

CAPITAL UNIVERSITY OF SCIENCE AND
TECHNOLOGY, ISLAMABAD



**Factors leading to Panic Buying
Behavior, with the Mediating
Effect of Customer Fear: A Study
of Personal Protective Equipment
in Pakistan**

by

Muhammad Hissan Ahmad

A thesis submitted in partial fulfillment for the
degree of Master of Science

in the

Faculty of Management & Social Sciences

Department of Management Sciences

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This thesis is dedicated to all the front line warriors who have sacrificed their lives, health, wealth and time selflessly to fight the current pandemic. Especially to the Doctors, who have fought against the COVID-19 by putting their lives on line. To those who are in medicinal research and development and contributed in making of the vaccine. To those who have lost their lives and those who have survived. It is only during the difficult times that enemies turn friends and extend a helping hand to each other. This thesis is dedicated to the betterment of humanity.



CERTIFICATE OF APPROVAL

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(Muhammad Hissan Ahmad)

Abstract

Purpose – The concept of Panic Buying in extreme conditions explores aspects of consumer behavior in this paper during recent events of COVID 19. Panic Buying in extreme conditions gained significance in consumer behavior. This research argued that, social network rumors and hygiene promotion proved supportive while studying panic buying behavior in extreme conditions.

Objective - aim of this research was to hypothetically test the effects of social network rumors and hygiene promotion directly on customer fear and on panic buying behavior. Also, this research tested the mediating role of customer fear between social network rumors, hygiene promotion and panic buying behavior.

Design - Smart PLS 3.3 was applied to test the hypothetical relationship between established variables by using the data of 319 users of personal protective equipment who were also aware of COVID 19.

Results - revealed that, social network rumors and hygiene promotion elucidated a positive effect on customer fear. Whereas, customer fear as a mediator, mediated the relationship between social network rumors, hygiene promotion and the outcome variable panic buying.

Research Limitations and Implication - This research anticipated and analytically confirmed that, social network rumors, and hygiene promotion had an effect on customer fear. Moreover, it highlighted the significance of customer fear as a key variable between social network rumors, hygiene promotion and panic buying behavior amongst the users of personal protective equipment.

Keywords: Social Network Rumors, Hygiene Promotion, Customer Fear, Panic Buying, Personal Protective Equipment, Consumer Behavior.

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Abbreviations

CF	Customer Fear
COVID 19	Corona Virus 2019
HP	Hygiene Promotion
PB	Panic Buying
PPE	Personal Protective Equipment
SNR	Social Network Rumors

Chapter 1

Introduction

1.1 Research Background

The demand of personal protective equipment has increased tremendously after the outbreak of Coronavirus worldwide (Schwartz, 2020; WHO, 2020). Early research it was found that 212 countries were directly affected in the first wave of chronic novel virus COVID 19 (Kumar, 2020). It was determined globally that use of personal protective equipment is the only solution to control the spread of this disease since no vaccine or cure existed (Erdal, 2020). Hence, high growth rate in demand of PPE in the early stages of pandemic spread was noted, it was also anticipated that huge influx of customers looking for personal protective equipment would appear in malls and stores dealing in these products (Alam et al., 2020).

Not surprisingly, as anticipated, the overwhelmed behavior of PPE consumers and customers towards the use of personal protective equipment changed the economy of PPE industry globally (Righetti, 2020). The disturbed market and social environment functioning in a start and stop manner, pre-emptively established to control the spread of disease also contributed hugely towards fluctuated supply of PPE products in the market, resulting in unfulfilled demand in early stages (Zhang, 2021). As the number of patients grew globally, the use of PPE became more and more evident across different segments of society, especially those involved in social interaction on daily basis (Kavaliunas et al.2020).

In similar vein customer environment has evolved and behavioral changes are evident today for example the recent pandemic, behavioral changes occurred during the crisis (Loxton et al., 2020). As society grew ascertain about spread of viral disease, huge influx of customers seeking personal care products came out in the market. Prior to outspread of disease, global market of PPE was valued at \$ 47 billion approximately in November, 2019 (Furman et al., 2021). The PPE includes protection equipment for face, eyes, head, ears to keep safe against respiratory system, hand-wear, foot-wear and other similar products are also included in personal protective equipment (Livingston et al., 2020). Personal care products also include skin-care, soap and sanitizers which keep one safe against viral and infectious particles and germs (Gondi et al., 2020). The use of these products were limited prior to spread of this contagious disease (Wax & Christian, 2019), mostly it was limited to industrial and medical use only, and only small part general public was part of PPE market as customers and consumers.

Since WHO declared COVID 19 a pandemic, the impact of disease was also felt by PPE market and in matter of two months the market grew to 49 Billion in the start of 2020 (Naudé, 2020). The PPE industry not anticipating this huge influx in market due to newly grown hygiene promotion, it was underprepared. Supply chain from production to distribution was disrupted to cater the market demand and to provide required quantity to markets and stores (Keysser, 2020). Impact of this disease has been felt in many ways globally, affecting production, supply chain process, the financial system of PPE market (Park et al., 2020). Similarly, the impact was felt at individual level and one of the most disrupted and deranged segment is the behavioral change in customers (Ruprecht et al., 2021). With the growth in pandemic awareness, and as the global population got more ascertained about the disease; fear leading to stress, anxiety and panic behavior became evident in customers which ultimately led to monumental change in developing PPE Industry Globally.

Global outbreak the World Health Organization's evidence confirmed that the total no of Corona Virus infected cases has surpassed 112 million with death rate of 2% to 3% globally during the first 3 months, with the US on top of the list. The number of deaths reported globally are around 2.48 million whereas

approximately 63.5 million individuals have reported to have recovered from the disease. Initial data driven analysis showed that COVID 19 will spread further globally and may affect 70% global population with death rate of 2% (Zhang et al, 2020). In Pakistan 1,248,000 individuals have been tested positive with novel corona virus, out of which approximately 1,175,000 individuals are reported to have recovered and more or less 28000 deaths are being reported thus far (Government Pakistan, 2021).

Not surprisingly, in this strongly connected and interrelated world, the impact of this fatal disease has greatly affected the behavior towards use of personal protective equipment around the globe. Intense surge in demand of PPE was recorded as the panic situation grew due to increase number of deaths and number of positive cases grew. Global health monitoring teams confirm that, the mortality rate of the infected patients is 3.7% (Mehta et al., 2020), which is also reported as one of the leading factors to create fear in the social environment globally. Furthermore, as the panic situation grew the retail stores and markets experienced product shortage (Hobbs, 2020). In that chronic situation and tuff times expectations of customers and consumers of getting the necessities for basic survival grew low and anxiety prominently dominated amongst the consumers (Samuel, 2020). Moreover, the social network rumors and information coming from media also created a sense of chaos and lead to panic buying during the first wave crisis amidst COVID 19, (LA Poe, 2020). Scholars have previously discussed customer buying behavior, overlooking the influence of social network rumors and product shortage on panic buying behavior in times of epidemic viral infections. Therefore, this quantitative endeavor focused on social network rumor and product shortage with mediator as customer fear to study the panic buying behavior of customers. The next section would discuss the existing gap & problem statement for this thesis.

A study conducted in Rio de Janeiro, Portugal about the behavioral properties and its initial development during the COVID 19 found that fear is elevated during a crisis which ultimately effects persons attitude and behavior. The study shows the comparison of different buying behaviors due to fear of crisis; including, panic buying, impulsive buying, temporal buying, optimism, risk perception and need of cognition (Lins & Aquino, 2020). Similarly another behavioral study confirms

during crisis from a study conducted in China shows that one of the ubiquitous human traits is irrational piling and stocking, which leaves market short of products, (Chen et al, 2020) and this behavior becomes one of the major factor to instill fear in customers in reflection of aforementioned studies.

Evidently a rich literature is available on dominance of panic, anxiety, irrational and consumer behaviors during pandemics, yet minimal evidence is available on panic buying behavior in PPE industry of Pakistan. In similar vein it is evident that researchers have closely scrutinized upon human behavior during the spread of fatal disease on mass traveling restriction, movement and gathering restriction and other policies to control spread of deadly disease and buying behavior of customers globally, (Yau et al, 2020; Ho et al, 2020). The following paragraph discusses the panic buying situation under the crisis.

Panic Buying has been identified as a behavioral outcome due to emotion raised during un-anticipated or crisis situation. It's commonly noted that uncertainty, fear and anxiety has influenced consumer behavior globally during all previous natural disasters, public and social crisis, epidemics and pandemics, (Lins & Aquino, 2020). Moreover, it has been noted that in the earlier stages of COVID 19 outbreak US, UK, Europe, China, Malaysia and other developed countries struggled to maintain the provision of goods in market as the demand for personal care products and personal protective equipment increased unexpectedly in result of disruptive COVID 19 declaration as pandemic.

The huge economic divide exist in developed and under developed countries. The under developed or poor countries have limited public reserves and storage of food, medicines and petroleum which also caused distress in the market. Anticipating limited or no imports during the COVID 19 many panic buying incidents have been reported globally. News and media evidence confirms that the western states such as France, the UK, the US and Australia have reported most panic buying cases. In similar vein Egypt, Philippines and Hong Kong has reported panic buying behavior by mops of customers. Leaving stores to limit the entry and introducing purchase caps per family to control the situation.

Thorough examination on impact of behavioral biases and panic buying during

COVID 19 has caused havoc in different industries and economies globally, (Kuruppu & Zoysa, 2020). The consumer behavior has been identified as one of the most effected aspects amongst factors leading to panic buying and an important factor in creating herd mentality, the major player in all this remains media influence and spread of information, (Loxten et al, 2020). Studies in Panic buying is not a recent phenomenon, it has existed during almost every crisis situation and especially during pandemics and lockdowns and has been reported as (Sim et al, 2020; Hou et al, 2020; Yuen et al, 2017; Drury et al, 2013). In light of afore mentioned literature the following section discussed the problem statement as foundation of this thesis.

1.2 Problem Statement

The global spread of COVID-19 has led to panic buying towards personal protective equipment. Equally important, it has led to practicing on and off lockdown profoundly impacting the PPE industry and buying pattern of customers. This restricted social life has created panic and distress in millions of consumers around the globe. Also, spread of rumors and the increase awareness about COVID 19 has caused hygiene promotion. The anticipated economic disruption has caused unrest and instilled a sense of customer fear resulting in panic buying. Consequently, flooding the markets with customer pre lockdown announcements. Additionally, leaving shelves empty of products in supermarkets and marts.

Despite a wealth of studies were conducted on buying behavior such as consumer behavior, impulsive buying, compulsive buying and intention to rebuy. The direct relationship between social network rumors, product shortage, customer fear and panic buying behavior in light of S-O-R theory during time of viral infections has been overlooked. Also, several studies tested the impact of socio economic factors such as family size, level of income and education with behavioral buying outcome. However, the collective effect of sociological and psychological cues with customer during extreme conditions has been unnoticed. Moreover, minimal attention has been paid towards the role of media and consumer fear while studying buying behaviors in retail sector of Pakistan. Hence, this thesis aimed to test the

mediating role of customer fear and moderating role of media with cues including social network rumors and product shortage in light of Stimulus-Organism-Response as framework (Liam, 2020). The next section would discuss the research questions followed by research objectives.

1.3 Research Questions

RQ 1: Does social network rumor have relationship with customer fear in the personal protective equipment industry of Pakistan?

RQ 2: Does hygiene promotion have relationship with customer fear in the personal protective equipment industry of Pakistan?

RQ 3: Does customer fear have a significant relationship with panic buying behavior in the personal protective equipment industry of Pakistan?

RQ 4: Does social network rumor relationship with panic buying behavior, is mediated with customer fear in the personal protective equipment industry of Pakistan?

RQ 5: Does hygiene promotion relationship with panic buying behavior is mediated with customer fear in the personal protective equipment industry of Pakistan?

1.4 Research Objectives

RO 1: To examine social network rumor a relationship with customer fear in the personal protective equipment industry of Pakistan.

RO 2: To examine hygiene promotion a relationship with customer fear in the personal protective equipment industry of Pakistan.

RO 3: To examine customer fear have a relationship with panic buying behavior in the personal protective equipment industry of Pakistan.

RO 4: To examine social network rumor relationship with panic buying behavior, mediated with customer fear in the personal protective equipment industry of Pakistan.

RO 5: To examine hygiene promotion relationship with panic buying behavior, mediated with customer fear in the personal protective equipment industry of Pakistan.

1.5 Theoretical Underpinning

Stimulus Organism Response (S-O-R) was chosen as the underpinning framework for this thesis. The Stimulus Organism Response previously established to predict the buying behavior of the consumers and is primarily constructed to build parsimony, comprehensiveness, coherence, and flexibility in research on consumer models (Jacoby, 2002). For example, in a study conducted in USA in year 2011 studied the Impulsive Buying Behavior in retail shopping of highly educated residents as their target audience in reflection of SOR, (Chang et al., 2011). Similarly, in another study conducted in India customer engagement and brand loyalty has been discussed with target audience as online consumer in light of SOR (Islam & Rahman, 2016). Additionally, in UK the exploring consumer behavior in virtual reality tourism with SOR as underpinning framework, (Kim et al., 2019).

In Pakistan Stimulus Organism Response has been studied impact of user generated content on online shopping (Aslam & Sidiqqe, 2020), similarly another study discusses impulsive buying behavior of consumers in retail environment. (Hashmi et al, 2019). However, despite rich literature available on Stimulus Organism Response framework it has been identified it has not been studied in context of anxiety outcome of retail consumers and customers as Panic Buying Behavior with attitude cues and customer fear as arousal towards the Panic Buying Behavior.

1.6 Research Gap

This thesis is based on newly developed model, successfully complementing the underlying framework of stimulus organism response with four additional variables. Wide range of literature is available on social factors acting as attitude which has led to panic buying behavior in the society, globally. A Brazilian study

discussed the attitudinal properties which led to panic buying behavior includes the social behavior, consumption pattern, uncertainty about the availability of products, fear of shortage and anxiety, (Lins & Aquino, 2020). Another study explained that for such a widely observed psychosocial behavior, It is possible that unrest is created and manifestation of underlying conflict between desire to live a normal life and uncertainty of duration of the pandemic limiting access to daily necessities, which leads to anxiety and panic buying to assuage the conflict, (Sim et al., 2020). On the other hand, researchers in Malaysia studied upon factors such as mental health, behaviorism, psychiatry, social sciences which lead to change in consumption behavior and panic buying, (Yau et al., 2020).

Factors towards panic buying behavior related study in Australia discussed that preexisting, irrational stock piling behavior relation with panic buying behavior; this also has a significant impact on economy, society and local communities, (Chen et al., 2020). In existing crisis, it has been reported that the UK and Australia have seen panic-buying of products such as toilet paper, and many people also stock up on similar products like baby nappies and kitchen towels, assuming they could be interchangeable. In similar vein it has been identified that there are other factors such as media and news which influence the psychographics of consumers and customers. The following paragraph discusses the literature on media influence towards panic buying behavior.

Team of researchers from all around the world worked on the impact of content on media on defining behavioral outcome panic buying. It has been identified that media plays a pivotal role in controlling the panic buying behavior globally (Arafat et al., 2020). Another study showed that media can be detrimental in defining mental health strategies to combat panic buying behavior, (Hall et al., 2020).

Similarly, the studies on relation of fear and consumption behavior because of crisis showed that they clearly influence buying and consumption behaviors (Ballantine et al., 2014). Consumption displacement is described as the shift in consumption patterns of customers that occurs when consumers experience variation in the availability or accessibility of products, services and amenities which are commonly accessible in the market as the result of an external stimulus of control, has been previously recognized in households related study by (Datta et al., 2018), but only

to a marginal extent in the context of crisis situation. However, this thesis argued that the COVID-19 SOPs, which prevent individual mobility and personal contact physical or social distancing (Anderson et al., 2020) has created the panic buying scenario globally.

The newly developed model has been empirically examined which further enlightened the consumers attitude towards panic buying of personal protective equipment. Most of the past research on attitude cues in customers of personal protective equipment during the crisis are directed to medical and professional use only and not in context of individual consumer (Addo et al., 2020). The recent crisis has engaged and introduced general public to personal protective and hygiene care product industry unsettling the demand in market (Timmis & Brusso, 2020). Minimal theoretical evidence is present to support the relationship of attitude cues such as social network rumors and hygiene promotion and panic buying behavior. Moreover, to understand the significance of this thesis and existing gap in theory detailed and comprehensive amount of research is present on attitude cues leading to consumers buying behavior and patterns for example; impulsive buying, reactive buying, compulsive buying and intention to rebuy. The direct relationship between social network rumors, hygiene promotion, customer fear and panic buying behavior in light of S-O-R during time of viral infections has been overlooked. Also, several studies tested the impact of socio economic factors such as family size, level of income and education with behavioral buying outcome. However, the collective effect of sociological and psychological cues with customer during extreme conditions has been unnoticed. Therefore, this research based thesis will extend the body of knowledge theoretically and literarily considering PPE industry and general public's panic buying behavior as a consumer.

1.7 Significance of Thesis

Contribution of this research to cover evident literature gaps is discussed in the previous section. This section highlights the significance of the thesis in the context of research. To start with, Stimulus-Organism-Response framework as contemporary

consumer behavior operating framework was extensively discussed by researchers for online shopping, social media, and automobile. However, the behavioral outcomes of these researches included: usage intention, impulsive buying, utilitarian and hedonic values. The review of available literature lacked the evidence of use of S-O-R in retail industry while studying the impact social network rumors and hygiene promotion in times of COVID-19 with panic buying behavior as latent variable mediated by instilled customer fear.

Evidence from literature shows that researchers have focused upon multiple determinants of buying behavior in Pakistan; including behavioral attitude, subjective norms, perceived behavioral control, purchase intention, attitude, trust, perceived risk, perceived self-efficacy & perceived usefulness, (Akar & Dalgic, 2018; Singh, & Srivastava, 2018). This new model has helped in understanding Pakistani PPE consumers' attitude towards panic buying behavior. The new model has been empirically tested. Additionally, measures complimenting the developed model were derived, which helped in understanding the factors leading to panic buying behavior in Pakistan. Since Pakistani is amongst highly populous countries with almost 60% dominance in service industry. Therefore, the attitudes for those involved in public dealing and social interaction has been collected in this thesis.

In similar vein, the available literature shows the geographic regions of these studies to be US, UK, China, Korea, Israel and India. This constrained the generalization of the findings towards Pakistan, Also, it has been observed that marginal studies have been conducted in Pakistan. Thus, this study would have significant contribution and has a lot of scope in examining the relationship of social psychological factors in attitude formation towards arousal of customer fear leading to panic purchase behavior.

1.8 Thesis Scope

The research will specifically be focused on the use and users PPE, spotlighting tangible products that customers buy on regular basis during their daily routine for safety purposes and which are included in emergency or crisis situation.

Without analyzing any product particularly panic buying behavior will be analyzed in a generalized manner. The aim is to focus on attitudes towards buying PPE products anticipating impact of factors mediated by customer fear but not on any specific product or brand in order to generalize the study.

It has been identified that the global research changed their focus from existing world problems to unexpected and highly evolving issues during the ongoing pandemic. Major world economies experienced health, financial, functional, educational, and recreational and multiple other economic problems. These economic problems had a profound effect on behavioral and emotional issues. A study on portrayal of panic buying by online media, observed episodic involvement of panic buying behavior globally during COVID 19, (Arafat et al, 2020). However most of the research initially focused on psychometric factors such as perceived scarcity or shortage of products. (Yuen et al, 2020). Studies also focused on factors which are beyond panic buying, consumption displacement for example; a study done in New Zealand identified factors which lead to panic buying due to an external event, it infers that a customer's psychometric consumption preferences may vary and are determined availability of amenities, goods and services, the study further characterized panic buying in New Zealand's Canterbury district due to COVID 19, (Hall et al, 2020).

1.9 Structure of this Thesis

This thesis consisted of five chapters.

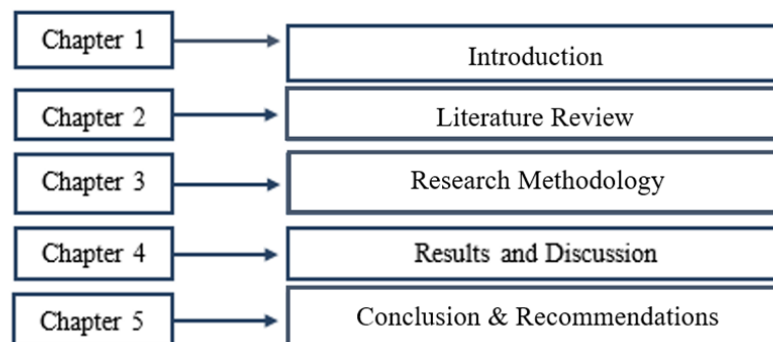


FIGURE 1.1: Structure of Thesis

Chapter 1

Chapter 1 will provide off focused panoramic view of the major issues highlighted in this thesis, pertaining to the factors leading to attitude formation of the consumers in the personal precautionary equipment/ products industry of Pakistan. This chapter of thesis establish the introduction of this research. Having a snapshot of background in mind, gap was analyzed and the problem statement, significance, scope of thesis was discussed. Thesis objectives were set followed by research questions.

Chapter 2

Chapter 2 focuses on analyzing latest and most relevant literature, proceeding systematically. Foremost literature includes reviewing panic buying behavior during COVID 19 situation in a global perspective. The second step includes literature discussion on significance of Panic Buying Behavior, factors leading to panic buying and emotional states led by the attitude cues. Fourthly, this chapter included a discussion on the hypothesis, followed by research gaps and conceptual framework. Finally, a summary was established to end this chapter.

Chapter 3

This chapter initiated with the research philosophy, population, sample size, and data collection method, consequently, a final survey questionnaire (Appendix A), to operationalize factors leading to customer fear and panic buying behavior were established.

Chapter 4

This quantitative analysis was based on structural and measurement model. This included certain tests such as; convergent validity, discriminant validity, cross loadings, effect size test f^2 and path analysis via boot strapping to test moderation and the overall paths for the conceptual framework using SMART PLS 3.3.3.

Chapter 5

This chapter established discussions, conclusions and implications of the findings related to the research question and hypothesis. These included discussions on the theory contribution and managerial practices. The final part of this chapter presented the conclusion from this research along with a recommendation for further research opportunities.

Summary

This chapter sheds light on the background of research and identified the current research problem. Highlighting research problem, this chapter also set the research questions, followed by the research objectives to be investigated. The contextual setting for this thesis is also discussed, followed by structural details to end this chapter.

Chapter 2

Literature Review

2.1 Introduction

The second chapter of this thesis discussed the phenomenon of panic buying behavior in existing studies and published literature on buying behavior. This chapter set the parameters of research and laid down strong foundation to elaborate the significance of this research in prospective of Pakistan and similar countries in south Asia. Additionally, chapter 2 gave an elevated orientation of panic buying behavior in global prospective. The discussion is followed by global stats and literature on personal precautionary industry before and during the COVID 19 situation and the factors which significantly increased the product usage. Also, attitude factors which stimulated the emotional arousal in customers have been discussed in detail along with existing studies on customer fears during previous pandemics in the global prospective.

The underpinning framework, Stimulus - Organism- Response developed the detailed theoretical framework which explained and operationalized the model. The model is developed on the basis of four hypotheses which explained and are based on the thesis objectives, also led to the conceptual frame work of this thesis. In later stages of thesis, detailed explanation based on empirical results after testing the model and the derived hypothesis of this thesis can be found. Figure 2 at the end of chapter describes the model developed for this thesis. The PPE retail industry is one of the fastest growing industry globally (Gereffi, 2020).

2.2 Personal Precautionary Equipment in Retail Industry

The PPE retail industry is one of the fastest growing industry globally (Gereffi, 2020). With the growth in global environmental issues, the past decade has evolved the personal care and precautionary industry (Daughton & Ternes, 2021). The general population has grown awareness about personal hygiene and huge influx of customers from all segments and classes are found in PPE industry at present day (Aslam & Hussain, 2020). For new businesses personal protective equipment and care products industry is a huge investment opportunity (Stols, 2013). Statistical evidence showed that the increase of personal care products demand during the past decade has risen up to 350% with the GDP contribution of USD 12 billion to the economy (Koen & Beom, 2020). Similarly countries like China, Japan, India, Pakistan and Bangladesh where air quality index is poor and skin problems exist due to direct sunlight use of masks, sunscreen and other personal precautionary equipment is a common practice. The Global market or personal precautionary industry can be estimated at USD 40 Billion (Chaudhary et al., 2020).

Worldwide the personal protective equipment industry is amongst the top profitable industries of 21st century (Gereffi, 2020). The wide use of products in health, medical, pharmaceutical, production industry has contributed in its growth significantly (Tavares et al., 2020). China remains the biggest exporters of disposable or one time use Personal Protective Equipment which includes face masks, medical masks, face covers, medical gloves, allover and other disposable items (Cohen et al., 2020). France and US have significant exports of personal care products such as hand wash, sanitizers, soaps and anti-viral personal hygiene products (Ahmed et al., 2020).

In context of Pakistan the personal protective equipment Industry, the local market is growing significantly has shown great potential for investors to earn Profit. The local manufacturers produce disposable face mask, medical gloves, medical soaps, face and hand wash, sanitizers and other antibacterial soaps and cleaning products (Ghafoor et al., 2020). The PPE industry in Pakistan has grown about 150% in

the past decade and it is amongst few industries with a futuristic scope in the coming decades (Anjum et al, 2020).

With the outbreak of corona virus originated in China, the consumption of these products increased significantly. The Chinese medical officers, doctors and staff were the first to face the lack of availability due to high consumption by locals and professional (Coulthard et al., 2020). China being the biggest producer and exporter of PPE caused the other countries to face shortage as well which lead to global panic buying behavior of personal protective equipment and products (Liv, 2021). This caused markets to face shortage and consequent rise in price of products. The following section discusses literature on social factors as attitude cues which contributed the most in instilling fear in society leading to panic buying behavior.

2.3 Factors leading to Panic Buying

Wide range of literature is available on social factors acting as attitude which has led to panic buying behavior in the society, globally. A Brazilian study discussed the attitudinal properties which led to panic buying behavior includes the social behavior, consumption pattern, uncertainty about the availability of products, fear of shortage and anxiety, (Lins & Aquino, 2020). Another study explained that for such a widely observed psychosocial behavior, It is possible that unrest is created and manifestation of underlying conflict between desire to live a normal life and uncertainty of duration of the pandemic limiting access to daily necessities, which leads to anxiety and panic buying to assuage the conflict, (Sim et al., 2020). On the other hand, researchers in Malaysia studied upon factors such as mental health, behaviorism, psychiatry, social sciences which lead to change in consumption behavior and panic buying, (Yau et al., 2020).

Factors towards panic buying behavior related study in Australia discussed that preexisting, irrational stock piling behavior relation with panic buying behavior; this also has a significant impact on economy, society and local communities, (Chen et al., 2020). In existing crisis, it has been reported that the UK and Australia

have seen panic-buying of products such as toilet paper, and many people also stock up on similar products like baby nappies and kitchen towels, assuming they could be interchangeable. In similar vein it has been identified that there are other factors such as media and news which influence the psychographics of consumers and customers. The following paragraph discusses the literature on media influence towards panic buying behavior.

Team of researchers from all around the world worked on the impact of content on media on defining behavioral outcome panic buying. It has been identified that media plays a pivotal role in controlling the panic buying behavior globally (Arafat et al., 2020). Another study showed that media can be detrimental in defining mental health strategies to combat panic buying behavior, (Hall et al., 2020).

Similarly, the studies on relation of fear and consumption behavior because of crisis showed that they clearly influence buying and consumption behaviors (Ballantine et al., 2014). Consumption displacement is described as the shift in consumption patterns of customers that occurs when consumers experience variation in the availability or accessibility of products, services and amenities which are commonly accessible in the market as the result of an external stimulus of control, has been previously recognized in households related study by (Datta et al., 2018), but only to a marginal extent in the context of crisis situation. However, this thesis argued that the COVID-19 SOPs, which prevent individual mobility and personal contact physical or social distancing (Anderson et al., 2020) has created the panic buying scenario globally.

2.3.1 Social Network Rumors

Established literature has richly discussed upon social network rumors in different dimensions of consumer behavior related researches. Mostly, studies have been conducted in domain of online ecommerce purchasing (Verma & Yadav, 2021). Literature depicted that social network builds a strong opinion about the market situation in the mind of customer (Hudders et al., 2021). Moreover Naik et al., (2021) argued that social networks also played an important role in influencing the purchase decision during the pre-purchase phase. The established results

confirmed that social media networks let people spread rumors about product stock availability and deterred the consumption patterns of online purchasers (Loxton et al., 2021). A study on textile retail market showed results that social network rumors crates a positive and negative impact of the product availability in the market and can influence the demand of specific products in a short period of time (Yeo et al., 2020). Tseng et al., (2021) researched on the social interactions in china and argued that existed between the online companies in the food and beverage industry and their respective target market, study investigated the effectiveness of Facebook and Twitter opinions (Zhou et al., 2020) from the users. The results showed that social media users collected information without authentication and built their opinions about the brand (Talwar et al., 2020). Additionally, consumption patterns influenced both positively and negatively by the audience rumors about the brand, products and the market dynamics.

2.3.2 Hygiene Promotion

The established literature has defined Hygiene promotion as developing habits and awareness about practices that help in maintaining health and preventing the spread of diseases” (WHO, 2017). It is referred as a fundamental element that can help prevent diseases, especially the contagious ones. Moreover, personal hygiene keeps an account of individual’s self-care precautions and is directly related to PPE usage to protect oneself from surroundings and health related issues. Hygiene promotion and self-care includes regular bathing, usage of PPE products for washing hands, using personal towel, using antibacterial soaps with running water, using masks, sanitizers and gloves, etc. Bhattacharya et al., (2019) reported that considering continuous social interaction and interaction with the external environment and it is nearly impossible to avoid pollutants, and maintaining hygiene is an indispensable part of present day society. Further, hygiene promotion and awareness practices vary across societies and countries, what is acceptable in one developed cities may not be acceptable in the underdeveloped or rural areas amongst different nations. (Nath, 2003). The Literature had shown great increase in use of PPE products as their awareness has grown in the recent history which is deemed as hygiene promotion.

2.4 Mediator

2.4.1 Customer Fear

Customer Fear is explained in the theory of fear appeal was widely used in the past but had lost its connection with the marketing research (Witte & Allen, 2000). However, with the increase in use of PPE products, researchers established that underlying reason is Customer Fear. In similar vein, it has also been established that Marketers often used customer fear to persuade customers to buy specific products (Mcdaniel & Zeithaml, 1984). By some researchers the concept of fear appeal is also segmented into risk avoidance and fear control. The prerequisites to fear such as attitude cues are deemed as predecessors for adaptive behavior to deal with or avoid dangers or risks, whereas fear control acts as emotional guide for the out-come responses.

Additionally, the parallel response paradigm based on fear appeal theory predicted that the perceived level of risk is directly proportional to intent to take action by the customer (Laros & Steenkamp, 2005).

2.5 Panic Buying

Panic Buying has been identified as a behavioral outcome due to emotion raised during un-anticipated or crisis situation. It's commonly noted that uncertainty, fear and anxiety has influenced consumer behavior globally during all previous natural disasters, public and social crisis, epidemics and pandemics, (Lins & Aquino, 2020). Moreover, it has been noted that in the earlier stages of COVID 19 outbreak US, UK, Europe, China, Malaysia and other developed countries struggled to maintain the provision of goods in market as the demand for personal care products and personal protective equipment increased unexpectedly in result of disruptive COVID 19 declaration as pandemic.

The huge economic divide exist in developed and under developed countries. The under developed or poor countries have limited public reserves and storage of food,

medicines and petroleum which also caused distress in the market. Anticipating limited or no imports during the crisis situation, many panic buying incidents have been reported globally. News and media evidence confirms that the western states such as France, the UK, the US and Australia have reported most panic buying cases. In similar vein Egypt, Philippines and Hong Kong has reported panic buying behavior by mobs of customers. Leaving stores to limit the entry and introducing purchase caps per family to control the situation.

Panic buying is not a new phenomenon reported, it already happened in other crises. Studies on panic buying behavior have been carried in different countries and contexts. Findings of a few have been unleashed here in. For instance, Ding, (2009) reported panic buying behavior in China after the spread of SARS and later another study reported the panic buying of salt in Japan followed by earthquake, in 2011 (Wei et al., 2011). Nevertheless, because of access to information facilitated by social media, and the universal nature of the coronavirus' spread, panic buying became a worldwide phenomenon never seen before (Singh and Rakshit, 2020). The markets were left shelf emptied as consumer feared shortage of products and possible travel restrictions to market by the customers.

Panic Buying behavior has been identified a common phenomenon globally during the recent pandemic and especially in the initial stages of its announcement. The coronavirus outbreak is mutually considered an alarming threat by populations living in developed and under developed countries, it has triggered feelings about the uncertainty of future and one reason is that they fear if there will have enough supplies and food while COVID 19 lasts (Kouchaki and Desai, 2015). Another study states that Panic Buying could be possible result of perceived lack of trust in governance system for social demand, future and concerns (Sim et al., 2020) which triggers panic stress due to sense of loss of control, (Sneath et al., 2009). Hence, buying under stress and panic during crisis can be considered as a way of coping with the feelings of uncertainty, and as an act of self-preservation (Harmon-Jones et al., 1997).

The next section discussed the link between the attitude cues derived from observation, Social Network Rumors and Hygiene Promotion widely reported during

the pandemic situation, the emotional state of customer fear which has existed in past literature which leads to Panic Buying Behavior.

2.6 Hypothesis

2.6.1 Social Network Rumors Relationship with Customer Fear

The first Hypothesis is developed in reflection of the very first objective of this thesis. Social Network rumors has been studied as attitude cue in various countries in various different contexts. Doerr, Fouz, & Friedrich, (2012) A study in Germany confirms common access to internet and use of social networking sights, speeds up the spread of rumors. Hence, it has been established that rumors mostly spread through social media. Another study about rumor as SPF conducted in china confirms that rumors mostly spread on social networks, it discusses the sentiments and popularity of rumors based on social influence (Zang et al., 2015). Similarly Irish researchers have studied the impact of rumor message, their main focus was to analyze why some rumor message has more impact on society than others and how it may influence it (Koidl & Matthews, 2017).

Kurrupu and Zoysa, (2020) Discussed in their study that dramatic image of possible shortage or possible price hike portrayed by media, rumored across societies and indulged consumer in unusual or irrational buying of products which were related to personal protective equipment this surge in demand was expected. Similarly, the consumers were also reported spontaneous and unexpected purchase of substitute items which were not directly related to mitigate risk of catching disease but held house hold usage for example toilet paper, water bottles, and other house hold items out of panic, (Marusek, 2020).

The above mentioned Studies on social network rumors has been studied in areas such as creating brand image or product perception in retail, internet and social media personality and social influence and spread of news without authenticating. However literature lack evidence of studying Social Network Rumor as an

attitude cue in context of Panic Buying Behavior, conceptually, contextually and theoretically. Based on this observation and available literature the proposed first Hypothesis of this research is as following.

H1: Social network rumor relation with panic buying behavior.

2.6.2 Hygiene Promotion Relation with Customer Fear

To satisfy the second research objective the Hypothesis 2 has been developed for this study, the available literature is richly established on multiple aspects of hygiene promotion as antecedent towards customer emotions and behaviors, mostly; it is to promote the use of products in advertisements through different mediums and platforms. However with the coronavirus outbreak hygiene promotion has been redefined and media campaign has run to spread the awareness amongst all layers of social classes (Lopes and McKay, 2020). The empirical results shows that perception differs contextually for different nations and classes. It has been established in research that amongst all mental health strategies, hygiene promotion is an important strategy to which instills awareness and customer fear to avoid unhygienic places and surface contacts (Ho et al., 2020). In similar vein the another study on counter pandemic strategy it has been identified that restrictions leave elderlies under huge psychological stress and fear even after the restrictions are lifted (Brigugilo et al., 2020).

The contemporary research proved that COVID 19 situation has left unprecedented challenges for the population; including workplace hygiene challenges, social isolation challenges, health care challenges and all this sums up to leave psychological obstacles on customers around the globe (Skoda et al., 2020). A German study on social cognitive determinants asserted that hand hygiene recommendation increased 48% during COVID as a result of heightened awareness to stay safe from COVID 19 and other infectious diseases which spread through hand contact (Derkson et al., 2020). To increase the health measures compliance rate in European adults a study conducted in Switzerland that awareness about consequences of lack of hygiene practices instilled fear in them to be more inclined about hygiene practices (Nivette et al., 2020).

The most convincing literature found on hygiene promotion stated that awareness and media campaigns to create hygiene awareness strongly impacted the population and instilled fear in them; thus, the use of hand hygiene, surgical masks, sanitizers and other public health measures increased drastically due to hygiene promotion, (Casanova et al., 2020; Duda-Chodak et al., 2020; Genzi, 2020; Jiang & Wen, 2020; Shirahmadi et al., 2020). Hence, the framework is well suited and supported by initial quantitative study objective number 2, the following hypothesis is presented;

H2: Hygiene Promotion relationship with Customer Fear.

2.6.3 Customer Fear Mediation between Social Network Rumors and Panic Buying Behavior

Third hypothesis of this study has been developed specifically to satisfy the third research objective, stated in chapter 1. Established marketing research explained customer fear as a mediator in multiple dimension between attitude cues and outcome behavior in literature (Galoni et al, 2020). However, after comparison the results empirically exhibited dis-similarities by nation. (Rather, 2021). Similarly, in the context of Pakistan, it is widely held that customer fear may exhibit different dimensions of mediating effects towards panic buying behavior of social psychological factors as attitude cue.

Based on previous exploratory research customer fear is examined as a mediator between the attitude cues and the latent variables related to buying behavior in consumer marketing research. It has been validated and recognized that instilled customer fear significantly mediates the behavioral outcomes such as; panic, impulsiveness, unscheduled and unplanned buying as emotionally triggered outcome, due to discussed predecessor variables (Naeem, 2020).

Most affective literature evidence cited in existing research validates that, customer fear in crisis situation such as COVID 19 is inevitable to be ignored while studying panic influenced buying behavior (Lins and Aquino, 2020). Moreover emotional psychological state of mind in consumer marketing research has been

identified as one the crucial precursor while studying behavioral buying decisions (Zehng et al, 2021). In addition Fitzpatrick et al., (2020), argued that during COVID 19 multiple factors lead to depressive symptoms in US adults during the course of disease and argued to have psychological and emotional impact on their overall behaviors and decisions. In another study it has been that there are a lot of social issues arising in the society during the ongoing crisis and causing customer fear leading to panic as effects of COVID 19 on consumer behavior (Donthu & Gustafsson, 2020). A study in Finland also confirmed that overall crisis and pandemic situation and corresponding affects has caused unusual purchasing behavior during the early stages of COVID 19, (Laato et al., 2020). Recent research has factually investigated that customer fear as one of the most dominating psychological and emotional factor which gives an arousal to influence the buying decision and customer fear and panic buying behavior during the current pandemic COVID 19 are highly interconnected. Therefore, based on provided evidence parallel to theory and in embryonic quantitative study objective number (3), the proposed hypothesis H3 is presented below:

H3: Customer fear relationship with Panic Buying.

2.6.4 Customer Fear Mediation between Hygiene Promotion and Panic Buying Behavior

The fourth hypothesis of this thesis is based on the fourth research objective RO number 4. It has been previously established that social network rumors plays a huge role in enticing the emotional fear in customer. The information flowing from one channel to another without authentication worries consumers in the market about unforeseen circumstances (Darmody, & Zwick, 2020). Enriched marketing research on customer fear mediation between multiple different attitude cues such as awareness, role of media, shortage, restrictions and other market indicators which leads to customer fear in consumers and the behavioral out comes such as reactive, impulsive, emergency, planned and unplanned buying behaviors are present (Li et al., 2020). Similarly, in the context of Pakistan, it is widely held that customer fear may exhibit different dimensions of mediating effects towards

panic buying behavior of social attitude cues as a nation (Ahmed et al, 2020).

Recent research has factually investigated that customer fear as one of the most dominating psychological and emotional factors which act as internal stimulus of control while making a buying decision. However minimum evidence has been found on how the relationship between hygiene promotion and panic buying behavior is mediated with customer fear. In similar vein minimal evidence has been found in context of Pakistan where customer fear has been tested as an emotional arousal in the light of stimulus organism response framework. Therefore, based on provided evidence parallel to framework and in embryonic quantitative objectives the fourth hypothesis H4a is presented as below.

H4a: Customer fear mediates the relationship between Social Network Rumors and Panic Buying Behavior.

2.6.5 Customer Fear Mediation between Hygiene Promotion and Panic Buying Behavior

The fifth hypothesis of this thesis is based on the fourth research objective RO number 5. Enriched marketing research on customer fear mediation between multiple different attitude cues such as awareness, role of media, shortage, restrictions and other market indicators which leads to customer fear in consumers and the behavioral out comes such as reactive, impulsive, emergency, planned and unplanned buying behaviors are present (Poulter, 2020). Similarly, in the context of Pakistan, it is widely held that customer fear may exhibit different dimensions of mediating effects towards panic buying behavior of social psychological factors as attitude cue (Sadus et al., 2021).

Recent research has factually investigated that customer fear as one of the most dominating psychological and emotional factors which act as internal stimulus of control while making a buying decision. However minimum evidence has been found on how the relationship between hygiene promotion and panic buying behavior is mediated with customer fear. In similar vein minimal evidence has been found in context of Pakistan where customer fear has been tested as an emotional arousal in the light of stimulus organism response framework. Therefore, based on

provided evidence parallel to framework and in embryonic quantitative objectives the fifth hypothesis H4b is presented as below.

H4b: Customer fear mediates the relationship between Hygiene promotion and Panic Buying Behavior.

2.7 SOR framework in light of Panic Buying Centric Studies

Stimulus Organism Response (S-O-R) was chosen as the underpinning operational framework for this thesis. The Stimulus Organism Response previously established to predict the buying behavior of the consumers and is primarily constructed to build parsimony, comprehensiveness, coherence, and flexibility in research on consumer models (Jacoby, 2002). For example, in a study conducted in USA in year 2011 studied the Impulsive Buying Behavior in retail shopping of highly educated residents as their target audience in reflection of SOR, (Chang et al., 2011). Similarly, in another study conducted in India customer engagement and brand loyalty has been discussed with target audience as online consumer in light of SOR (Islam & Rahman, 2016). Additionally, in UK the exploring consumer behavior in virtual reality tourism with SOR as underpinning operating framework, (Kim et al., 2019).

In Pakistan Stimulus Organism Response has been studied as impact of user generated content on online shopping (Aslam & Siddique, 2020), similarly another study discusses impulsive buying behavior of consumers in retail environment. (Hashmi et al, 2019). However, despite rich literature available on Stimulus Organism Response framework it has been identified that this framework has not been studied in context of anxiety outcome of retail consumers and customers as Panic Buying Behavior with attitude cues and customer fear as arousal towards the Panic Buying Behavior.

2.8 Research Gaps

Contribution of this thesis towards literature is based on established literature. This thesis is based on newly developed model, successfully complementing the underlying framework of stimulus organism response with four additional variables. The newly developed model has been empirically examined which further enlightened the consumers attitude towards panic buying of personal protective equipment. Most of the past research on attitude cues in customers of personal protective equipment during the crisis are directed to medical and professional use only and not in context of individual consumer (Addo et al., 2020). The recent crisis has engaged and introduced general public to personal protective and hygiene care product industry unsettling the demand in market (Timmis & Brusso, 2020). Minimal theoretical evidence is present to support the relationship of attitude cues such as social network rumors and hygiene promotion and panic buying behavior.

Moreover, to understand the significance of this thesis and existing gap in theory detailed and comprehensive amount of research is present on attitude cues leading to consumers buying behavior and patterns for example; impulsive buying, reactive buying, compulsive buying and intention to rebuy. The direct relationship between social network rumors, hygiene promotion, customer fear and panic buying behavior in light of S-O-R theory during time of viral infections has been overlooked. Also, several studies tested the impact of socio economic factors such as family size, level of income and education with behavioral buying outcome. However, the collective effect of sociological and psychological cues with customer during extreme conditions has been unnoticed. Therefore, this research based thesis will extend the body of knowledge theoretically and literarily considering PPE industry and general public's panic buying behavior as a consumer.

2.9 Contextual Framework

Theoretical and conceptual contribution of the thesis based on new model is discussed in the previous section. Contextual discussion of this thesis is presented in this section. Despite being a low income country Pakistan has felt the surge in demand in PPE, after the lockdown was lifted the offices, schools and

markets were open with strict SOPs and use of PPE during public interactions. This new model has helped in explaining Pakistani consumers' mindset, for example attitude towards use and purchase of PPE and this new model has been tested empirically. Pertaining to which measures have been derived from the established models, which will help in understanding the panic purchase behavior of personal protective equipment and products in Pakistan. Pakistani on an overall basis is a collectivist society and faced pandemic crisis equally. Pakistan has 65% service industry and almost every Pakistani had the access to media and news, and SOPs nationwide. Therefore, it was important to measure their attitude towards use and purchase of PPE products in the context of spread of rumors and newly developed hygiene promotion in the country. Serious and common use of PPE issue in Pakistan. Therefore, measuring impact of social network rumors and hygiene promotion would help the policy makers to develop policies and strategies for addressing this issue

2.10 Conceptual Model

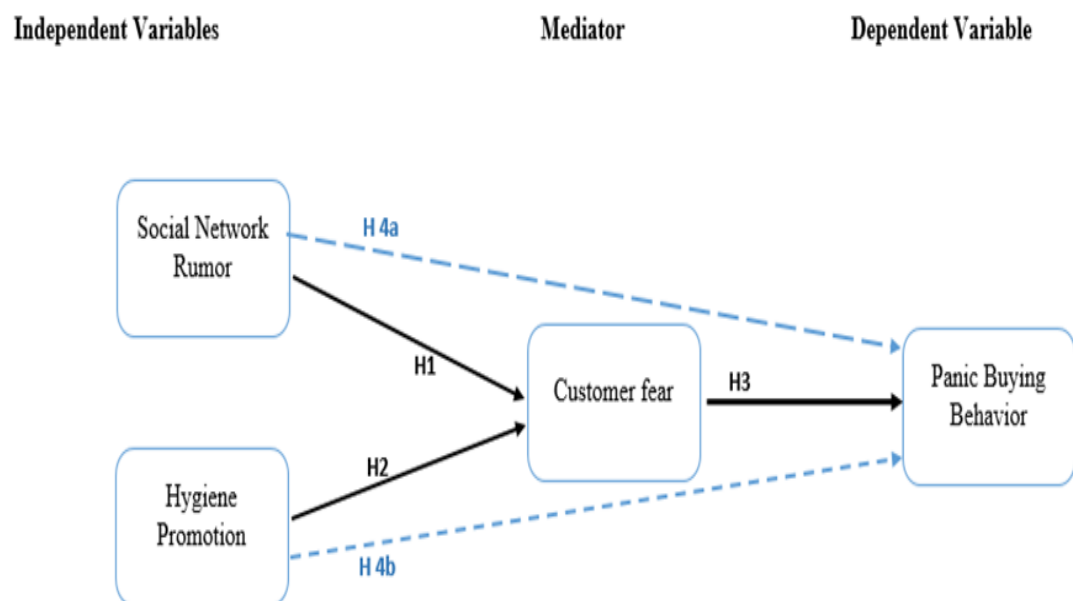


FIGURE 2.1: Conceptual Model Factors Leading to Panic Buying Behavior with mediating role of Customer Fear

Summary

Chapter 2 shares the insights established in the past studies by the researchers to provide substantial evidence to support the research objectives and the observations shared in chapter 1. At the same time it has explained how the proposed variables were defined by past researchers and their relationship with

corresponding or latent variables. To develop and explain Hypothesis. The operationalization of model was explained under the light of the framework as well. Finally the research gap in terms of theoretical and contextual gap was explained and the chapter was concluded with figure of proposed Model.

Chapter 3

Research Methodology

3.1 Introduction

Contemplated and scrutinized argument has been presented on factors leading to panic buying behavior in the previous sections of this thesis chapter 1 and 2, based on the aforementioned evidence the applied methods and procedures applied to explore reliable outcomes are discussed here in chapter number 3. Evidence confirmed that most of the studies and marketing research on consumer's panic buying behavior in glance of personal protective equipment industry during crisis and pandemic situation has been majorly focused on China, Hong Kong, U.S.A, U.K, Germany, Russia, Japan, Israel and other European developed countries (Lin, 2021).

Leaving most of 3rd world countries and especially south Asian countries out of focus and research deprived in the current pandemic. Therefor this thesis is concentrated in context of Pakistan to test and explore factors leading to panic buying behavior during COVID 19 with the mediating role of customer fear.

3.2 Research Paradigm

Research philosophy of this thesis is highly interrelated and based on research paradigm deemed closely upon research objectives discussed in chapter 1. This

research is based on positivist school of thought which incorporates all aspects of consumer marketing research and compliments methods to ensure research objectives are clearly secured to a meaningful outcome. Based on existing evidence positivism has been richly used in consumer marketing research and it is defined as a scientific methodology used to attain the laws of human behavior and social life (Cary, 1988).

Moreover, it has been kept in view while determining the research philosophy that, this study is based on hypothetical deductive research method. It ensures the use of previous literature and existing research in light of stimulus organism response to form hypothesis, in order to demonstrate and strategies how research advanced (laato et al., 2020). The following section will discuss the population of this study.

3.2.1 Unit of Analysis

Determined unit of analysis of this research is based on research objectives and questions. In order to achieve meaningful outcome the study is carried out focused on adults, those who deemed relevant and suitable to compliment research outcomes (Knudsen et al, 2012). Individuals involved in purchasing of personal protective equipment and health care products related to personal hygiene, explains the attitude cue of our research, moreover they have access to sources of information too, to be emotionally triggered and exhibit tendencies of customer fear leading and translating their overall panicked buying behavior and purchase decision (Steketee & Forest, 2016). The following section will discuss the time horizon of this thesis.

3.2.2 Time Horizon

Data is collected once as this is a cross sectional research (Setia, 2016). Data was collected during the first wave of pandemic outbreak in Pakistan. Considering the novelty of disease the market situation was under the impression of rumors, fear and panic with raging needs and arousals for use of hygiene and personal safety equipment and products (Plotnick, 2018). The data collection process took

4 weeks to complete and adopted cross sectional method was able to fulfill needs of this research. Population of this research is discussed in following section.

3.3 Population

A population is described as the total number of elements or people which fit into the particular set study for specific study (Hong et al., 2019). Past literature on research methodology has referred this as target population. (Son et al., 2020) a population centric study explained that population as the totality of the subjects meets criteria set in research objectives or that meet certain sets of specifications, this set is comprised of an entire group of individuals or groups that is in the interest of research or to the researcher (Asiamah et al, 2017). It is established that population is comprised of all the possible cases that fits the definition of unit of analysis (persons, objects, events) and it should constitute a known whole (Ross et al., 2005; Yount, 2006). Researcher identifies the desired population or target population in the study based on the research objective, and all the members of a household (father, mother, siblings and children above the age of fifteen) can be selected as a target population (Hayden et al., 2019).

TABLE 3.1: Population of Pakistan by provinces according to Census-2017, GOP

Region/Province	Inhabitants in Millions	Percentage of total Population
Islamabad	1,163,584	0.82%
Punjab	110,012,442	53%
KPK	30,523,371	14.70%
Sindh	47,886,051	23%
Baluchistan	12,344,408	6%
GB & AJ&K	5,001,676	2.42%
Total Population	207,774,520	100%

It is determined that age ensures the understanding of the questionnaire for accurate response. Administratively, Pakistan comprises of 4 major, 2 small and a federal territories, namely Punjab, Sindh, Baluchistan, KPK, GB, AJ&K and Islamabad as its Federal Capital (Siyal et al., 2018). However, it is not easy to reach every member of the population of Pakistan. Therefore, in this research

the scholar identified accessible portion of the population of Pakistan (Akram & Suleman, 2017). This method is justified in a previous literature and has been established as rule of thumb that time, resources, and easily accessible population should be researcher's selection criteria (Asiamah et al., 2017). The research scholar deemed online survey as the most convenient and time saving approach to cover the target population (Hussein et al., 2020). Refer to Table 4.2.

3.4 Sampling

Study conducted on sampling; Rajasekar (2006), explained that the sample is a share of the larger group and it is considered as a selected portion of the targeted population. In this thesis, researcher identified that the population was scattered geographically. Considering the established sampling method by Yount, (2006), the researcher made analysis based inferences about the population characteristics and concluded the sample. It is established that sample depicts a small-scale version, and is always a true representative of the entire population. However, a small model sample is drawn out from the complete population.

For example, in reflection of research objectives the true population for this research thesis was adults who purchased PPE products and were aware of COVID 19 in Pakistan, but since, the COVID 19 situation was similar in all major urban cities in different provinces of Pakistan the researcher received responses across multiple cities as online survey was distributed as its sample group. Most of the urban cities with access to internet and smartphone surpassed 5% positivity rate and had easy PPE products available in the market (Noreen et al., 2021).

Purposive sampling technique was used to identify the PPE consumers who were aware of COVID 19 in all the major urban cities in Pakistan. The quota sampling technique was chosen based on the following reasons:

- i) Primary data might only be collected realistically and easily from urban cities. Collecting data nationwide from all the citizens or individuals is not feasible and practically possible.
- ii) While using probability sampling, it is mandatory to enlist all the elements in

the sample frame. In this case scenario probability sampling is not applicable since there are no listings. That's why purposive sampling was preferred and implemented.

iii) Purposive sampling was implemented to select urban cities with access to device to receive online survey questionnaire in many cities in Pakistan as the PPE consumers and customers here were easily accessible and identifiable. Also they provided the correct information related to queries.

iv) The major cities in Pakistan have an accumulated population of 210 million (refer to Table 3.1) (Government of Pakistan, 2017).

Sample Size

The sample size was determined by using three different criteria. These 3 methods were implemented such as: i) Precise (by establishing range which determined the true value of the population for estimation); ii) the confidence level (central limit theorem was used as underlying principle, it is established that when population is sampled multiple times the obtained average value for the attribute is true for population); and iii) the target population for this research is heterogeneous thus a large number of population is not required as controlled variance would ensure the quality of data collected (Israel, 2009).

Reciprocally, in case of homogeneous population, the degree of variability will decrease and a smaller sample size is required (Israel, 2009). Therefore, in order to determine the minimum sample size from the actual population Israel's (2009) formula: $n = N / [1 + N (e^2)]$, keeping the sampling error tolerance at 5% and based sample size on total population Pakistan.

3.5 Measurement Variable

The model of this thesis comprises of 4 variable, and it is distributed in 3 types of variables in reflection of underpinning framework, stimulus organism response. The first 2 variables are independent variables and represents attitude cues, (social

network rumors and hygiene promotion). The third variable is the representative of emotional arousal (customer fear), defined as organism in the underpinning framework. Lastly the fourth variable represents the behavioral response to prerequisites and it is defined as panic buying behavior.

To measure all these variables multiple items has been adopted and adapted from different authentic sources to form an integrated close ended questionnaire. The questionnaire also consisted demographics section including (gender, age, monthly market visits and stocked emergency supplies) to investigate the case more thoroughly and relevantly. Respondent's answers to measurement questions were analyzed using 7 point Likert scale where 1 represented "strongly disagree" and 7 represented "strongly agree" (Sullivan, 2013).

3.5.1 Scale Development

3.5.1.1 Independent Variables

3.5.1.1.1 Social Network Rumors

The previous literature defined that rumors are capable of affecting individuals or even social values positively or negatively. Although the more the authenticity of the source where rumor has come from the more the perception of its reliability and trustworthiness, it is also established that not everything that is reliable would be adjudged as valid, (Jeong & Lee, 2018; Gandi, 2018). Additionally, one in the scale displayed a high level of agreement, while the seven in the scale demonstrated a high level of disagreement. The general impact of social network rumors was worked out by taking the average of 4 items. The summery of scales was showed in Table 3.3.

3.5.1.1.2 Hygiene Promotion

Scale of hygiene promotion has been adopted and adapted from an existing studies related to COVID 19, hygiene and its transmission awareness campaigns related studies. (Azlan et al., 2020; Gambir et al, 2020; Modi et al., 2020). Likewise, a

seven-point Likert scale is used for operationalization of the survey questionnaire. Additionally, one in the scale displayed a high level of agreement, while the seven in the scale demonstrated a high level of disagreement. The general impact of hygiene promotion was worked out by taking the average of 5 items. The summery of scales was showed in Table 3.3.

3.5.2 Mediator

3.5.2.1 Customer Fear

The mediator customer fear has been adopted and adapted from an existing study and it is defined as the emotional perception that customer feels to face a negative consequences and tries to mitigate a potentially harmful outcome (Hillie et al., 2015). Additionally, one in the scale displayed a high level of agreement, while the seven in the scale demonstrated a high level of disagreement. The general impact of customer fear was worked out by taking the average of 5 items. The summery of scales was showed in Table 3.3.

3.5.3 Dependent Variable

3.5.3.1 Panic Buying Behavior

TABLE 3.2: Measurement Variables and Items

Constructs	Source	Item
Social Network Rumor	(Jeong & Lee, 2018; Gandi, 2018)	4
Hygiene Promotion	(Azlan et al., 2020; Gambir et al, 2020; Modi et al., 2020).	5
Customer Fear	(Hillie et al., 2015)	5
Panic Buying	(Rithika et al, 2020; Fieger & Dyason, 2020)	4

The scale of Panic Buying Behavior has been adopted and adapted from a multiple sources and integrated to form single scale comprising 4 items. The sources of panic buying scale are as (Rithika et al, 2020; Fieger & Dyason, 2020). A seven-point Likert scale is used for operationalization of the survey questionnaire. Additionally, one in the scale displayed a high level of agreement, while the seven in the scale

demonstrated a high level of disagreement. The general impact of Panic Buying was worked out by taking the average of 4 items. The summery of scales was showed in Table 3.2.

3.6 Data Collection Method & Procedure

A self-explanatory quantitative survey questionnaire was developed to collect the data, created on google forms an online docs developed keeping in view ease of collection and was shared amongst residents of Pakistan. Total number of respondents remained 338 out of which 338 were useable however only 319 were used as sample for the analysis. To ensure the project supervisors of information technology industry of Pakistan that the data was used only for the educational purposes. A cover letter was attached with the questionnaires which shows the brief introduction of the project. See Appendix A

3.7 Data Collection Methods

While keeping in view the circumstances and also relying on digital feasibility, Google doc had been as tool of data collection. The URL link comprising google doc was sent to the residents of Pakistan. With the help of non-probability purposive sampling technique the link of google doc questionnaires were only responded by our target unit of analysis and resultantly total of 338 responses were received from the respondents. The collection of data was a challenging aspect of the research, Using whats-app messaging to share the Doc URL amongst the target population in this way without any reference it is difficult to collect data from the consumers who use personal protective equipment products in Pakistan. Table 3.4 exhibits the format if survey questionnaire.

TABLE 3.3: Format for Survey Questionnaire

Introduction	A description on the thesis objectives.
Section 1	Main study questions.
Section 2	Personal data questions. Appreciation statement.

3.8 Data Analysis

3.8.1 Smart PLS 3.3

To analyze the structural and measurement model, the tool used is smart PLS 3.3. Tool fulfils all the requirements of this research's objective and perfectly befits exploratory research hypothesis testing needs. The structural model examines the reliability and validity of the data. Moreover Smart PLS 3.3 is self-sufficient to normalize the data and cope up with the missing values which makes testing model SMART PLS 3.3 algorithm was used to estimate the research thesis with two models: measurement model and structural model. The measurement model established the effect to test the hypothesis based on assessment. Whereas, the validity and reliability of data was tested from the structural model was empirically examined. (Kwong & Wong, 2013). Additionally, it worked with a more extensive scope sample sizes and due to bootstrapping procedures, it didn't need any assumptions of data normality (Kwong & Wong, 2013). Furthermore, in recent years it has been noted that PLS-SEM had become the favored tool of analysis and it is adopted in research disciplines rapidly, including marketing and business etc. (Kwong & Wong, 2013). Moreover, it guaranteed more theoretical miserliness and delivered better expectations to the models with complex connections (Kwong & Wong, 2013).

3.9 Summary

This chapter explains the research paradigm in the beginning. Secondly, the targeted population was examined which is followed by establishing the sample size and its parameters for this thesis. Then a discussion on the procedure and data collection method was documented which is followed by construct development, setup for every variable. Finally, a conversation was setup on the analysis tool SMART PLS 3.3 by the researcher to run the data analysis of structural and measurement model.

Chapter 4

Results and Discussion

4.1 Respondents

Out of approximately, 800 survey questionnaires were shared online amongst residents of Pakistan, and 338 (three hundred and thirty eight responses) were received back, from this total of 335 (three hundred and thirty five) responses showed that they were aware of COVID 19. Based on set criteria of purposive sampling 202 respondents mentioned that the deemed use of PPE extremely important, 104 checked use of PPE as an important practice, 24 as somewhat important and only 8 responded as not very important therefore there data was used in data analysis.

TABLE 4.1: Geographic and Demographic Characteristics of Respondents

Major Segmentation Variables	Category	Frequency	%
Geographic Region	Pakistan	338	100
Demographic	Male	121	36
Gender	Female	217	64
Age	20-25	152	45
	26-35	77	22.8
	36-45	65	19.2
	45+	44	13
COVID Awareness	Yes	335	99%
	No	3	1%
PPE Usage Important	Extremely Important	202	59.90%
	Very Important	104	30.70%
	Somewhat Importance	24	7%
	Not Very Important	8	2.40%
	Not at all Important		0%

Source: Developed from the Quantitative Field Study.

Assumption of SMART-PLS 3.3 that it did not require a large sample size (Afthanorhan, 2013). The residents of Pakistan using PPE and were aware of COVID 19 participated as respondents in quantitative research for this thesis. Their geographic and demographic characteristics were presented according to gender, age group, COVID 19 awareness, and importance PPE usage. A complete description of their demographics and geographic is summarized in Table 4.1.

4.2 Useable Data

Data was collected using google docs and it was shared via social media platform what's app and Facebook. Total of 800+ contacts were sent google survey questionnaire and 338 responses were received. Of which, no missing data issues were find because of google docs working and every question was marked compulsory to be responded. The purposive sampling was operationalized on the basis of response to filter questions COVID 19 awareness, social interaction and use of PPE and 319 responses were used as sample to establish results.

4.3 Model Evaluation (SMART-PLS 3.3)

Smart PLS 3.3 works on the principles of partial least square, structural equational modeling principles, which is used to analyses multi-variable model (Wong 2013). Primarily designed for marketing, human resource management and organizational management research which has gained notable reputation as a reliable tool to run exploratory tests based on components based approach of structure equational modeling (Hair et al., 2019). For analysis of data, Smart PLS 3.3 version has been used. The salient features to use PLS-SEM is its ability to handle complex model in an efficient manner, handling of single-item constructs, measuring formative constructs and no assumption for normality of data (Hair Jr et al., 2016).

Partial least square, structural equational modeling analysis is based on structural model without indicators which depicted the relations of constructs with each other and measurement model with indicators analysis and it exhibited the

outer loadings as reflective constructs were used in this thesis. The tests exhibited multi-collinearity, composite reliability, convergent and discriminant validity. Followed by structural model assessment by examining R² which is coefficient of determination, Q² which is path coefficients and shows predictive relevance (Sarstedt et al., 2014).

4.3.1 Analysis of Measurement Model

Using smart PLS 3.3 analysis on measurement model was run to determine composite reliability along with convergent and discriminant validity of scale's variables. Since the model is operationalized using only reflective constructs, outer loadings of items were check. Items with low outer loading values were disposed to obtain increased Cronbach's alpha and composite reliability values. See Table 4.3

4.3.2 Convergent Validity

Convergent validity is determined by the identification of co relation amongst multiple items of the same variable or construct (Hair Jr et al., 2016). Smart PLS 3.3 provided assessment results in its outer loadings, average variance extracted (AVE) and composite reliability. The set criterion asserts that outer loadings value should be greater than 0.70 and indicators with values ranging between 0.40-0.70 should be disposed to increase the value of AVE or CR (Hair Jr et al., 2016).

Initial run showed indicator, HP_1, PB_1, PB_2 had factor loadings of 0.394, 0.586, and 0.523 respectively being below 0.7, and reasoned to be the cause of low (AVE) average variance extracted. Hence, as per the criteria HP_1 and PB_1 were deleted from the model to achieve increased AVE values. Resultantly, while the data was ran second time it was identified that all the factor loading were satisfactory for each item were above 0.5 (Benitez et al., 2019).

Similarly, it was identified for each factor while observing internal consistency reliability, that composite reliability in established results demonstrated and confirmed <0.7 values in between all the variables (Benitez et al., 2019), and showed

internal consistency existed at a high level. Also, by extracting the AVE, convergent validity for each variable was examined, average variance extracted values. It was found that the AVE for SNR, HP, CF, and PB were equal to, and above 0.5 acceptable threshold value (Ahmed, 2018). Explained and demonstrated in Figure 4.1 and Table 4.3.

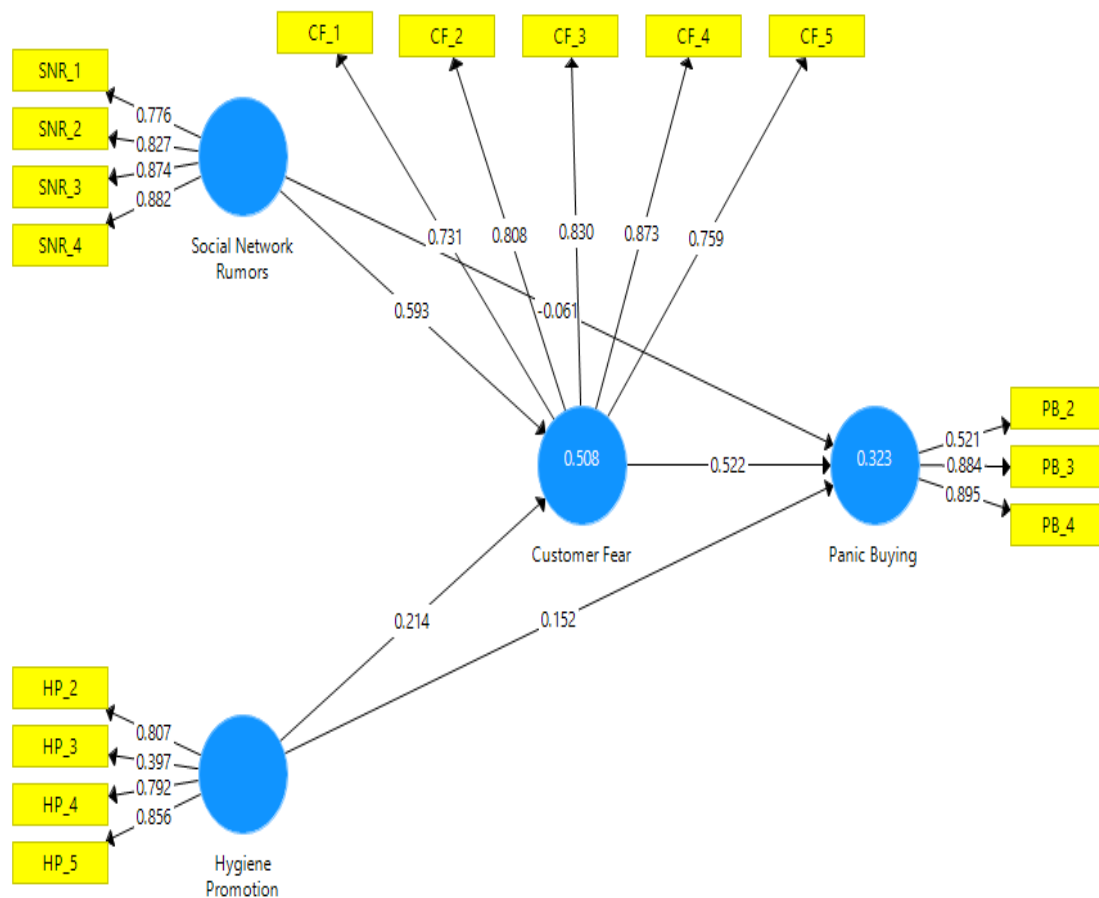


FIGURE 4.1: Illustration of outer loading after removing indicators with lower values

Following convergent validity, established square root of average variance extracted for each latent variable confirmed and demonstrated the discriminant validity (Ahmed, 2018). Resultantly, squared root values were observe to be larger than correlation values of latent variables (Kwong & wong, 2013). Graphical representation for construct item loading, Cronbach's alpha, composite reliability and average variance extracted is present in Appendix section in figure form in Appendix B.

TABLE 4.2: Analysis of Measurement Model

Variables	Cronbach's Alpha	composite Reliability	Average Variance
CF	0.8605	0.8996	0.6427
HP	0.7082	0.8164	0.5424
PB	0.7054	0.8219	0.6179
SNR	0.8614	0.906	0.7072

4.4 Discriminant Validity

4.4.1 Former Larker Criterion

Calculated square root of average variance for each attitude cues which stimulated emotional arousal customer fear was used to determine the values of discriminant validity (Hamid, Sami, & Sidek, 2017). This square root for each attitude cue was established using smart PLS 3.3.3 was calculated by the software by PLS algorithms. The results were established and presented in the table with heading discriminant validity. Results showed in (Table 4.3) confirmed that, the square roots for CF (0.87), HP (0.73), PB (0.78), and SNR (0.841) were of higher values than other correlation values amongst the variables. The bold diagonal vales represented the aforementioned relation of later being greater than former. Therefore, results in (Table 4.4) pointed out that the discriminant validity was determined and confirmed.

TABLE 4.3: Discriminant Validity using Former Larker Criterion

	CF	HP	PB	SNR
CF	0.87	0	0	0
HP	0.4725	0.7365	0	0
PB	0.5523	0.3723	0.7861	0
SNR	0.6861	0.4354	0.3635	0.841

Note: CF= Customer Fear, HP= Hygiene Promotion, PB= Panic Buying, SNR= Social Network Rumors & AVE and CR represents Average Variance extracted and Composted Reliability respectively.

4.4.2 Heterotrait-Monotrait Ratio (HTMT)

An additional feature of Smart PLS 3.3. allowed to confirm discriminant validity through heterotrait-monotrait ratio. HTMT is based on ratio of average correlation of different items amongst multiple constructs to the average of the correlation of indicators of the related construct. Hensler et al. (2015) confirms that model with variables that are conceptually similar demonstrates discriminant validity if their threshold level is 0.90 while those variable which are not related shows discriminant validity if they have threshold value of 0.85 or below. From Table 4.6, it is evident that not a single value is $<.85$. Therefore, discriminant validity is established.

TABLE 4.4: Heterotrait-Monotrait Ratio (HTMT)

Constructs	CF	HP	PB
CF	0	0	0
HP	0.5899	0	0
PB	0.6343	0.4071	0
SNR	0.7882	0.5734	0.4509

4.5 Path Analysis using Boot Strapping

Bootstrapping was used to generate T-statistics for both structural and measurement model (Hair et al., 2018). 345 observable survey questionnaires collected from residents of Pakistan were considered. Additionally, bootstrapping was applied through creating 5000 cases for the subsamples during model evaluation (Hair et al., 2018). Table 4.7 established bootstrapping results for structural model.

TABLE 4.5: P Values, T Statistics and VIF Values of Path Coefficient

Relationships	Path coefficient	P values	T Statistics	VIF values
CF \rightarrow PB	0.5224	0.0001	3.9891	2.0324
HP \rightarrow CF	0.2144	0.0193	2.3471	1.2339
HP \rightarrow PB	0.1521	0.2077	1.2614	1.3273
SNR \rightarrow CF	0.5928	0	6.7671	1.2339
SNR \rightarrow PB	-0.0612	0.6111	0.5088	1.9481

4.6 Structural Model Evaluation

Relationship amongst constructs in the framework was illustrated through structural model evaluation (Hair Jr et al., 2016). It demonstrates the significance on the basis values of path coefficients, coefficients of determination R², f² effect size, Q² predictive relevance and effect size q². Structural model is based on multi-collinearity of structural model is checked to avoid any sort of distortion in results. Therefore, VIF, T statistics, p value and beta values of exogenous constructs with respect to each endogenous construct were checked (Hair Jr et al., 2014). Presented in Table 4.3, multi-collinearity issue did not exist as all VIF values are within the acceptable range. The structural model is shown in Fig 4.2

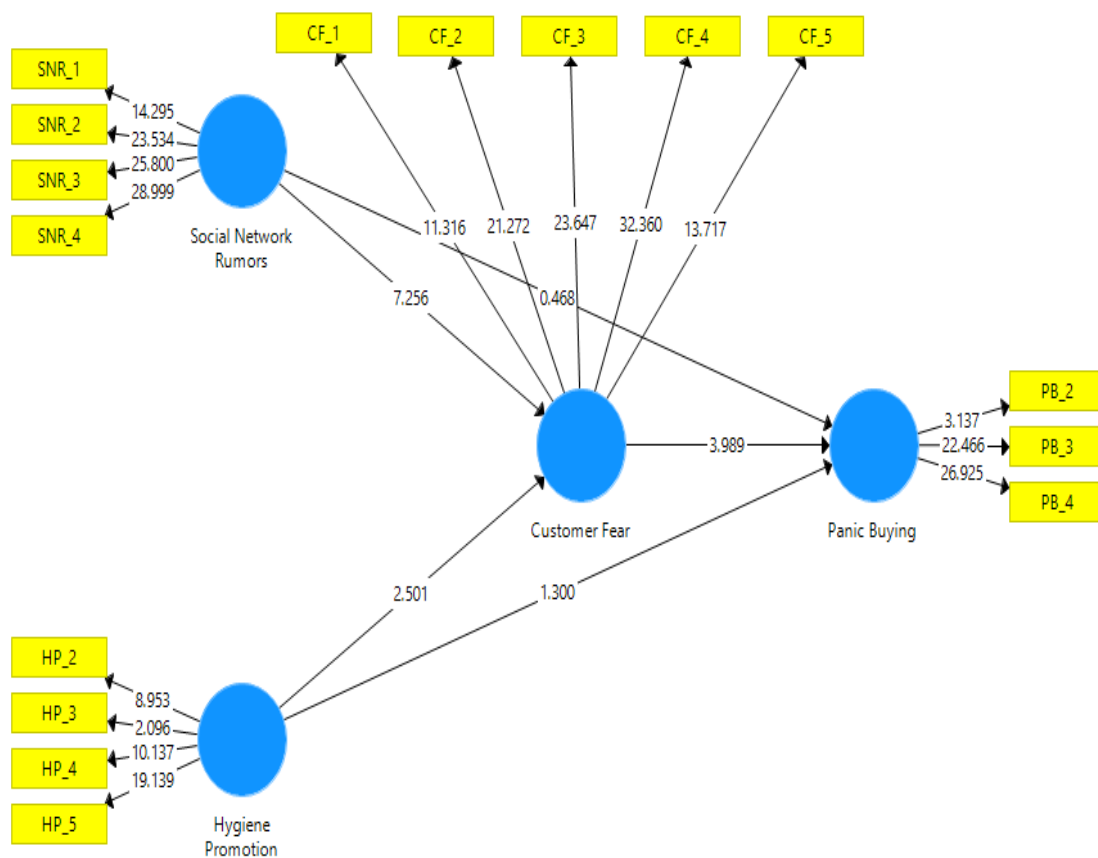


FIGURE 4.2: Structure Model of Factors Leading to Panic Buying Behavior

4.6.1 R Square

R^2 value of SNR and HP was 0.508 and represented endogenous variable to exogenous variable explanatory values and is the determinant of coefficient. The given score verified that, the two attitude cues (SNR & HP) explained 50.8 % of the variance in CF which is considered moderate, similarly it is evident from the results that R^2 of CF on PB is 0.323 which shows 32.3 % of the variance in PB and it is considered weak (Hair et al., 2016)

4.6.2 Assessment of Effect Size (f^2)

The value f^2 explained how much value of R^2 contributed if a specific exogenous construct was removed from a model to determine its influence on endogenous constructs (Hair Jr et al., 2016). f^2 value greater than 0.35 represented large effect size. Value ranging between of 0.15-0.35 represented medium effect and small effect size is considered if values are ranging between 0.02-0.15. The formula used to calculate effect size f^2 is as follows; reported in table 4.8

$$F^2 = \frac{R^2 \text{ included} R^2 \text{ excluded}}{1 R^2 \text{ included}}$$

Note: < 0.02 weak effect, > 0.35 moderate effect, > 0.90 very strong effect.

4.6.3 Predictive Relevance (Q^2)

Predictive relevance is evaluated using blindfolding technique and it is demonstrated by Q^2 . The value of OD represented omission distance and it was taken as 7. To acquire Q^2 cross validated redundancy was used and the value >0 demonstrated predictive relevance of given model (Hair et al, 2016). The table 4.8 shows the predictive relevancy of model.

4.6.4 q^2 Effect Size

The impact of Q^2 predictive relevance is assessed by calculating q^2 . Specific variable is disposed-off to and Q^2 values are compared using formula $(Q^2 \text{ included} Q^2 \text{ excluded}) / (1 - Q^2 \text{ excluded})$. Values ranging between 0.02, 0.15 and 0.35 represented small,

TABLE 4.6: Analysis of Structural Model using Bootstrapping

Relationship	β value	St Dev	P	VIF	CI	f^2	Q^2	q^2	Decision
H1: SNR \rightarrow CF	0.5928	0.0876	0	1.2339	(0.3992, 0.7393)	0.5787	0.3158	0.2055	Supported
H2: HP \rightarrow CF	0.2144	0.0913	0.0193	1.2339	(0.0550, 0.4033)	0.0757	0.3158	0.0325	Supported
H3: CF \rightarrow PB	0.5224	0.1314	0.0001	2.0324	(0.2713, 0.7927)	0.1984	0.1378	0.2425	Supported

Note: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

medium or large predictive relevance relatively. (Hair Jr et al., 2016). Values are demonstrated in table 4.8 whereas figure below Fig 4.3 represents the values of blindfolding technique to calculate predictive relevance.

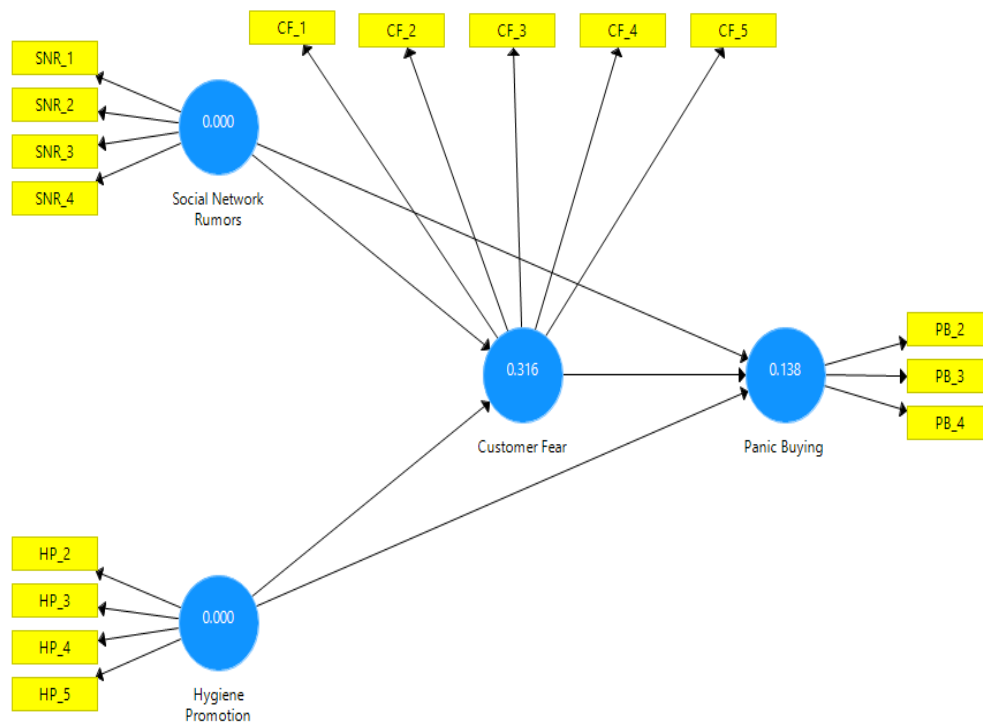


FIGURE 4.3: Blind foldingr

4.7 Mediation Analysis

The purpose of mediation analysis was to test the hypothesis that Customer Fear (CF) mediates the relationship between the factors of Social Network

Rumors (SNR), Hygiene Promotion (HP) and predict Panic Buying Behavior (PB). SMART PLS 3.3 was used to perform the mediation analysis through bootstrapping with 319 samples. The mediation model is shown in Figure: 4.2 and summarized in table 4.9 below.

TABLE 4.7: Mediation Analysis

Relationship	value	St Deviation	p value	t value	CI	Decision
SNR → CF → PB	0.3071	0.0993	0.0019	3.1188	(0.1321, 0.5046)	Supported
HP → CF → PB	0.1182	0.0532	0.0358	2.1054	(0.0306, 0.2371)	Supported

In reflection of the above table the total effect of CF on SNR and PB was significant and supported ($H4a : \beta = 3.087t = 3.11 ** , p = 0.00$) and ($H4b : \beta = 0.118, t = 2.105 ** , p = 0$). With the inclusion of the mediating variable (CA) the impact of SNR and HP became significant and shows a positive full mediation.

4.8 Chapter Summary

Chapter 4 gives a panoramic view of results extracted from the analysis in systematic manner. Primarily, this chapter initiated with a run on path analysis and estimated structural model empirically, followed by establishing the discriminant validity, assessment of effect size test f^2 , factor loading and composite reliabilities were established. Resultantly, this established the foundation for running the path analysis via bootstrapping, and end the chapter with running the moderation effect. Conclusion and implications were discussed in Chapter 5 of this thesis.

Chapter 5

Conclusion and Recommendation

5.1 Introduction

This chapter concludes the results discussed in chapter 4. In this chapter no.5 the researcher has reported the established findings and implications for the thesis. In similar vein, to conclude this quantitative research established results and discussion of the study were used as the base. Primarily, the measurement model results were concluded. This concluded the confirmatory factor analysis for the structural model based on the established hypothesis developed in the reflection of research objectives. The first three hypotheses (H1, H2 & H3) were focused towards testing the relationship of Social network rumor with panic buying, hygiene promotion with panic buying and customer fear with panic buying. The last two hypotheses (H4a & H4b) were focused towards testing the mediating effect of customer fear between the factors leading to panic buying behavior SNR and HP. Lastly the chapter was concluded by theoretical contribution, managerial implications, conclusion, limitation and future research direction.

5.2 Summary of the Study

To summarize main purpose of this research was to explore and discover the relationship between the attitude factors which are green as social network rumors and hygiene promotion with customer fear in order to predict purchase behavior

of customers in the potential and current consumers of Personal Protective Equipment. This study also focused on testing the mediating effect of customer fear between the attitude factors SNR and HP and the panic buying behavior in order to predict the purchase decision. The data was collected from the current and potential consumers of PPE products in Rawalpindi and Islamabad.

This study also concluded the answer of the following specific research objectives of the study. **RO 1:** To examine social network rumor a relationship with customer fear in the personal protective equipment industry of Pakistan. **RO 2:** To examine hygiene promotion a relationship with customer fear in the personal protective equipment industry of Pakistan. **RO 3:** To examine customer fear have a relationship with panic buying behavior in the personal protective equipment industry of Pakistan. **RO 4:** To examine social network rumor relationship with panic buying behavior, mediated with customer fear in the personal protective equipment industry of Pakistan. **RO 5:** To examine hygiene promotion relationship with panic buying behavior, mediated with customer fear in the personal protective equipment industry of Pakistan.

5.3 Results for Hypothesis H1, H2 and H3

5.3.1 Social Network Rumors Relationship Customer Fear

The results of the hypothesis (H1) shows that the social network rumors has a significant impact on creating customer fear in the PPE industry of Pakistan. The hypothesis one was connected with the research question 1 (RQ1): Does social network rumor have relationship with customer fear in the personal protective equipment industry of Pakistan? The path analysis via boot strapping in SMART PLS 3.3 for hypothesis (H1) was supported ($H1 : \beta = 0.5928, t = 6.76 **, p = 0.031$). Refer to table 4.8 for the comprehensive results. Additionally, the acceptance of hypothesis (H1) was also supported by established studies. According to Sing et al., (2021) social network rumors instils customer fear in the consumer while making purchase decision. Das et al., (2021) has discussed in his article that social rumors act as predecessor attitude cue which stimulates the emotional state of

fear in customers. It is due to the customer fear that a hurried, rather panicked purchase decisions are made by the customers of PPE industry.

5.3.2 Hygiene Promotion Relationship with Customer Fear

The results of the hypothesis (H2) has established that the sense of Hygiene promotion has a significant impact on customer fear in the personal protective equipment industry of Pakistan. The hypothesis two was connected with the research question 2 (RQ2): Does hygiene promotion have relationship with customer fear in the personal protective equipment industry of Pakistan?

The path analysis via boot strapping in SMART PLS 3.3 for hypothesis (H2) was supported ($H2 : \beta = 0.2144, t = 2.34, p = 0$). Refer to table 4.8 for the comprehensive results. Additionally, the acceptance of hypothesis (H2) was also in support with the literature established in the past. In a research conducted by Rohm et al., (2021) proves that Hygiene promotion creates the need based on awareness and knowing the importance of usage of personal protective equipment which creates their image about health safety measures and that instils the customer fear preserved by customer that it is to avoid risk of catch contagious diseases the environment.

Moreover, a study on Caucasian by Yang et al., (2021) indicated that hygiene promotion in the personal protective equipment customers helps to identify the emotional notion of customer fear and helps us to develop the understanding that there is a relation between hygiene promotion and customer fear in the direction of the purchase decision.

5.3.3 Customer Fear Relationship with Panic Buying

The results of the hypothesis (H3) shows that the customer fear has a significant impact on to the outcome variable panic buying in the personal protective equipment industry of Pakistan. The hypothesis number three was connected with the research question 3 (RQ3): Does customer fear have a significant relationship with panic buying behavior in the personal protective equipment industry of Pakistan?

The path analysis was run using boot strapping in SMART PLS 3.3 for hypothesis (H3) was supported ($H3 : \beta = 0.522, t = 3.98 **, p = 0$). Refer to table 4.8 for the comprehensive results. It is also established that (H3) is supported with the literature. Gupta et al., (2021) explained in research that customer fear is one of the fundamental reasons sense of purchase appeal is triggered and customers out of fear makes a purchase decision.

5.4 Results for Mediating Hypothesis H4a and H4b

5.4.1 Mediating Role of Customer Fear Between Social Network Rumors and Panic Buying Behavior

The results of the hypothesis (H4a) shows that customer fear plays a partial mediating or intervention between relationship of social network rumor and panic buying behavior of personal protective equipment user. The hypothesis four was related to the research question 4 (RQ4): Does social network rumor relationship with panic buying behavior, is mediated with customer fear in the personal protective equipment The path analysis via boot strapping in SMART PLS 3.3 for hypothesis (H4a) was supported for total effect, ($H4a : \beta = 0.11, t = 2.24 **, p = 0$), for total indirect effect ($H4a : \beta = 0.104, t = 2.97 **, p = 0.03$) it was also significant and for the specific indirect effect ($H4a : \beta = 0.104, t = 2.97 **, p = 0.03$).

The P value in total effect is $P_{0.0}$. However it has changed in specific indirect and total indirect effect P value is ($P_{0.03}$) thus and the difference is > 0.01 thus full mediation exists. Refer to table 4.7 for the comprehensive results. Additionally, the acceptance of hypothesis (H4a) is also supported with the existing literature in the past. In a research it states that Customer fear act as a mediator in between attitude cues and purchase behavior (Yamamoto, Hirose, Keele, & Imai, 2014). The results are showed in Table 4.9. Gupta et al., (2021) explained in research that customer fear is one of the fundamental reasons sense of purchase appeal is triggered and customers out of fear makes a purchase decision.

5.4.2 Mediating Role of Customer Fear Between and Hygiene Promotion and Panic Buying Behavior

The results of the hypothesis (H4b) unleashed that customer fear plays a partial mediating role between relationship of Hygiene promotion and to predict panic buying behavior. The hypothesis five was related to the research question 5 (RQ5): Does hygiene promotion relationship with panic buying behavior is mediated with customer fear in the personal protective equipment industry of Pakistan? The path analysis via boot strapping in SMART PLS 3.3 for hypothesis (H4b) was supported for total effect, ($H4b : \beta = 0.11, t = 2.37 ** , p = 0.01$), for total indirect effect ($H4b : \beta = 0.05, t = 2.05 ** , p = 0.04$) it was also significant and for the specific indirect effect ($H4b : \beta = 0.05, t = 2.05 ** , p = 0.04$). It was significant for all three instances but the p value was > 0.01 at all three instances (Yamamoto, Hirose, Keele & Imai, 2014). However existed with variation thus the partial mediation existed. Refer to table 4.7 for the comprehensive results. Moreover, the acceptance of hypothesis (H4b) was also in support with the literature established in the past. A study conducted in by Addo, (2020) stated that hygiene promotion or awareness relationship with consumption pattern can be mediated with an emotional trigger and it supports our argument of partial mediation as well.

5.5 Theoretical Contribution

At the outset, the significance of Stimulus organism response framework as preexisting and widely used marketing, consumer behavior theory has made an addition by researching on new set of variables. Although the researchers applied S-O-R to understand the consumer behavior outcomes such as impulsive buying, buying behavior, online buying and persuasive buying.

This thesis extended the stimulus organism response can be used as framework to understand the factors leading to panic buying behavior with the mediation of customer fear in personal protective equipment market of Pakistan.

This thesis also included a critical review of past literature and it revealed the

facts from researches on the different factors of buying behavior in the light of Stimulus organism response. It is identified that existing literature based on the underpinning theory were mostly established in countries such as Germany, Sweden, U.K, U.S.A Australia, Japan, Austria, Brazil, Norway, Switzerland, Belgium Slovenia, Netherlands, Finland, Denmark, Canada, Ireland, Malaysia, Israel, Indonesia and Singapore. Which indicated the limited research conducted in south asian countries and that the generalizability of the findings toward the South Asian countries, specifically Pakistan. Therefore, this thesis promised to be significant for testing the leading to Panic Buying behavior such as social network rumors, hygiene promotion and customer fear as the mediator in the personal protective equipment industry in Pakistan.

5.6 Conclusion

Social network rumor as an independent variable relied on customer fear in order to predict panic buying behavior in personal protective equipment products in Pakistan. This variable was based on 4 items structure, SNR_1, SNR_2, SNR_3, and SNR_4. The current personal protective equipment products users confirmed that, Social network rumors acts as the consumer's attitude towards the panic buying behavior in Rawalpindi and Islamabad in Pakistan. As expected keeping in view the established literature, this study confirmed the factor loadings of all the four items of SNR. This indicated that the current and potential consumers of personal protective equipment gave significant weightage customer fear. Hence, the scale on social network rumors was validated with four items for the personal protective equipment and products to achieve in the vicinity of Rawalpindi and Islamabad in Pakistan.

The second independent variable, hygiene promotion partially relied on customer fear in order to predict panic buying behavior in potential and current users of personal protective equipment products in Pakistan. This variable was based on 5-items structure, HP_1, HP_2, HP_3, HP_4 & HP_5. Keeping in view the past studies, this study did not confirm the factor loadings of all the 5 items of hygiene promotion. This showed that the current users of personal protective equipment

and products. Which gave significant weightage towards the discussed variable. Hence, the scale on hygiene promotion was validated with only 4 items for the current and potential consumers of personal protective equipment and products which predicted panic buying behavior in the vicinity of Rawalpindi and Islamabad in Pakistan.

The third variable, Customer fear acts as a mediating variable and acts as predictive variable of Panic Buying behavior in current and possible consumers of personal protective equipment products in Pakistan. This variable was based on 5-items structure CF_1, CF_2, CF_3, CF_4 and CF_5. Keeping in view the past studies, this study confirmed all the factor loadings of all the five items of Customer Fear. This implied that the current and all the possible users of personal protective equipment gave significant weightage towards customer fear. Hence, the scale on customer fear was validated with five items in PPE industry in the vicinity of Rawalpindi and Islamabad in Pakistan.

Lastly the latent variable Panic Buying as a dependent and outcome variable was based on 5-items structure PB_1, PB_2, PB_3 and PB_4. Keeping in view the past studies, this research failed to confirm the factor loadings of all the four items of to predict the buying behavior and only 3 items were selected with one having PB_2 0.54 as cross loading which is < 0.7 , however in some marketing cases this is deemed acceptable Humphreys et al.(2020) and minimum of 3 items were required to predict the research (Tavares et al., 2020). This signified that the current and potential customers of Personal protective equipment products gave significant weightage towards to predict sustainable product consumption. Therefore, the scale on to predict the buying behavior was validated with only 3 remainder items in sustainability industry in the vicinity of Rawalpindi and Islamabad.

5.7 Managerial Implications

The established results in this thesis, the factors leading to panic buying behavior in the presence of customer fear as the mediator have reasoned enough to give useful insights to PPE users and the market as well. The policy makers should

incorporate the facts reported in this thesis while planning during difficult times. This thesis has established logical and coherent argument about how the consumer reacts under the impression of fear and how it effects demand for of specific products as customers inflicted to hurried, rather panicked buying behavior. Here, the policy makers should also consider that while spreading awareness such as hygiene promotion, the message should be conveyed in a neutral manner without instilling overwhelmed fear in the customers. Similarly, social network rumors also stimulated customer fear. Thus authenticity of message should also be checked and controlled depending the situation.

In a similar manner statistically acquired empirical results via path analysis that the mediating role of customer fear intervenes between the factors leading to buying behavior and to predict panic buying of personal protective equipment products consumption in Pakistan. Meanwhile social network rumors fully mediated by customer fear to predict the panic buying behavior of the PPE consumers. Whereas, Hygiene promotion showed partial mediation by customer fear to predict panic buying behavior. However no Hypothesis was rejected in the study in light of the ran analysis. As a result, the policy makers in PPE industry and dealing with consumer behavior should use these factors and implications in marketing the practices and controlling the customer response to situational crisis.

5.8 Limitations and Future Research

This research thesis has several limitations and opportunities for the future research. To begin with, this thesis has primarily emphasized on the PPE users who were aware of COVID 19 living in only Rawalpindi and Islamabad in Pakistan. However, COVID 19 has affected globally and facts may differ in different sort of crisis. Future studies could discover other vicinities of Pakistan as well. Meanwhile it was also found that different factors of panic buying behavior were diverse from one country to another country. Accordingly, a comparative analysis of two or more countries would bring more insight in understanding the factors leading to panic buying behavior in order to predict the purchase intentions of customer in PPE market and Industry. The thesis has measured the panic buying behavior

of only PPE users. This phenomenon or research objectives can be established for other industries and attitude cues as well.

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Appendix A

SECTION-ONE; PREAMBLE

Dear Participant,

We are carrying out a survey on looking into the factors leading to panic buying behavior for safety equipment's such as mask, sanitizer, and gloves during COVID 19. We would appreciate your kind participation by answering all questions related to this research. This question and answer section shall not take more than 5 minutes of your time. Your participation in this survey is completely voluntary, and you may discontinue the survey at any time. All the information provided by you shall be kept confidential, and will be used for academic purposes only.

Muhammad Hissan Ahmad; Dr. Ahsan Mahmood Ahmed

SECTION TWO: STUDY QUESTIONS

Please tick one column per statement, to indicate your response towards the statements below. The response scale is based on seven options including; strongly agree (1), agree (2), mildly agree (3), neutral (4), disagree (5), mildly disagree (6), and strongly disagree (7).

Please tick the appropriate box that indicates your level of agreement.

S.N	STATEMENT	1	2	3	4	5	6	7
1	Online doubtful stories of COVID-19 had an effect on me.							
2	Exchange of COVID-19 views on social platforms influenced me.							
3	Online news rumors on COVID-19 horrified me.							
4	Spread of COVID-19 rumors on several online platforms had an impact on me.							
5	The spread of COVID-19 limited human to human contact at all times.							
6	The spread of COVID-19 through respiratory droplets led me to keep social distance.							
7	The spread of COVID-19 forced me to keep low contact with surfaces.							
8	Overload on the national health system due to COVID-19 increased focus towards my hygiene.							
9	The spread of COVID-19 motivated me to use safety equipment.							
10	As a customer I fear that COVID-19 had spread in the environment.							
11	As a customer COVID-19 had increased my anxiety, and fear towards the market place.							
12	As a customer I feel stressed with the increase in COVID-19 cases.							
13	As a customer I fear I would lose my life because of COVID-19.							
14	As a customer I fear that COVID-19 would lead to frequent lockdowns.							
15	I have stocked up safety equipment such as mask, sanitizer and gloves due to COVID-19.							
16	I feel there would be a sudden shortage in safety equipment due to COVID-19.							
17	I feel there would be a sudden rise in price due to panic buying.							
18	As a customer I fear that panic buying would lead to hoarding of safety equipment.							

Please tick the appropriate box that indicates your level of agreement.

Gender Male Female

Age 20-25 25-35 35-45 45+

Are you aware of COVID? YES NO

Safety Equipment Usage Extremely important very important somewhat important Not very important Not at all important

THANKYOU VERY MUCH FOR GIVING YOUR PRECIOUS TIME MUCH APPRECIATED!!!

Appendix B

Graphical Representation Measurement and Structural Model

