

Impact of Infectious Disease Risk Perception on Perceived Retail Crowding: With Special Reference to Retail Industry in Sri Lanka

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ABSTRACT

The global pandemic of COVID 19 has changed consumer behaviour to reduce the risk. This is common for all interpersonal interactions of individuals especially in maintaining the recommended interpersonal distance based on the recommendations from the health experts. Sri Lanka as a developing country affected by COVID 19, observed changes in individuals' day today' consumption decision making due to pandemic. Importantly the retailing sector is highly influenced by the conditions since the frequency of interpersonal interactions and degree of interaction is higher in the retailing sector. Interestingly the retailing sector with its largest contributor, the SMEs need to identify the unique changes that happen to the consumer behaviour in responding to them. Accordingly, the objective of the study is to examine the impact of infectious disease risk on the perceived retail crowding in two perspectives of human density and the spatial density. The study has used a quantitative survey in collecting data with the online self-administrated questionnaire with a sample of 100 consumers. Data analysis has been done by using a PLS-SEM with the support of SmartPLS version 3. The key findings of the study emphasize the significant positive influence of infectious disease risk on human density as well as on the spatial

density. Based on the findings the study attempts to provide the implications for the retailing industry to cope with situational changes in the environment.

Keywords:

Infectious disease risk perception, Perceived retail crowding, Human density, Spatial density

1. Introduction

The retailing sector in Sri Lanka is accounting for 34% of the country's GDP, 14% of employment (Perera, 2019) while SMEs as main contributors in the retailing sector. Importantly, this sector faces continuous challenges with environmental dynamics. Similarly, the retail sectors had a serious impact on the COVID 19 global pandemic.

With the rapid expansion of COVID 19 all around the world, it has been identified as the worldwide pandemic (Baker, et al., 2020). COVID 19 is a recently identified infectious disease, which has badly affected human health and economic wellbeing. Facing a critical situation, many countries have taken several actions to reduce the spreading of the disease (Bikbov & Bikbov, 2020). In which

communicating, encouraging, and forcing people to maintain interpersonal distances by using different mechanisms such as self-isolation, lockdowns, and curfew have been used by many of the countries in the world. These actions have influenced human behaviour from different perspectives (Zheng, et al., 2020). As consumers, the regular behaviours have been changed with the situational condition with the risk assessments (Seale, et al., 2010). Therefore, it has created a timely need to investigate the changes in consumer behaviour under current conditions.

Physical conditions are having a higher degree of impact on consumer attraction for retail stores (Machleit, et al., 2000). Retailers make decisions on designing the layout and the other physical structural based on the understanding of consumer evaluation

on the environment this also has a direct impact on shopper satisfaction (Mehta, 2013). To explain the consumer perception of the environmental conditions of a store, crowding has identified as a one of the main concern which has studied in different perspectives (Whiting, 2009); (Machleit, et al., 2000); (Mehta, 2013). Perceived crowding is the psychological assessment by individuals on a comparison between space demand and supply (Machleit, et al., 2000). The psychological assessment of crowding has been influenced by different factors (Stokols, 1972). Furthermore, the infectious disease risk has identified as a factor influencing the perceived crowding (Wang & Ackerman, 2019). Accordingly, the study has been an attempt to investigate the impact of infectious disease risk on the perceived crowding with the time requirement.

1.1. Background

Coronavirus is an infectious disease which is caused by the newly identified Coronavirus or COVID 19

which is a serious illness for older people and those with underlying medical problems like cardiovascular disease, diabetes, chronic respiratory disease, and cancers (World Health Organization, 2020). As per the statistics from the Health Promotion Bureau in Sri Lanka, 1,519,571 total confirmed cases worldwide with the 88,550 deaths from 209 different countries on 10/04/2020 (Health Promotion Bureau, Sri Lanka, 2020) have been recorded. Similarly, with the other infectious diseases, the best way to prevent and reduce the transmission is to make individuals aware and create interpersonal distance (Bikbov & Bikbov, 2020). Therefore, different countries have taken actions in creating interpersonal distance and self-isolation.

Sri Lanka with the current status of having 2,665 confirmed cases and 11 deaths recorded on 15/07/2020 (Health Promotion Bureau, Sri Lanka, 2020). Based on the estimations of the health authorities, it has been highlighted the importance of preventing the transmission of the disease based on the recommendations

of the world health organization and the experience from the other countries (Health Promotion Bureau, Sri Lanka, 2020). The government has decided to enforce the police curfew for the entire country while having breaks to ensure access to essentials by the citizens by identifying the risk areas of the country based on the number of reported cases (Nathaniel, 2020). Accordingly, the country has experienced the curfew with relief consumers are engaging with the purchasing for the essentials (Jayasekera, 2020). Even the regulatory bodies have strictly advised the consumers to follow the safety mechanisms and to maintain the distance in interpersonal interactions. However, it has been observed the occasions where the consumers are violating the guidelines (Nathaniel, 2020). This has highlighted the importance of understanding the consumer risk assessment and how it influences the perceived retail crowding to amend the behaviour of the shoppers in shopping space (Machleit, et al., 2000).

2. Literature Review

2.1. COVID 19 and Consumers

The pandemic has changed consumer behaviour worldwide (Chen, et al., 2020). Statistical findings on the consumer behavioural changes due to COVID 19 highlight that nearly 90% of the consumers have changed their regular behaviours to avoid the COVID 19 risk (Baker, et al., 2020). With health experts' recommendations on maintaining the interpersonal distance on avoiding the transmission of COVID 19 (Health Promotion Bureau, Sri Lanka, 2020), individuals take actions to maintain interpersonal distance in day to day social interactions, especially in the shopping experience (Chen, et al., 2020). In other words, the consumers attempt to use methods that facilitate the interpersonal distance while their shopping as an avoidance mechanism. Further, it is evident that the consumer touchpoints also get changed with the COVID 19 risk which was caused by the disturbance of the supply chain networks and international trade (Department of Economic and Social Affairs, 2020). With the restriction

impose in accessing to the conventional retail channels, researchers highlight the changes in spending patterns and preference on accessing products and services by consumers (Chen, et al., 2020); (Baker, et al., 2020); (Department of Economic and Social Affairs, 2020).

Especially the retail sector has been highly affected by the new trend of the consumer touchpoints of purchasing. As per the (Purcărea, 2020) retail industry is working under pressure to ensure the required responsiveness in providing access to the consumers while addressing the issues of maintaining their existing channels against the changing environmental conditions. On the other hand, it has highlighted the fact that the consumer tendency towards the e-retailing with the convenient value generated by the touchpoint (Hughes, 2020). The higher number of individuals attempt to avoid crowded places especially the supermarkets and shopping centers which is predicted to increase in the future (Purcărea, 2020). This has caused to reduce the spending on consumption even in daily necessities

such as groceries and household items. Furthermore, it has observed the direct association with the level of risk in the area and consumption levels (Chen, et al., 2020). Accordingly, the risk perception of individuals directly contributes to preventive methods used by them. This means the risk perception becomes central to the changes that happened in consumer behaviour.

2.2. *Infectious Disease Risk Perception of Consumers*

Studying the concept of perceived risk, it is defined as the psychological concept which explains the state of mind on explaining the probability of getting victimized with the potential threat (Martins-Melo, et al., 2012). In explaining the perceived risk against the infectious disease, it is identified with the individuals' evaluation of the possibility of infecting with the diseases (Seale, et al., 2010). Many studies have attempted to develop the measuring scales of perceived risk (Risher, 1996); (Faiola & Holden, 2017); (Patterson, et al., 2001); (Menon, et al., 2006). With regards to

the infectious disease risk, (Turvey, et al., 2009) identified seven dimensions of risk perception of infectious disease as 1) voluntariness of activity, 2) dread of the outcome, 3) control over consequences, 4) knowledge of associated risks, 5) catastrophic potential, 6) novelty or familiarity with risk, and 7) equity and distribution of consequences. Furthermore, the individuals' assessment based on those different factors have disparities with personal and social factors (Slovic, et al., 2005). On the other hand, health risk assessment has been defined as a social construction (Menon, et al., 2006). Since the risk is socially assessed based on the information received and the knowledge of the individuals (Riskier, 1996). This has emphasized the importance of communication and information access in the risk assessment (Faiola & Holden, 2017).

In a current global pandemic, the individual access to the information has been widely debated. Since the information circulation has created a significant impact on consumer

behaviour against the risk (La, et al., 2020). Therefore, in investigating the risk perception, there are society level as well as personal level differences (Feldman & Dowd, 2000). Based on the underline principles pointed out, it is important to understand how this risk perception has infancy on the perceived crowding.

2.3. Risk Perception and Perceived Crowding

Perceived crowding is defined as the consumer assessment of space availability (Whiting, 2009). This means the evaluation of demand and supply of space. In which the demand for space influence by different factors such as health recommendations (Wang & Ackerman, 2019). With the changes in the demand, the constant supply creates the amendments to the entire evaluation. In other wordings, the changes in the demand and supply of space influence adjusting the perceived crowding (Li, et al., 2009).

In another end, some of the literature sources highlighted the definition of perceived crowding is a subjective state of psychological stress that arises

from a situation of scarce space (Li, et al., 2009). The individual assessment on spacing being influenced by different factors such as physical, social, and personal factors (Machleit, et al., 2000). This has made the perceived crowding a subjective construct, where the same place may have different perceived crowdedness with different individuals (Mehta, 2013). In reviewing the concept of perceived crowding literature, it has been identified as the main two perspectives. One as controlling factors of perceived crowding (Machleit, et al., 2000) and the other one as consequences of perceived crowding (Mehta, 2013). Especially in the retail space, the under crowding creates less attractiveness in the store while overcrowding creates less attractiveness for the store. This has emphasized the importance of maintaining the optimum level of crowding by managing the people and objects in the store (Li, et al., 2009). The optimum level of crowding expected by the individuals will differ with different factors. For an instant, in a sports stadium or a bar consumers will expect more environmental

density which they do not consider as a distraction for their behaviour (Machleit & Eroglu, 1980).

According to the subjective nature of the construct, the determination of perceived crowding is based on the different situational factors. Based on this it was also identified the fact that the perceived crowding was influenced by the infectious disease risk. Since, infectious disease transmission by human interactions (Wang & Ackerman, 2019), individuals attempt to maintain the distance in social distance. In other words, the evaluation of space availability in social interactions (Seale, et al., 2010) has been influenced by the infectious disease risk. In a public space, the ability to maintain the distance between persons and objects have a direct impact on the level of density that particular space has provided for the consumer (Whiting, 2009). The perception of the level of crowdedness in public places further influenced by other social characteristics of the individuals who use the place. Individual preference in

social interaction differs from their social characteristics (Li, et al., 2009).

As has highlighted in the study, COVID 19 as an infectious disease that has developed into a global pandemic, created the challenge of reducing the transmission rate of disease among individuals (Bikbov & Bikbov, 2020). Furthermore, authorities have created proactive measures to maintain the interpersonal distance (Health Promotion Bureau, Sri Lanka, 2020). The information on COVID 19 prevention recommend interpersonal distance and avoid being in crowded places (La, et al., 2020). In other wordings similarly with the infectious disease risk COVID 19 risk also attempts to reduce the individuals' tendency to have close interpersonal interactions (Wang & Ackerman, 2019). Therefore, based on the level of risk assessment by individuals the level of assessment on the crowdedness of the environment will be determined (Seale, et al., 2010). Since the health recommendations to have distance have increased the space requirement which is directly influenced by the overall assessment

of the crowdedness in the place. This provides the underpinning for the construction of the model.

The identified association of the infectious disease risk on perceived crowding study attempts to further review the literature on how this association being affected in the retailing sector. The existing literature was evident that the consumer perceived risk in the retail space as a critical concern of individuals in selecting the store (Whiting, 2009); (Mehta, 2013); (Machleit, et al., 2000); (Wang & Ackerman, 2019); (Li, et al., 2009). With the importance of perceived crowding on retailing the study focus on how infectious disease risk influences the perceived retail crowding.

2.4. Perceived Crowding in the Retailing Industry

Traditionally, retailing has been identified as selling goods and services in a retail store (Peterson & Balasubramanian, 2002). But with the changes in the environment creates reconsideration on the definition. The recent literature pointed out retailing

with its intention to cater to the end-users (Hagberg, et al., 2016). Accordingly, the study also defines retailing as selling goods or services for ultimate use. Besides, the traditional viewpoint concentrated on retailing places that have now converted into retail spaces (Peterson & Balasubramanian, 2002). Even in current market structures it has identified market spaces the application of market places also having validity with the consumer preference in using market places (Hagberg, et al., 2016). This has created the necessity of studying the market place conditions even now. Furthermore, the study has focused on the market place, where the study investigates consumer behaviour in retailing places or retail stores.

To understand the different retailing places, it is required to review different types of retail stores. As per the classification presented by (Jang & Kang, 2015) retailing store was divided into five types as (1) departmental stores, (2) shopping centers, (3) hypermarkets, (4) supermarkets, and (5) convenient

stores. This study focused on supermarkets as a retail store. With the study scope, it has been defined as the supermarket a large grocery store with a self-service base and sells food products and household items arranged in organized aisles (Peterson & Balasubramanian, 2002). Furthermore, the supermarket is a self-service facilitated large store with Fast Moving Consumer Goods (FMCG). The consumer demand for the FMCG is having a regular pattern even with the different environmental conditions (Verplanken & Sato, 2011). Therefore, in explaining the influence of the external environmental changes on the consumers, the supermarkets provide an effective platform (Kukarkinney, 2005). This has provided further justification for selecting supermarkets as a retailing setup.

With the study focus, the store environment has been identified as a critical factor in shopping satisfaction (Machleit, et al., 2000). This association has created the implications for the retail sector in managing responsive strategies to create long term customer loyalty

(Gupta & Arora, 2017). In managing the retail environment, it attempts to identify the different factors such as layout, shelf arrangements, aroma, music, salesforce arrangements, and other physical evidence (Whiting, 2009). Accordingly, the individual decision on selecting the retail store and the satisfaction of the shopping experience influenced by different factors (Verplanken & Sato, 2011); (Kukar-Kinney, 2005); (Machleit, et al., 2000); (Piacentini, et al., 2001); (Mehta, 2013); (Gupta & Arora, 2017). The reason for the retail stores to concern about different perspectives in business operations enforce with the validated reason above. In reviewing factors influencing the attractiveness of the retail store the consumer perception of the crowdedness in the store has intensive research with its subjective and dynamic nature (Machleit, et al., 2000); (Wang & Ackerman, 2019); (Li, et al., 2009). Therefore, the study attempts to investigate the impact of infectious disease risk on perceived retail crowding.

Further, a review of the literature on retailing identified the dimensions of perceived crowding as human crowding and the spatial crowding (Mehta, 2013). Accordingly, the next section defines human crowding and spatial crowding.

2.5. *Human Crowding*

Simply, human crowding has been defined as the level of human density in the place (Zhang, 2010) (Zhang, 2010). On many occasions, the human density or the human crowding is measured with the frequency and the degree of social interaction (Li, et al., 2009). In general, the literature pointed out the association of human density with social factors such as social class, social status, etc. (Wang & Ackerman, 2019). Besides the literature on social distance in market place provide another perspective with individual willingness to maintain close social interactions with the individuals in the same social cluster (Purcărea, 2020). The perception of the distance will also influence the identified factors. Interestingly in the retail setting, there are other human

interactions than the other consumer. Since there is a sales force on the premises also creates interactions. Therefore, interacting with the sales force also becomes part of perceived human crowding (Zhang, 2010). Importantly over-involvement of the sales assistance, as well as under-involvement of sales assistance, make a negative impact on the overall consequences of the perceived crowding (Li, et al., 2009). On an occasion where the individuals have the pre-assumption of the effective interpersonal distance then they always try to maintain the pre-determined level in the shopping journey which changes the demand for the space in the retail store (Whiting, 2009).

2.6. *Spatial Crowding*

As per the definition by (Zhang, 2010) spatial density or spatial crowding is referring to the number and configuration of spatial elements such as merchandise and fixtures. The important perspective highlighted in the literature is, the individual assessment on availability is critical

with the spatial density (Li, et al., 2009). Besides, even the consumer perception of over spatial crowding is harming customer shopping intention. Moreover, consumers are expecting to have the level of spatial crowding which they always expected to maintain from the retail store they select (Mehta, 2013). Nevertheless, in studying the importance of spatial crowding in the study setting, (Wang & Ackerman, 2019) have discussed that spatial crowding supports maintaining the expected interpersonal distance by the individuals which explain the influence in the space demand. However, the study findings reveal how it influences the space supply as well. For instance, the arrangements and colours can change the perception of space supply (Yüksel, 2009). This means that the spatial density influence both the demand and supply of the space in a retail store and finally, it determines the perceived crowding of the store. Besides, focusing on the infectious disease the mode of transmission for the identified disease includes things (Health Promotion Bureau, Sri Lanka, 2020)

in the retail setting. This has created consumer concern on the spatial crowding since it is also a mode of transmission (Bikbov & Bikbov, 2020). With this understanding, the study highlighted the importance of considering spatial crowding in the study setting.

3. Methodology

According to the reviewed literature and the identified study gap, the study attempts to investigate the impact of infectious disease risk on perceived retail crowding and how it influences the human and spatial dimensions of perceived retail crowding. Accordingly, the following hypotheses were developed by the researcher,

H1: There is an influence from the infectious disease risk perception on human density in a retail store.

H2: There is an influence from the infectious disease risk perception on spatial density in a retail store.

With the defined objectives of the study, it has utilized the quantitative

approach with the survey technique. The self-administrated questionnaire was developed using validated measuring scales. Accordingly, the infectious disease risk perception as measured with the scale presented by (Seale, et al., 2010) in their study which consists of nine indicators was adapted. And the retail crowding measurement of (Machleit, et al., 2000) which consists of eight indicators was used for measuring two dimensions identified with the literature review of the study. Even it has used the validated scales in measuring the construct, in ensuring the content validity in the identified context, the researcher has used the experts' opinions. A questionnaire developed in three sections the first section attempts to collect the demographic information of respondents which provides an understanding of the profile of the consumers and the second section was on the infectious disease risk perception and the final and the third section was on perceived retail crowding. The third section consists of the main two subsections as human density and spatial density.

The study population for the study was identified as all the consumers in the country. With the identified population study has utilized the purposive sampling for sample selection. In which the purposive sampling provides a more informative response to achieve the study objectives. Furthermore, in determining the sample size it has been used the rule of thumb as per the recommendations from the (Wong, 2013); (Ringle, et al., 2014) have used the 100 as the sample size for the study. The data was collected using the online questionnaire within the period of 1st of April 2020 to 14th April 2020 from the residents in the Western province. The respondents have recruited via emails and social media the researcher selected the Western province since the Western province has identified as the high-risk area in the case of COVID 19 (Health Promotion Bureau, Sri Lanka, 2020). In analyzing the study hypotheses researcher has used the Partial Least Square Structural Evaluation Modeling (PLS-SEM) technique which was supported by the SmartPLS 3 software package. Data presentation

has been conducted in the main three aspects while the first one describes the data set including the respondent profile. The second part of the data analysis presents the reliability and the validity of the collected data and the final section presents the hypotheses testing to achieve the expected outcomes of the study.

4. Data Analysis

4.1. Descriptive Analysis

A descriptive analysis of the collected data consists of two parts. The first part describes the profile of the respondents. As per the analysis, it is highlighted that 76% of the respondents are male while 63% of the total sample is married. Furthermore, 92% of the respondents are above 30 years old which implies that the respondents are engaging with the household consumption decision making. Also, 60% of the respondents are having more than LKR 70,000 as their family income which represents the majority middle income earning families in the country.

With the briefing on the respondent profile, the following table presents

the descriptive statistics of the study constructs.

Table 1: Descriptive of the Study Constructs

| | Minimum | Maximum | Mean | | Std. Deviation | Variance | Skewness | |
|-----------------|-----------|-----------|-----------|------------|----------------|-----------|-----------|------------|
| | Statistic | Statistic | Statistic | Std. Error | Statistic | Statistic | Statistic | Std. Error |
| Risk Perception | 2.44 | 4.33 | 3.3333 | .04522 | .45223 | .205 | .176 | .241 |
| Human Density | 2.50 | 5.00 | 4.0200 | .07068 | .70682 | .500 | -.543 | .241 |
| Spatial Density | 2.00 | 4.25 | 3.3100 | .05379 | .53786 | .289 | -.169 | .241 |

Source: Survey Data, 2020

As it was widely accepted the application of Partial Least Squares Structural Equation Modeling (PLS-SEM) in social sciences (Wong, 2013) the study used the PLS-SEM in data analysis as a second-generation tool in analyzing data (Ringle, et al., 2014). Accordingly, the study presents, the data analysis with the two main categories as measurement model assessment and the structural model assessment.

4.2. Measurement Model Assessment

The study model as a formative model in testing for the measurement model assessment study has used the factor loadings, Cronbach's alpha, and the Average Variance Extracted (AVE) (Hair, et al., 2019). The following table summarizes the result of the measurement model assessment

Table 2: Measurement Model Assessment

| Variable | Item | Factor loading | Cronbach's alpha | AVE |
|------------------------------------|-------------|-----------------------|-------------------------|------------|
| Infectious disease risk perception | R1 | 0.718 | 0.715 | 0.587 |
| | R2 | 0.747 | | |
| | R3 | 0.724 | | |
| | R4 | 0.704 | | |
| | R5 | 0.841 | | |
| | R6 | 0.762 | | |
| | R7 | 0.841 | | |
| | R8 | 0.785 | | |
| | R9 | 0.774 | | |
| Human Density | CH1 | 0.801 | 0.773 | 0.512 |
| | CH2 | 0.755 | | |
| | CH3 | 0.787 | | |
| | CH4 | 0.886 | | |
| Spatial Density | CS1 | 0.710 | 0.756 | 0.506 |
| | CS2 | 0.815 | | |
| | CS3 | 0.785 | | |
| | CS4 | 0.774 | | |

Source: Survey Data, 2020

As per the (Hair, et al., 2019) establish the benchmark in assessing the measurement model assessment as factor loading to be higher than 0.7, Cronbach's alpha value to be higher than the 0.7 and the AVE value to be higher than the 0.5 the same

parameters have used in the several studies (Ringle, et al., 2014); (Wong, 2013). Accordingly, the same was adopted by the study. Therefore, it has identified the measurements with the suitability to use in examining the developed conceptual model.

4.3. Structural Model Assessment

(Hair, et al., 2019) explains the statistical methods in structural model assessment using PLS-SEM as path

Table 4: PLS results

| | Path Coefficient | P-value | Decision |
|---|-------------------------|----------------|-----------------|
| Infectious disease risk perception -> Human Density | 0.676 | 0.000 | Supported |
| Infectious disease risk perception -> Spatial Density | 0.583 | 0.000 | Supported |

Source: Survey Data, 2020

As per the results, it demonstrates the infectious disease risk perception is having a significant positive influence on the consumer assessment on the human density and the spatial density in the retail store environment.

In assessing the model fit (Hu & Bentler, 1999) suggested having the Standardized Root Mean Square Residual (SRMSR) to be less than the 0.1. The same rule has used by the (Hair, et al., 2019) and the study was utilizing the same parameter as per the result of the model it was recorded the

eco-efficiency and the measurements for the model fit. The study has adapted the (Hair, et al., 2019) for the structural model assessment.

SRMSR as 0.09 which was accepted as an indication for the model fitness.

5. Discussion

The study result confirms the previous study findings (Wang & Ackerman, 2019); (Whiting, 2009) explaining that the infectious disease risk perception is having a definite influence on the consumer assessment on the perceived crowding. Furthermore, findings identified the human density is the most effected factor from the infectious disease risk perceptions the same as highlighted with the (Li, et al., 2009). Besides, in

the study result, it has identified the necessity of concentrate on the individual assessment on the infectious disease risk since it has a significant influence on the consumer crowding perception. Especially for retailers in setting the layout of the store to increase consumer shopping intention the same has emphasis by (Machleit, et al., 2000).

Since the COVID19 has been identified as a new infectious disease that was converted as the global pandemic the study findings highlight even with different types of infectious disease the risk perception is influencing the consumer perception of the crowing. For an instant, the same has evident with the H1N1 by (Seale, et al., 2010). Therefore, the study findings confirm the influxes of infectious disease risk perception of perceived crowding. However, the study findings empirically support the influence of the infectious disease risk perception on perceived crowding in the Sri Lankan context. This support to validate the studies in a different context (Machleit, et al., 2000); (Seale, et al., 2010); (Li, et al., 2009);

(Wang & Ackerman, 2019); (Whiting, 2009) into Sri Lankan context.

6. Conclusion

Infectious disease risk perception has changed with the global pandemic and its effect on the general public as reviewed with the literature. The paper highlighted the two perspectives of perceived retail crowding as human density and the spatial density. The empirical testing of the developed conceptual model provides the implications for retailers. In a nutshell, the study has identified positive and definite impact by infectious disease risk perception on the human density and the spatial density as dimensions of perceived crowding. Accordingly, the following section presents the implications of the study.

7. Implications for Retailers

With the identified infectious disease risk perception, the consumers have a higher assessment of the crowdedness in the store. Therefore, retailers have to consider the methods of reducing the crowdedness in store in both the perspectives of human density and the

spatial density. In short term retailers have less ability to increase the space supply, therefore, the retailer has to use methods to use existing space based on the space demand. For instance, the rearranging the store can be used in this. In the long term, even retailers have the possibility of increasing the existing space it may harm organizational profitability and

operational performance. Therefore, the retailers have to focus on the targeting strategies in constructing the remedies on the identified problem context. This will require further in-depth studies on the construct. On the other hand, the infectious disease risk perception may change with the situational conditions which have to address in developing retail strategies.

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