66375.21 BDT.

Table 3: Respondent's Demographic Characteristics (n=267)

| Variables | Variables | Number of the respondent (n) | Percent (%) |
|------------|------------|------------------------------|--------------|
| Gender | Male | 122 | 45.7 |
| | Female | 145 | 54.3 |
| Occupation | student | 67 | 25.1 |
| | business | 25 | 9.4 |
| | govt. | 15 | 5.6 |
| | private | 152 | 56.9 |
| | unemployed | 8 | 3.0 |
| Residence | Dhaka | 149 | 55.8 |
| | Chittagong | 46 | 17.2 |
| | Sylhet | 31 | 11.6 |
| | Khulna | 12 | 4.5 |
| | Rajshahi | 12 | 4.5 |
| | Barisal | 3 | 1.1 |
| | Rangpur | 4 | 1.5 |
| | Mymensingh | 10 | 3.7 |
| Age | Mean Value | | 31.23 Years |
| Income | Mean Value | | 66375.21 BDT |

5.2 Factors Descriptive Analysis

Table 4: Descriptive Statistics (Mean and Standards Deviation) (n = 267).

| | Mean | Std. Deviation | | |
|---|-----------|----------------|----------|----------|
| | Statistic | Statistic | Skewness | Kurtosis |
| Funtional_skills for digital Literacy. | 4.0112 | 1.18412 | -1.322 | .961 |
| Ability to find and select information DL | 3.7903 | 1.16699 | -1.129 | .500 |
| e-safety DL | 3.5356 | 1.14447 | -1.051 | .270 |
| DL Digital_Knowledge | 3.5880 | 1.18048 | -.772 | -.241 |
| DL Critical thinking | 3.7303 | 1.20865 | -.885 | .051 |
| DL internet_knowledge | 3.7903 | 1.23887 | -.898 | -.145 |
| PB Convenience | 3.5506 | 1.20785 | -.577 | -.638 |
| PB price_compare | 3.4494 | 1.17631 | -.527 | -.672 |
| PB simple_process | 3.2360 | 1.37941 | -.336 | -1.166 |
| PB Huge_Product_availability | 3.3333 | 1.37011 | -.310 | -1.143 |
| QF Fast_delivery | 3.7903 | 1.21744 | -.902 | -.155 |
| QF Easy_payment | 3.5206 | 1.24851 | -.806 | -.325 |
| QF Huge_Information | 3.3633 | 1.35968 | -.699 | -.776 |

| | | | | |
|------------------------|--------|---------|--------|--------|
| QF personalized | 3.5918 | 1.25132 | -.744 | -.461 |
| QF cash_on | 3.5993 | 1.37119 | -.800 | -.557 |
| QF digital Payment | 3.4120 | 1.42571 | -.487 | -1.141 |
| A relative_adv | 3.7041 | 1.35672 | -.770 | -.718 |
| A better_quality | 3.6517 | 1.22721 | -.884 | -.198 |
| A impulsive_buyer | 3.7940 | 1.24706 | -1.068 | .286 |
| A new Online_store | 3.6929 | 1.24878 | -1.082 | .153 |
| PR security | 3.9588 | 1.22405 | -1.222 | .538 |
| PR privacy | 4.1648 | 1.23049 | -1.538 | 1.237 |
| PR Psychological | 3.6629 | 1.22269 | -.799 | -.279 |
| PR Financial | 3.7903 | 1.10748 | -1.099 | .781 |
| PR Fraud | 3.9213 | 1.09570 | -1.294 | 1.255 |
| Total | 4.4382 | .84455 | -2.030 | 4.603 |
| Valid N (listwise)=267 | | | | |

Twenty-eight items were measured by the mean, standard deviation skewness, and kurtosis (Table 4). The total mean was 4.43 (S.D = 0.84). The skewness and kurtosis are into the range.

5.3 Exploratory Factor Analysis

Table 5: Hypothesis Testing and Total Variance Analysis

| Hypothesis | Kaiser-Meyer-Olkin | Bartlett's Test of Sphericity | | | Hypothesis result | Eigenvalue and total variance |
|--|------------------------------|-------------------------------|-----------|--------------|--------------------------|-------------------------------|
| | Measure of Sampling Adequacy | Chi square | df | Sig. | | |
| H1: Consumer digital literacy has relation with the digital customer satisfaction | 0.829 | 618.380 | 15 | 0.000 | Null hypothesis rejected | 1 component 56.796% |
| H2: Perceived benefits has influenced digital customer satisfaction | 0.782 | 356.393 | 6 | 0.000 | Null hypothesis rejected | 1 component 63.872% |
| H3: Quality factors have impact on digital customer satisfaction | 0.723 | 322.050 | 15 | 0.000 | Null hypothesis rejected | 2 components 67.779% |
| H4: Customer attitude towards online shopping has influenced digital customer satisfaction | 0.854 | 557.108 | 15 | 0.000 | Null hypothesis rejected | 1 component 55.848% |
| H5: Perceived risk have impact on digital customer satisfaction | 0.839 | 466.409 | 15 | 0.000 | Null hypothesis rejected | 1 component 60.041% |

In this study, the KMO value > 0.5 , which has indicated that the sample was adequate for performing factor analysis, and the Bartlett's Test of Sphericity was significant when $\text{sig. } 0.05 <$ indicating that the relationship among the variables was strong and the data were suitable to conduct an Exploratory Factor Analysis (George and Mallery, 2000). Using Parallel Analysis (PA), factors number can be determined in table-5, which had an Eigen value > 1 , as recommended by Horn (1965), this being one of the recommended approaches to determine the number of factors. In Appendix, the rotated principal components have been including for each hypothesis. All of the components have positive relation and value more than 0.50 correlated with their latent factors.

5.3.1 Convergent Validity

Convergent validity means the level to see that all items of a construct measure the specific construct(s) (Rehman et al., 2019). Convergent validity measures three things: average variance-extracted (AVE), factor loadings and composite reliability (CR) as suggested by Hair Jr, Hult, Ringle and Sarstedt (2013). To get the best results for CR and AVE in order to eliminate all items that were below 0.50-factor loading. In this study **Table-6** proves the necessary standards for CR (greater than 0.60) and AVE (0.50) (Hair et al., 2013). According to Nunnally (1978), the value of Cronbach's alpha must be 0.70 or higher than 0.70 and this study met the criteria.

Table 6: Reliability, Construct Correlations and Validity

| Construct | Cronbach's Alpha | rho_A | Composite Reliability | Average Variance Extracted (AVE) |
|--------------------|------------------|-------|-----------------------|----------------------------------|
| Customer Attitude | 0.841 | 0.847 | 0.883 | 0.657 |
| Digital Literacy | 0.846 | 0.872 | 0.882 | 0.757 |
| Perceived Benefits | 0.808 | 0.815 | 0.875 | 0.737 |
| Perceived Risk | 0.839 | 0.842 | 0.886 | 0.708 |
| Quality Factor | 0.711 | 0.728 | 0.802 | 0.606 |

Discriminant validity refers to a condition where the researchers see that every indicator of a theoretical model is different in terms of statistics (Rehman et al., 2019). In this study, discriminant validity is measured on recommendations of Fornell and Larcker (1981a). Table-6 validates the standard of discriminant validity as proposed by Fornell and Larcker (1981b).

Table 7: Discriminant Validity

| | Customer Attitude | Digital Literacy | Perceived Benefits | Perceived Risk | Quality Factor |
|---------------------------|--------------------------|-------------------------|---------------------------|-----------------------|-----------------------|
| Customer Attitude | 0.747 | | | | |
| Digital Literacy | 0.018 | 0.746 | | | |
| Perceived Benefits | 0.108 | 0.479 | 0.798 | | |
| Perceived Risk | 0.537 | 0.036 | -0.010 | 0.780 | |
| Quality Factor | 0.382 | 0.367 | 0.479 | 0.285 | 0.637 |

5.4 Confirmatory Factor Analysis

Hair, J. F., Ringle, C. M., & Sarstedt, M. (2013) has discussed that latent construct and factor mostly represent the value more than 0.70. Though, their AVE value is more than 0.50. From **Figure 2** in customer attitude construct better option value is 0.696 which is very close to 0.70. For digital literacy construct digital knowledge has 0.560 value which is comparatively low but representative. In quality construct most of the variables have nearly 0.60 value which can be accepted by some researcher. As Digital customer satisfaction is the dependent variable here, this model shows positive relation with all the other variables.

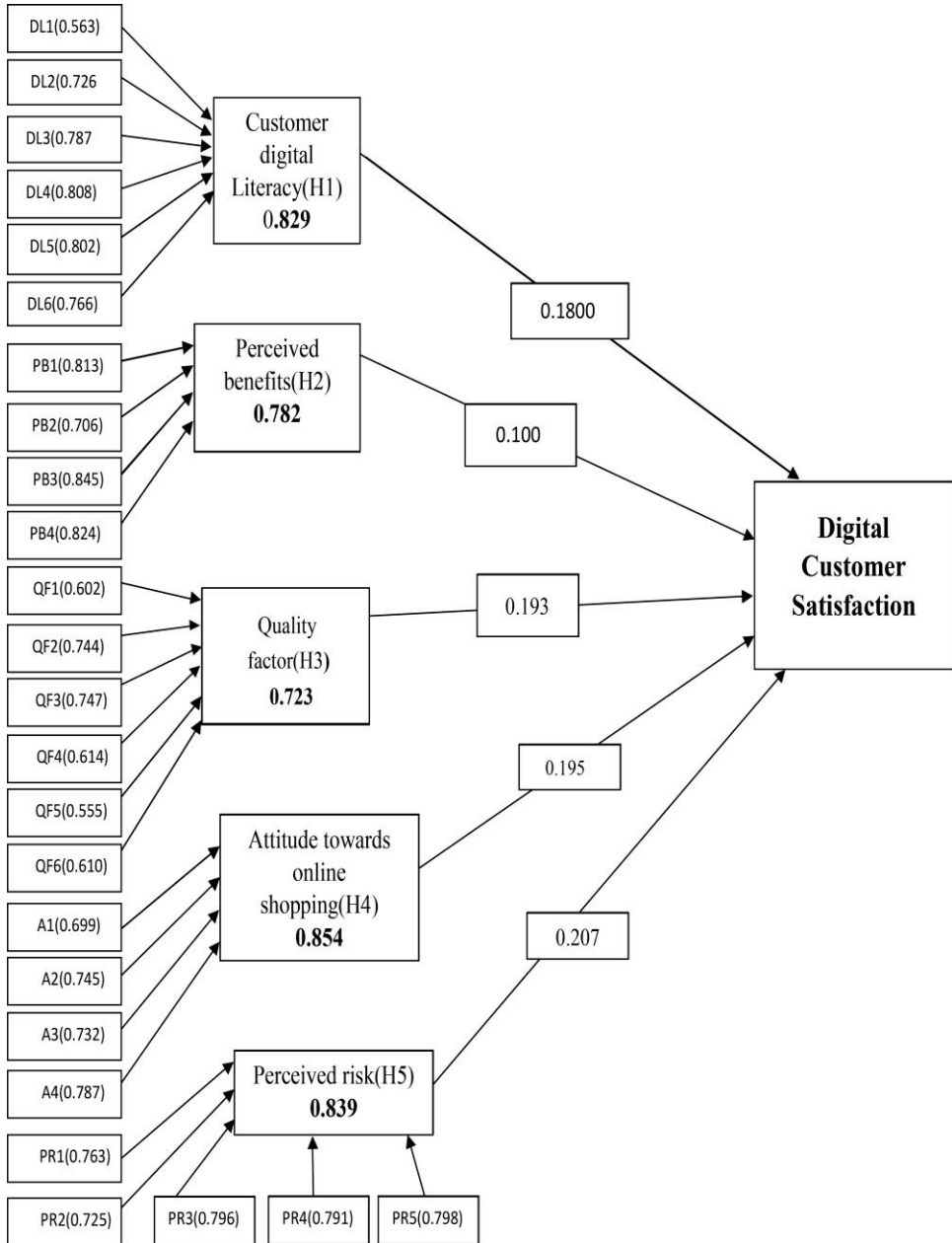


Figure 2: CFA model for digital customer satisfaction. (Measurement model)

6. Discussion

Digital customer satisfaction is depending on several latent variables and the developed hypothesis from the literature have been significantly proven with the fact. From table 2 Cronbach's Alpha value provides a very good reliability of the factors. Demographic characteristics from table 3 have indicated a good difference from the sample. For analysis the Exploratory Factor Analysis (George and Mallery, 2000) , the hypothesis results from table-5 based on KMO testing all the hypothesis have indicated that customer digital literacy, perceived benefits, quality factors, attitudes towards online shopping and perceived risk have a very positive relation with digital customer satisfaction.

Table 8: Structural Model and Direct Relation

| | Original Sample (β) | Sample Mean (M) | Standard Deviation (STDEV) | T Statistics (O/STDEV) | P Values | Hypothesis | Decision |
|--|-----------------------------|-----------------|----------------------------|--------------------------|----------|------------|-----------|
| Customer digital Literacy > digital customer satisfaction | 0.180 | 0.0247 | 0.073 | 0.247 | 0.405 | H1 | Supported |
| Perceived benefits -> digital customer satisfaction | 0.100 | 0.102 | 0.066 | 1.510 | 0.432 | H2 | Supported |
| Quality factor - > digital customer satisfaction | 0.193 | 0.488 | 0.087 | 0.510 | 0.007 | H3 | Supported |
| Attitude towards online shopping > digital customer satisfaction | 0.195 | 0.345 | 0.074 | 0.609 | 0.000 | H4 | Supported |
| Perceived risk - > digital customer satisfaction | 0.207 | 0.479 | 0.057 | 2.389 | 0.000 | H5 | supported |

From the **Table 8 and Figure 2**, this study has shown the direct relationship among the factors, whereas customer digital Literacy > digital customer satisfaction ($\beta=0.180 < 0.20$), t value $0.247 < 1.96$ and p value $0.405 < 0.5$) Perceived benefits -> digital customer satisfaction ($\beta=0.100 < 0.20$), t value $1.51 < 1.96$ and p value $0.432 < 0.5$) and Quality factor -> digital customer satisfaction ($\beta=0.193 < 0.20$), t value $0.51 < 1.96$ and p value $0.007 < 0.5$) have direct relation among the factors. In addition Attitude towards online shopping > digital customer satisfaction ($\beta=0.195 < 0.20$), t value $0.609 < 1.96$ and p value $0.000 < 0.5$). Finally, Perceived risk -> digital customer satisfaction ($\beta=0.207 > 0.20$), t value $2.389 > 1.96$ and p value $1.000 > 0.5$) has slightly related with the factors.

Customer digital functional skills, digital information, e-safety, digital knowledge, internet knowledge and critical thinking ability, these items loading value is more than 0.50 which indicates a good representation for digital literacy. For digital customer satisfaction, digital literacy can play an influential factor and marketers should follow this significance. In addition, product convenience, price comparison, simple process, large assortment of product loading value from figure 2 also represent good perceived benefits factors variables for digital customer satisfaction. Besides, digital payment, fast delivery, huge information, personalized product and cash on delivery etc. variables also have loading value nearly 0.70 which is also a good representative for quality factors. Therefore, relative advantage, impulsive buying, new store etc. variables value also indicate the customer positive attitude factors. Finally, the security, privacy, fraudulence, financial risk have good loading value (< 0.50) from figure 2 represent nicely the perceived risk factors towards digital customer satisfaction. So the above results and analysis have shown the good model fit and proven hypothesis that all the factors have influence and impact on digital customer satisfaction.

7. Conclusion

This study has mainly focused on the digital customer satisfaction understanding in the 4th industrial revolution. Several variables and factors are being related with digital customer satisfaction. Consumers prefer digital platform especially online for several reason. Today's consumer are more inclined with digital knowledge and understanding, they are more conscious about their rights and different alternatives. As 4th Industrial revolution has opened up several

opportunities for business as well as consumer for better product and services. This study has tried to find out the several variables and their inter relation by Exploratory factor analysis and confirmatory factor analysis.

7.1 Managerial Implication and Future Research Direction

As customer are now more informed about the digital and online shopping, business and marketers should understand better regarding the factors, variables are being important for better customer satisfaction socially digital customer or tech-oriented customer. Delafrooz et al. (2006) and Girard et al. (2003) have been discussed that online retail store should more concern regarding their online and offline activities for customer satisfaction which leads to customer loyalty and profit. From this study marketers can have a theoretical understanding of several factors and digital customer satisfaction relation and analysis. Besides, due to the time and resource constraints this study cannot focus on other related factors which are also very significant for digital customer satisfaction. Future researchers can find out those factors and also analyses the mediating relationship among the variables and factors as this study has just concentrated on direct relationship in structural mode through confirmatory factor analysis. The incorporation of Online and social media impact on customer satisfaction analysis can be a great scope for future researcher as well.

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Appendix:

A.

| Digital Literacy Component Matrix^a | |
|--|-----------|
| | Component |
| | 1 |
| Functional skills for digital Literacy . | .781 |
| Ability to find and select information DL | .786 |
| e-safety DL | .796 |
| DL Digital_Knowledge | .662 |
| DL critical thinking | .787 |
| DL internet_knowledge | .699 |
| Extraction Method: Principal Component Analysis. | |
| a. 1 components extracted. | |

B.

| Perceived benefits Component Matrix^a | |
|--|-----------|
| | Component |
| | 1 |
| PBConvenience | .816 |
| PBprice_compare | .843 |
| PBsimple_process | .836 |
| PBHuge_Product_availability | .692 |
| Extraction Method: Principal Component Analysis. | |
| a. 1 components extracted. | |

C.

| Quality factors Component Matrix^a | | |
|---|-----------|-------|
| | Component | |
| | 1 | 2 |
| QFFast_delivery | .670 | -.513 |
| QFEasy_payment | .582 | -.310 |
| QFHuge_Information | .716 | -.387 |
| QFpersonalized | .668 | .271 |
| QFcash_on | .679 | .400 |
| QFdigital_payment | .590 | .590 |
| Extraction Method: Principal Component Analysis. | | |
| a. 2 components extracted. | | |

D.

| Attitude Component Matrix^a | |
|--|-----------|
| | Component |
| | 1 |
| A relative_adv | .765 |
| A better quality | .761 |
| A impulsive_buyer | .788 |
| A new Online_store | .738 |
| Extraction Method: Principal Component Analysis. | |
| a. 1 components extracted. | |

E.

| Perceived risk Component Matrix^a | |
|--|-----------|
| | Component |
| | s1 |
| PRsecurity | .820 |
| PRprivacy | .792 |
| PRpsychological | .785 |
| PRfinancial | .758 |
| PRfraud | .715 |
| Extraction Method: Principal Component Analysis. | |
| a. 1 components extracted. | |