IMPACT OF COVID-19 PANDEMIC ON ADOPTION OF OMNI-CHANNEL IN MILLENNIAL CONSUMERS THROUGH OMNI-INTERACTION

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Abstract- The covid-19 pandemic with the lockdown and social distancing mandates have disrupted the consumer purchase behaviour. This disruption had the impact in adoption of omni-channel during the pandemic, specific in millennial consumers. As a young generation, and large population, their purchasing power is making them an interactive target for consumer industries. Millennials as consumers of technology on omni-channel will be the focus of this research.This research was tested with a data collected from September 2019 as pre-pandemic period and on December 2020 as within-pandemic period. The output reveals that Omni-interaction and Millennial purchase behaviour are not strengthen the Omni-experience and Adoption omni-channel within-pandemic period compare to pre-period. The key is the lockdown and social distancing mandates accelerated the digital transformation impacted direct to process of adoption of omni-channel. The quality and credibility of information influenced the millennial to make purchasing decisions. This research will contribute to the literature by providing a factors of adoption omni-channel to understands consumers and their experiences to purchase. Limitation of this research is draws conclusions based on data that were collected at pre and during pandemic period. To overcome this limitation, future research should consider the post pandemic period dataset especially when available.
Keywords: Covid-19; Omni-channel; Millennial; Adoption; Experience

1. INTRODUCTION
1.1. Research Background
Since the official statement from WHO on March 11, 2020, the massive spread of Covid-19 caused a decline in economic activity, and the pandemic has many severe impacts on almost all nations around the globe, including Indonesia. To reduce the spread of Covid-19, governments worldwide have taken aggressive steps that are beneficial to preventing the spread of the virus. The most crucial steps are social distancing rules, staying at home regulation and closed international borders to prevent the spread of the virus from outbound sources.

In Indonesia, the recommendations from WHO is implemented by imposing lockdowns partially in big cities and small towns. The lockdown implementation has exacerbated the situation, people mobilization has become limited, making the economic activities go down significantly, and drastically shifted the economic condition, including a shift in digital world. The positive impact of the digital world is the unexpected growth in e-commerce, delivery service, online education and digital marketing (Santoso, 2020). Customer turned to online shopping since they were unable to leave their homes due to restrictions (Yuan et al., 2021). This change was made possible by advances and developments in digital as an offline to online (O2O) model, allowing customers to purchase products or services online from companies

(Zanetta et al., 2021). In addition, according to Zanetta et al., (2021), the online shopping method can reduce stress levels and the risk of being exposed to viruses due to traveling.

Data from eMarketer, January 2022, shows in 2022, e-commerce sales in region Southeast Asia will reach nearly $90 billion, an increase of $15.31 billion over previous year, almost 65% of the region's sales coming from Indonesia with total $58.00 billion in 2022. Some extraordinary facts were also found related with e-commerce in Indonesia, as top 10 ranked country measured by retail e-commerce sales, as top 3 ranked country by retail e-commerce sales growth 2022 with 23.0% growth and as top 4 ranked by retail e-commerce share of total retail sales 2022 with 28.1% share.

The online to offline or O2O approach is the initial stage for omnichannel, because consumers still want to see and touch, even though orders are made online, goods are still picked up offline (Yingseng et al., 2014; Zhang, 2015). The increasing diffusion and adoption of alternative business-to-consumer retail channels through both traditional and innovative retail settings has transformed retail practices and consumers' shopping processes. The new model of retail is omni-channel (Carvalho et al., 2014), achieves optimal effectiveness by combining offline marketing with online marketing (Laudon et al., 2015), provide an easy process for consumers and sellers (Lazaris et al., 2014; McCormick et al, 2014; Rigby, 2011; Rigby, 2014).

Omni-channel represents the future of retail, and they have grown up in a world that enables both purchasing and servicing to be done instantaneously and digitally through any channel. The most interesting journal about Omni-channel was published (Brynjolfsson et al., 2013), dealing with Omni-channel concepts and strategies. This strategy can have a synergistic effect on retail, where a consumer's experience is properly enhanced through the simultaneous use of all available distribution channels (Gerritsen et al., 2014; Chopra, 2016) as well as through social media, applications for portable devices, which make the experience unique and prompt consumers to buy (Verhoef et al., 2015). The dominant characteristic of the omni-channel is that the strategy is centered on the consumer and the shopping experience, with a view to offering the shopper a holistic experience (Gupta et al., 2004) and the experience is seamless regardless of which channels the consumer uses (Herhausen et al., 2015).

Millennial generation is an important part in the development of e-Commerce (Abdul et al., 2017). They are active (mobile) and highly connected and they actively use technology in their daily lives (Cook, 2014). They will represent 50% of the world's population in 2017 is making them an interactive target for consumer industries (Kotler et al., 2016; Smith, 2011; Flor et al., 2017). Aubrey et al. (2012) state that technology has changed consumer attitudes and behaviors. They actively participate in marketing research, downloading applications that are useful for them to stay connected to retail or brands (Moore, 2012, Dabbous et al., 2020).

This research is relevant and align with the impact of the Covid-10 pandemic in Indonesia, the utilization of e-commerce has experienced a rapid increase to meet daily needs (Rakhmawati et al., 2021), and e-commerce has changed consumer shopping behavior and transformed the retail landscape, especially for general non-perishable merchandise categories (Abbu et al., 2021).

The present study revisits this question using data on the factors that influence online and/or offline or omni-interaction during the shopping for omni-experience in the adoption of omni-channel as moderated by millennial purchase behavior, during the shopping for omni-experience (Djohan et al., 2021). Will the consumers permanently change their purchase behavior due to lockdown and social distancing or will they go back to their old behavior once the global crisis is over? Expressed in the form of research questions, the current study seeks to address the following main questions:

RQ1   Are any impact in omni-interaction, omni-experience and millennial purchase behavior during adoption of omni-channel during the covid-19 pandemic?

RQ2:   What is the relevant impact from pre covid-19 pandemic period to within covid-19 pandemic period on adoption of omni-channel?

1.2. Literature Review And Hypotheses Development

The Covid-19 pandemic and the lockdown and social distancing mandates have disrupted the consumer habits of shopping. Consumers develop habits over time about what to consume, when and where (Sheth, 2020a; Sheth, 2020b), they are learning to improvise and learn new habits. New habits will also emerge by technology advances, changing demographics and innovative ways consumers have learned to cope with blurring the shopping environment boundaries.

Consumers adapt for a prolonged period of time, they are likely to adopt newer technologies which facilitate consumption in a more convenient manner via technology is likely to change existing habits (Sheth, 2020c). In recovering the condition at post the pandemic, retailer must to confront the changes in consumer shopping behaviors, and provide possible solution to accommodate the new realities and better understanding of the persisting effects in the aftermath (Inaue et al., 2023; Marina et al., 2023).

Retail omni-channel has become popular in recent years, according to Carvalho et al. (2014), the new retail model that has emerged as omni-channel, achieves maximum efficiency by combining physical and online distribution channels. Retailers understand omni-channel represents the future of retail, and they have grown up in a world that enables both purchasing and servicing to be done instantaneously and digitally through any channel. Strong omni-channel strategy can increase overall sales by giving consumers additional ways to gather information, make purchases, and receive products (Marshall et al., 2017).

Millennial generation is an important part in the development of e-Commerce, generation of young people, distinguished by being users and consumers of technology, increasingly have diverse choices and a full authority, shifts from traditional to digital (Caraher, 2015; Abdul et al., 2017). Millennial are omni-channel customers who are active (mobile) and highly connected, and they actively engage in, extensive use of technology in their everyday lives (Moore, 2012; Cook, 2014; Aubrey et al., 2012).

1.2.1 Omni-Interaction

Some studies have focused on the effect of the COVID-19 pandemic on e-commerce in several country in the world (Jensen et al., 2021; Mason et al., 2020; Gao et al., 2020; Tran, 2021; Guthrie et al., 2021), because government restrictions, including lockdowns, often require or request that people stay home and businesses close down, even without any restrictions, consumers may stay home out of fear of infection. They may shop in person less frequently and thus rely more on online shopping. On the other hand, the pandemic has accelerated the process of digital transformation, consumers are more willing to download applications and try their services to avoid interacting with cashiers or other customers (Abbu et al., 2021).

Omni-Interaction is the ability to make the purchase process on several channels that are integrated with omni-channel consumers (Angel, 2014), integrating online and offline marketing (Laudon et al., 2015), providing consumers with a greater number of options when making purchases and gives consumers many choices for purchasing activities (Fernie et al., 2015).

The challenge is in integration between channels, consumers expect a consistent, uniform, and integrated service or experience, regardless of the channel they use; they are willing to move seamlessly between channels depending on their preferences, their current situation, the time of day, or the product category (Cook, 2014; Piotrowicz et al., 2014). The focus on interactions between channels and brands, how these interactions operate, and the integration of consumer, brand, and retail channels is increased with the introduction of omni-channel marketing (Neslin et al., 2014).

During the search, buy, and post-purchase phases of the process, interactions are utilized seamlessly and alternately (Verhoef et al., 2015). Including the consistency of Information in the same style and tone across channels will increase consumer satisfaction and loyalty (Shankar et al., 2011; Carvalho et al., 2014), the consistent buying process, especially in making purchases at multiple points of contact to different channels between thinking and buying (McCormick et al., 2014), and the integrity of consumer data required when shopping: need recognition, information search, evaluation, purchase, and post-purchase (Puccinelli et al., 2009).

1.2.2 Omni-Experience

Customers may meditate and think on their purchases in a peaceful environment while shopping online, allowing them to do so in the comfort of their own homes (Zhang et al., 2010). The conventional offline channels are used for professional guidance; if the customer enjoys touch-and-feel shopping while also wanting to save time on delivery, the traditional offline channels are used (Kollmann et al., 2012).

Online shopping is quite convenient once consumers pay initial costs, i.e., setting up accounts and learning how to use the platform. However, compared to offline shopping, online shopping has several disadvantages, such as delayed possession, a lack of social interactions, privacy and security risks, and the difficulty of processing online information (Kim, 2020; Cai et al., 2016; Rohm et al., 2004; Watanabe et al., 2020). Therefore, consumers who are forced to shop online during periods of strong restrictions may return to offline shopping when the restrictions are lifted if the variable costs of online shopping are sufficiently high for them.

Regardless of the channel through which they interact, customers expect a consistent, uniform, and integrated service or experience; they are willing to move seamlessly between channels depending on their preferences, their current situation, the time of day, or the product category; and they expect seamless integration between channels (Cook, 2014; Piotrowiczet al., 2014). Consumers try to accomplish some objective by buying and utilizing a specific product or service, which may be used to better understand retailing and consumer experiences (Ratneshwar et al., 2000).

A successful implementation of an omni-channel strategy that includes comprehensive integration of all channels has the potential to significantly improve the shopping experience for the consumer, as shown by customer feedback (Herhausen et al., 2015). Understanding and putting out the necessary work to develop an omni-channel experience is no longer a choice, but rather a must (Winter, 2012). Consumer not only saves a lot of time, but also optimizes the shopping experience, the utility of the purchased items, shortens the trip from one store to another, increases shopping enjoyment and thus increases satisfaction with the retailer and the application used (Yee et al., 2015). Therefore, consumers should feel satisfied with their experiences, since having a positive experience will lead to a positive predisposition purchase (Küster et al., 2016) and influence the intention to buy (Flor et al., 2017).

The customer experience in retailing is defined specifically by Verhoef et al. (2009) as a multi-dimensional concept that is holistic in character and encompasses the consumer's

cognitive, affective, emotional, social, and physical reactions to a store. When it comes to consumer behavior, Peter et al. (2010) defines it as a combination of thoughts and emotions experienced as well as actions performed throughout the purchasing and consuming process.

Furthermore, the term "omni-channel retailing" has become popular in recent years, referring to a process that makes it easy for consumers and retailers to interact (Lazaris et al., 2014; McCormick et al., 2014; Rigby, 2011; Rigby, 2014; Carvalho et al., 2014), and that understands customers and their experiences (Lazaris et al., 2014; Puccinelli et al, 2009). Therefore, we propose the following hypothesis:

H1:   Omni-interaction positively influence Omni-experience in retail Omni-channel.

1.2.3 Adoption Omni-channel

Facing a large shock such as the COVID-19 pandemic, people usually react strongly at first, but their reaction weakens after they learn how to cope with the situation (Di Crosta et al., 2021; Guthrie et al., 2021; Borbás et al., 2021). Research from (Inoue et al., 2023) clearly show that consumers adapted to the pandemic because we find that the effect of the case number and states of emergency diminished over time and ultimately disappeared. Initially, the pandemic generated anxiety and fear, which drove panic buying and hoarding via online shopping channels (Chronopoulos et al., 2020; Keane et al., 2021; Sheth, 2020; Koch et al., 2020), but consumers became accustomed to the pandemic and thus began to reduce such reactions. Therefore, will the consumers permanently change their behavior or will they go back to their old behavior once the crisis is over?

The increasing diffusion and adoption of alternative business-to-consumer retail channels through both traditional and innovative retail settings has transformed retail practices and consumers' shopping processes. The new model of retail is omni-channel (Carvalho et al., 2014), achieves optimal effectiveness by combining offline marketing with online marketing (Laudon et al., 2015), provide an easy process for consumers and sellers (Lazaris et al., 2014; McCormick et al, 2014; Rigby, 2011; Rigby, 2014).

Consumer acceptance and usage of technology were the focus of Emma et al. (2016)'s research on the adoption of the newest retail model, omni-channel, which they conducted in 2016. Aiolfi et al. (2017) provide an overview of the possible advantages and results arising from the implementation of an omni-channel strategy, including increased sales and profitability, the development of omni-channel loyalty, and the creation of a long-term connection with consumers.

Adoption of omni-channel has gained significance, as shown by many studies that have emphasized the importance of adopting new technology in terms of customer acceptability and willingness to utilize that new technology (Meuter et al., 2000; Venkatesh et al., 2012; Lai et al., 2015; Lai, 2016). Purchase intentions are used to make purchases in research from Emma et al. (2016), while behavioral intentions are used in research from Venkateshet al., (2003), and Raffaele (2014) uses information adoption to make purchase decisions.

Previous research has found that the aim of adopting omni-channel retailing is to provide consumers with a seamless shopping experience by integrating the advantages of both online and physical shopping channels (Rigby, 2011; Frazer et al., 2014). Based on that argument, we expect the following hypothesis:

H2:   Adoption of Omni-channel in Retail Omni-channel is favorably influenced by the Omni-experience.

1.2.4 Consumer Purchase Behaviour among Millennials

The Millennial generation has played a significant role in the growth of e-Commerce during the last several years (Abdulet al., 2017). It is expected that they would account for half of the world's population by 2017 (Kotler et al., 2016; Smith, 2011; Flor et al, 2017). These young individuals, who were born between 1980 and 2000 (Caraher, 2015), have been characterized as open-minded socially conscious innovators who are also active, ambitious, dependable, driven, and bright (Guven, 2015).

According to Aubrey et al. (2012), millennials are defined by their use and adaptation of technology in their daily lives as well as their shared values, life experiences, and common purchasing behaviors. Marketing research is something they actively engage in, technological advancements have altered customer attitudes and habits (Aubrey et al., 2012).

Having grown up in a technologically developing environment, this generation has taken a more active role in integrating technologies into their everyday lives for marketing reasons, using their mobile devices as well as conventional Internet methods to interact with merchants or brand representatives (Moore, 2012). Due to the fact that they represent half of global consumption, the millennial generation has emerged as an interesting group to research since their habits vary from those of previous generations, and it is for this reason that researching them has gained significance and relevance (Smith, 2011).

Notify, millennials are omni-channel customers who are active (mobile) and highly connected, and who make extensive use of technology in their everyday lives (Cook, 2014), therefore, we propose the following hypothesis:

H3:   Purchase by a Millennial in the retail omni-channel environment, consumer behavior has a beneficial influence on the connection between Omni-interaction and Omni-experience.

1.3. Research Model and Hypotheses

This research examines the impact of Covid-19 pandemic on omni-interaction during the shopping for omni-experience in the adoption of omni-channel as moderated by millennial purchase behavior, during the shopping for omni-experience (Djohan et al., 2021) in a broad sample of millennial followed for pre covid-19 pandemic period on end of 2019 and within covid-19 pandemic period on 2021.
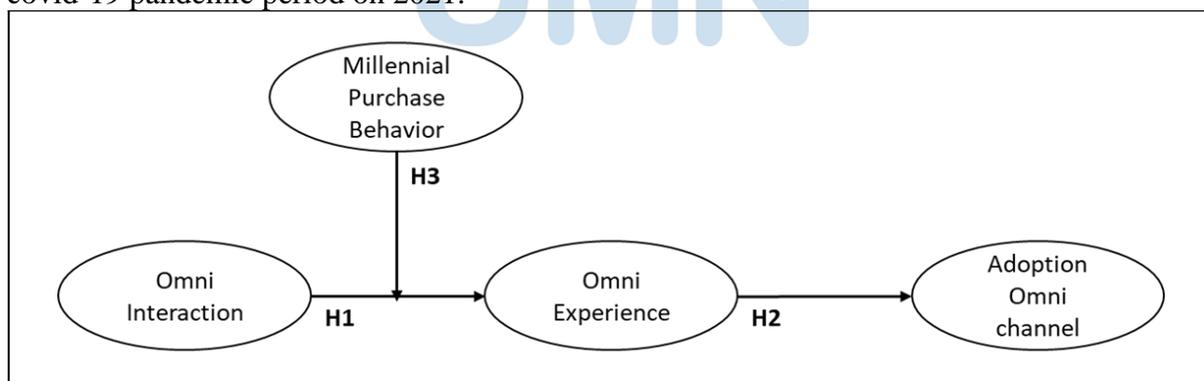

Figure 1. Research model (Djohan et al., 2021)

According to foregoing information and hypotheses, the following research model (Figure 1) is developed, which focuses on the omni-interaction as an exogenous variable, the omni-experience as an intervening variable, adoption omni-channel as an endogenous variable, and millennial purchase behaviors as a moderating factor. This section covers omni-interaction, omni-experience, millennial purchasing behavior, and omni-channel adoption, and it offers

hypotheses relating to these topics. This research investigates the impact of covid-19 pandemic on millennial consumer on adoption of omni-channel that have shown their academic and practical relevance in a substantial body of research: omni-interaction, omni-experience, millennial purchase behavior and adoption omni-channel.

2. RESEARCH METHODOLOGY

This is longitudinal research with repeated measures design, repeatedly examine the same individuals to detect any changes that might occur over a period of time. Longitudinal research is a research design that involves repeated observations of the same variables over short or long periods of time or exposures are collected at multiple follow-up times. It is often a type of observational study, although it can also be structured as longitudinal randomized experiment (Shadish et al., 2002). Repeated measures design is a research design that involves multiple measures of the same variable taken on the same or matched subjects either under different conditions or over two or more time periods (Kraska, 2010).

2.1. Sample and Procedure

One of the most common longitudinal types of research is a "pre-post" in which a single baseline measurement is obtained, an intervention is administered, and a single follow-up measurement is collected. This research was stated the "pre" for the data 261 millennial consumers from non-probability with accidental sampling technique stated that they had made a recent purchase during the previous 12 months prior to the data collection (September 2019) as (T1) pre covid-19 pandemic period (Djohan et al., 2021) and "post" for second survey on December 2020 as (T2) within covid-19 pandemic period or with retrospective approach to collect data on events that have already happened.

Due to the covid-19 pandemic, in order to recruit online T2 respondents for second survey (within covid-19 pandemic period), the survey was thus Google form platform rather than in paper format and millennial consumers stated that they had made a recent purchase during the previous 12 months prior to the data collection. Data was collected through questionnaires distributed on T1 respondents and found of 34 respondents were return and valid for data during covid-19 pandemic period, as well as for data pre covid-19 pandemic period.

2.2. Measurement

The survey questionnaire consisted of two parts. The first part of the questionnaire was used to gather socio-demographic information, such as gender, age, employment status, and education. The second part contained statements about retail omni-channel represent the four variables research: omni-interaction, omni-experience, millennial purchase behavior and adoption of omni-channel (Table 1), were instructed to rate their agreement with each item on a four-point Likert scale ranging from 1 (strongly disagree) to 4 (strongly agree). This four-point scale as an asymmetric Likert scale will force preference to a certain position (Brown, 2000) even if the respondent may not have a definite opinion, even if the respondent may not have a definite opinion

Table 1. Variable, Constructs and items, included in the questions

Variable	Construct	Item	Measurement
Omni-Interaction (OI)			
	- Information	OI-1	I feel a consistent of product and sales information on all available channels.
	- Process	OI-2	I feel a consistent of purchase process on all available channels
	- Data	OI-3	I feel a consistent of integrated consumer data on all available channels
Omni-Experience (OE)			
	- Cognitive	OE-1	I feel pleasured when easily get the variety of information on all available channels
	- Affective	OE-2	I feel satisfied when received good service of purchase on all available channels
	- Conative	OE-3	I feel comfortable when I have many choices to purchase on all available channels
Adoption Omni-Channel (AO)			
	- Purchase	AO-1	I am willing to purchase through retail on all available channel because of easiness process
	- Behaviour	AO-2	I am willing to purchase through retail on all available channel because of technology
	- Information	AO-3	I am willing to purchase through retail on all available channel because of integrity of information
Millennial Purchase Behaviour (MP)			
	- Mobile	MP-1	I like to be active or mobile and highly connected use technology in daily lives
	- Innovative	MP-2	I like to get involved in offering of new products

2.3. Data analysis

In accordance with the impact of covid-19 pandemic in omni-interaction, omni-experience and millennial purchase behavior during adoption of omni-channel with the data collection (September 2019) as T1 pre covid-19 pandemic period (Djohan et al., 2021) and "post" for second survey on December 2020 as T2 within covid-19 pandemic, the descriptive statistics was used to address the first research questions (RQ1) "Are any impact in omni-interaction, omni-experience and millennial purchase behavior during adoption of omni-channel during the covid-19 pandemic?" And the Smart PLS was used as a Structural Equation Modeling (SEM) tool to address the second research questions (RQ2) "What is the relevant impact from pre covid-19 pandemic period to within covid-19 pandemic period on adoption of omni-channel?"

3. RESULT AND DISCUSSIONS

From the first part of the questionnaire, all of 34 respondents are productive millennial with their own income (Figure 1), male (59%) and employee (79%). They purchase online with smartphone (100%) and shopped online one in a week from 44% for T1 pre covid-19 pandemic period, increase become 68% for T2 within covid-19 pandemic period.

The purchase frequency change significantly for pre covid-19 pandemic period to within covid-19 pandemic period. This incremental mostly comes from almost of female millennials, they change their purchase frequency from once in a month become once a week during the

covid-19 period. These phenomena are consistent with previous research conducted by Loo (2018), women spend more time e-shopping at home and more likely to shop online at a higher frequency for clothing, groceries, and daily goods, but a lower frequency for electronics (Zhen, 2016; Ding, 2017; Shi, 2019; Hjorthol, 2009; Saphores, 2020).
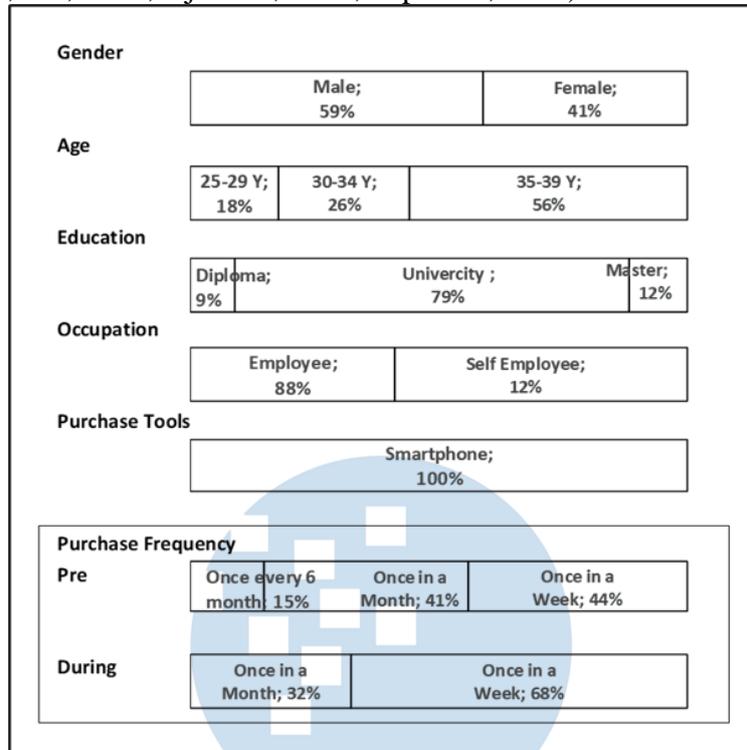

Figure 2. Respondent Characteristic (N:34 respondents)

3.1. Descriptive Data Analysis

To address the first research questions (RQ1) "Are any impact in omni-interaction, omni-experience and millennial purchase behavior during adoption of omni-channel during the covid-19 pandemic? this research uses the descriptive data analysis from second survey on December 2020 as T2 within covid-19 pandemic period for 34 respondents, continues with some of the first stage respondent (T1) were valid for pre and during covid-19 pandemic period.

The Omni-interaction (OI) as independent variable, describe the interactions between channels and brands, how these interactions operate, and the integration of consumer, brand, and retail channels is increased with the introduction of omni-channel marketing (Neslin et al, 2014). The highest mean value of this variable from the pre-covid19-pandemic period (Table 2) are OI-1 Information indicator (T1: 2.971 of 4 scale), but this indicator decreases and become the lowest during the covid-19 pandemic (T2: 2.882). The OI-2 Process indicator become more important during the covid-19 pandemic (T2: 3.088) as the highest compare to pre covid-19 pandemic period (T1: 2.941) with incremental 5%. These finding are consistent with previous research conducted by Abbu et al. (2021), the pandemic has accelerated the process of digital transformation, consumers are more willing to download applications and try their services to avoid interacting with cashiers or other customers.

The Omni Experience (OE) as mediating variable, combining offline marketing with online marketing (Laudon et al., 2015), provide an easy process for consumers and sellers (Lazaris et al., 2014; McCormick et al, 2014; Rigby, 2011; Rigby, 2014). According to Zanetta et al., (2021), the online shopping method can reduce stress levels and the risk of being exposed

to viruses due to traveling, since they were unable to leave their homes due to restrictions (Yuan et al., 2021). The highest mean value of this variable from the pre-covid19-pandemic period (Table 2) are OE-2 Affective indicator (T1: 3.382 of 4 scale), and increase 6.98% during the covid-19 pandemic (T2: 3.618). Comprehensive integration of all channels has to significantly improve the shopping experience by customer enjoys shopping, comfort of their own homes, save time on delivery and customer feedback, customer enjoys shopping, save time on delivery (Zhang et al. 2010; Kollmann et al., 2012; Herhausen et al., 2015).

Table 2. Descriptive Data Analysis

N: 34 respondents	T1 period (September 2019) Pre Covid-19 pandemic			T2 period (December 2020) Within Covid-19 pandemic		
Items	**Min**	**Max**	**Mean value**	**Min**	**Max**	**Mean value**
Omni-Interaction (OI)	**2**	**4**	**2.921**	**1**	**4**	**2.961**
OI-1 Information	2	4	2.971	1	4	2.882
OI-2 Process	2	4	2.941	2	4	3.088
OI-3 Data	2	4	2.853	2	4	2.912
Omni-Experience (OE)	**3**	**4**	**3.265**	**2**	**4**	**3.441**
OE-1 Cognitive	3	4	3.118	3	4	3.382
OE-2 Affective	3	4	3.382	3	4	3.618
OE-3 Conative	3	4	3.294	2	4	3.324
Adoption Omni-Channel (AO)	**2**	**4**	**3.382**	**2**	**4**	**3.382**
AO-1 Purchase	3	4	3.441	3	4	3.559
AO-2 Behaviour	3	4	3.353	2	4	3.500
AO-3 Information	2	4	3.353	3	4	3.559
Millennial Purchase Behaviour (MP)	**2**	**4**	**3.382**	**2**	**4**	**3.539**
MP-1 Mobile	3	4	3.471	3	4	3.559
MP-2 Innovative	2	4	3.294	2	4	3.206

The Millennial generation has played a significant role in the growth of e-Commerce during the last several years (Abdul et al., 2017). Their purchase behavior as a moderating variable (MP) for this research. Complex consumer buying behavior became all the more unpredictable, millennials now have adjusted to the new norms of life (Anil et al, 2021). MP-1 Mobility indicator (Table 2) showed as the highest mean value of this variable either for the pre-covid19-pandemic period (T1: 3.471 of 4 scale), and during the covid-19 pandemic (T2: 3.559). This result is consistent with previous research conducted by Moore (2012), the millennial using their mobile devices as well as conventional Internet methods to interact with merchants or brand representatives.

The last variable as dependent variable is Adoption Omni-channel (AO), Consumers are likely to adopt newer technologies due to covid-19 pandemic which facilitate consumption in a more convenient manner via technology is likely to change existing habits (Sheth, 2020c). They turned to online shopping since they were unable to leave their homes due to restrictions (Yuan et al., 2021). All of the indicator of this variable are significantly increasing during the during the covid-19 pandemic (Table 2), AO-1 Purchase +3.43%, AO-2 Behavior +4.38% and AO-3 Information +6.14%. Information indicator (AO-3) as the highest incremental are consistent with previous research conducted by Raffaele (2014), the quality and credibility of information have an effect on omnichannel adoption to make purchasing decisions.

3.2. Measurement Model Variables

To address the second research questions (RQ2) "What is the relevant impact from pre covid-19 pandemic period to within covid-19 pandemic period on adoption of omni-channel?" the Smart PLS was used as a Structural Equation Modeling (SEM) tool to analyze the data. According to Djohan et al. (2021), data 261 millennial consumers stated that they had made a recent purchase during the previous 12 months prior to the data collection (September 2019) for T1 pre covid-19 pandemic period, the validity and reliability analysis indicating were valid for measuring their constructs, and met the reliability requirements (Table 3). The results of measurement model variables for T1 were measuring the research model with positively strengthens the relationship between variable (Table 4).

Table 3. Validity and Reliability Analysis

Items	T1 period (September 2019) Pre Covid-19 pandemic N: 261 respondents		T2 period (December 2020) Within Covid-19 pandemic N: 34 respondents	
	Composite Reliability (CR)	Average Variance Extracted (AVE)	Composite Reliability (CR)	Average Variance Extracted (AVE)
Omni-Interaction (OI)	0.764	0.540	0.748	0.519
Omni-Experience (OE)	0.845	0.647	0.778	0.539
Adoption Omni-Channel (AO)	0.902	0.754	0.882	0.714
Millennial Purchase Behaviour (MP)	0.869	0.769	0.873	0.775

Source: Smart PLS Construct Reliability and Validity Result

The Validity and Reliability Analysis for T2 within covid-19 pandemic period indicate that all items possess significant, standardized loading factor greater than 0.50 (Table 3). The value of Average Variance Extracted (AVE) for all variables had a loading factor greater than 0.50, suggesting they were valid for measuring their constructs and the value of Composite Reliability (CR) greater than 0.7 (Nunnally, 1978), which showed that all variables met the reliability requirements.

Once the research model met the elements of validity and reliability, the model was executed using bootstrapping to measure the research model. Similar with the previous research T1 pre covid-19 pandemic period (Djohan et al., 2021), the data from T2 within covid-19 pandemic period will using assistance from Smart-PLS v3.0 by bootstrapping 500 samples using all research data from 34 respondents for resampling (Ghozali et al., 2015). The parameters used are the T-statistics value to test the effect of the relationship between variables and the P-value to test the probability/significance value. If the T-statistics value is greater than 1.96, the moderating effect affects the relationship between these variables (Chin, 1998), the P-value is less than 0.05, then the significance or hypothesis is accepted.

The first hypothesis (H1) addressed the relationship between Omni-interaction and Omni-experience. As shown in Table 4, the measurements for T2 period included a T-statistics value is 0.940 (< 0.196) and P-value is 0.174 (> 0.05), indicating Omni-interaction has a not significant effect on Omni-Experience for during the covid-19 pandemic. E-commerce has grown in popularity since the emergence of the covid-19 pandemic period. This pandemic spread boosted e-commerce as a platform for business between consumers and retailers and between manufactures (Myovella et al. 2020). Customer turned to online shopping since they were unable to leave their homes due to restrictions (Yuan et al. 2021), keen to try new online

shopping options for essential and non-essential goods. On the other hand, delivered products to consumers doorstep (Ali Taha et al. 2021).

The second hypothesis (H2) addressed the relationship between omni-experience and adoption omni-channel. As shown in Table 4, the measurements for T2 period included a T-statistics value is 7.495 (> 0.196) and P-value is 0.000 (< 0.05), indicating Omni-Experience has a significant effect on Adoption Omni-channel for during the covid-19 pandemic. Initially, the pandemic generated anxiety and fear, which drove panic buying and hoarding via online shopping channels (Chronopoulos et al., 2020; Keane et al., 2021; Sheth, 2020; Koch et al., 2020), usually react strongly at first, but their reaction weakens after they learn how to cope with the situation (Di Crosta et al., 2021; Guthrie et al., 2021; Borbás et al., 2021). This finding is in-line with previous research by Emma et al. (2016) provide theoretical understanding of the anticipated use of omni-shoppers technology in connection with the initial adoption of omni-channel by focusing on the acceptance and use of technology used by customers in the information and purchase stages.

Table 4. Results of Measurement Model Variables

Items	T1 period (September 2019) Pre Covid-19 pandemic N: 261 respondents			T2 period (December 2020) Within Covid-19 pandemic N: 34 respondents		
	T Statistics	P Values	Hypothesis	T Statistics	P Values	Hypothesis
H1: Omni-Interaction → Omni-Experience	3.490	0.001	Accepted ✓	0.940	0.174	Rejected ✗
H2: Omni-Experience →Adoption Omni-channel	10.775	0.000	Accepted ✓	7.495	0.000	Accepted ✓
H3: Millennial Purchase Behaviour Moderating Omni-Interaction → Omni-Experience	2.011	0.045	Accepted ✓	0.772	0.235	Rejected ✗

Source: Smart PLS Bootstrapping Result

The third hypothesis (H3) addressed the relationship between millennial purchase behaviors as a moderator variable for omni-interaction and omni-experience. As shown in Table 4, the measurements for T2 period included a T-statistics value is 0.772 (< 0.196) and P-value is 0.235 (> 0.05), indicating Millennial purchase behaviors as a moderator variable has a not strengthens effect for omni-interaction and omni-experience. The covid-19 pandemic largely affected consumer behavior. During this time, consumers purchased more essential products, such as medical and health products and foods, while total purchases decreased because of a decline in the purchasing of nonessential products (Chronopoulos et al., 2020; Cruz et al., 2021; Di Crosta et al., 2021). In addition, even without any government restrictions, consumers may stay home out of fear of infection, consumers shop in physical less frequently and thus rely more on online shopping. This phenomenon has been confirmed by several studies in country across the world, US (Jensen at al., 2021; Mason et al., 2020), China Gao et al., 2020), Vietnam (Tran, 2021) and France Guthrie et al., 2021) by a study based on online transaction data at the country level.

According to the research model, the hypotheses from T1 period (Figure 3) were supported by the results: H1: Omni-interaction significant influence Omni-experience in retail Omni-channel and H2: Omni-experience significant influence Adoption Omni-channel in Retail Omni-channel, then H3: Millennial purchase Behavior positively strengthens the relationship between Omni-interaction and Omni-experience in Retail Omni-channel for pre

covid-19 pandemic period on September 2019 (Djohan et al., 2021). But the results of Measurement Model Variables (Figure 3) for T2 period for during covid-19 pandemic on December of 2020 shown not all hypotheses are accepted, only for H2 are accepted, the other hypotheses are rejected.
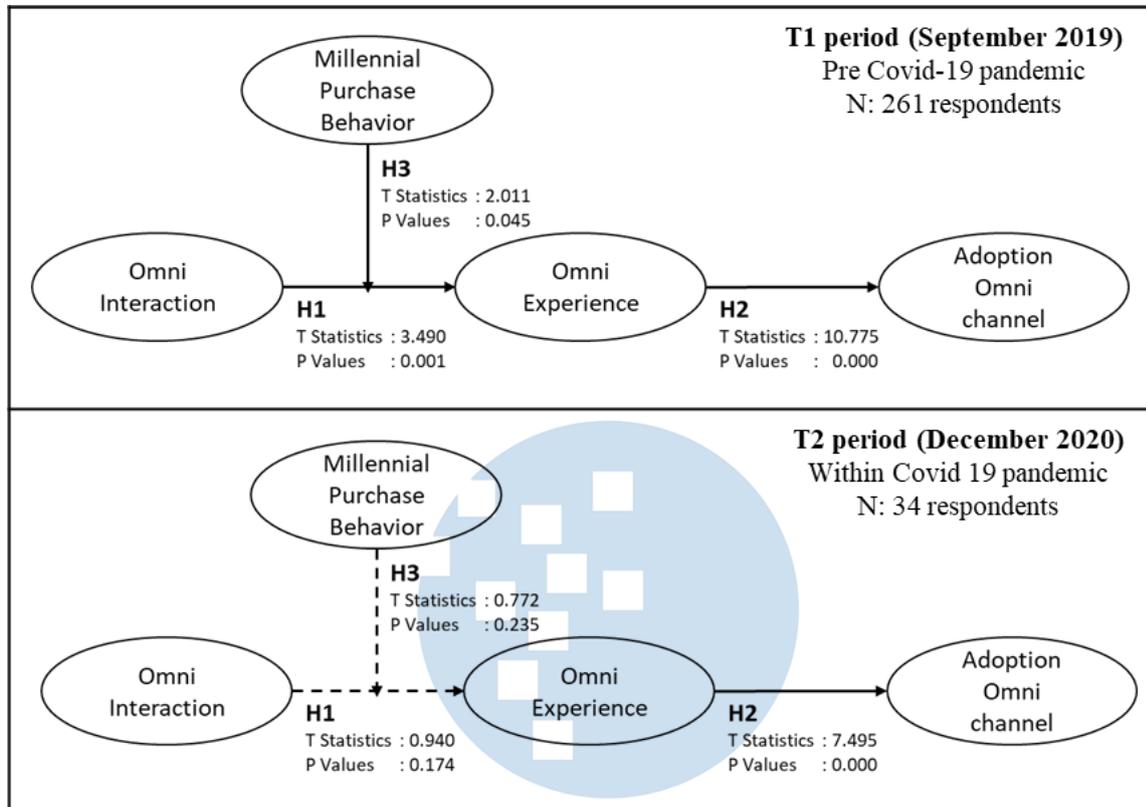

Figure 3. Smart PLS Bootstrapping Result

4. CONCLUSION, LIMITATIONS AND SUGGESTIONS

Before covid-19 pandemic, retail world has given rise to a new phenomenon known as omni-channel retailing (Herhausen et al., 2015). The dominant characteristic of the omni-channel is that the strategy is centered on the customer and the customer's shopping experience, with a view to offering the shopper a holistic experience (Gupta et al., 2004; Shah et al., 2006). This phenomenon can be defined as the customer management strategy throughout the life cycle of the customer. As a consumer of omni-channel, millennial is active (mobile), highly connected and they actively use technology in their daily lives (Cook, 2014).

4.1. Conclusion

The covid-19 pandemic that has accrued worldwide, the lockdown and social distancing mandates have disrupted the consumer habits of buying as well as shopping. Consumers develop habits over time about what to consume, when and where (Sheth, 2020a, Sheth, 2020b) and learning to improvise and learn new habits. They turned to online shopping due to restrictions (Yuan et al., 2021) and this change was made possible by advances and developments in digital as an offline to online (O2O) model, allowing customers to purchase products online from companies (Zanetta et al., 2021).

This pandemic largely affected consumer behavior: purchased more essential products, total purchases decreased specific for nonessential products, may stay home out of fear of

infection, consumers shop in physical less frequently and thus rely more on online shopping. This new behavior spread boosted e-commerce as a platform for online shopping, supported by the technology in the information and purchase stages. Processing online information requires greater cognitive resources than does processing printed information (Cai et al., 2016). If the net benefit of offline shopping is greater than that of online shopping, then consumers will rely on offline shopping, even after paying the initial costs of online shopping. Furthermore, although consumers often panic and overreact at the beginning of a large shock, over time, they learn to cope with the new situation and react less to the shock (Guthrie et al., 2021).

This research comprehensively investigates relation the impact of covid-19 pandemic on millennial consumer on adoption of omni-channel that have shown their academic and practical relevance in a substantial body of research: omni-interaction, omni-experience, millennial purchase behavior and adoption omni-channel with a data collected from September 2019 as pre-pandemic period and on December 2020 as within-pandemic period.

The output reveals that Omni-interaction and Millennial purchase behavior are not strengthen the Omni-experience and Adoption omni-channel within-pandemic period compare to pre-period. The key is the lockdown and social distancing mandates accelerated the digital transformation impacted direct to process of adoption of omni-channel. The pandemic has accelerated the process of digital transformation for millennial consumer in adoption omni-channel, comprehensive integration of all channels has to significantly improve the shopping experience by customer enjoys shopping, comfort, and delivery. Millennial using their mobile devices to interact with merchants or brand representatives, the quality and credibility of information have an effect on omnichannel adoption.

This research will contribute to the literature by providing a factors of adoption omni-channel to understands consumers and their experiences to purchase at the covid 19 pandemic period. The effect of the covid-19 pandemic on fear and anxiety has also been found to diminish over time (Borbás et al., 2021). Therefore, consumers who are accustomed to the pandemic may have weaker reactions to it than they did before and return to old habits in the long run (Sheth, 2020). While consumers go back to old habits, it is likely that they will be modified in the way consumers shop and buy products. New habits will also emerge by technology advances, changing demographics and innovative ways consumers have learned to cope with boundaries. In addition, using more innovative technologies, such as virtual reality (VR), 3-dimensional (3D) images, and the metaverse, can provide consumers with information that can be processed more easily without high levels of cognitive skills (Kim, 2020).

4.2. Limitations and Suggestions

The limitation of this research is draws conclusions based on data that were collected at pre and during covid-19 pandemic period. To overcome this limitation, future research should replicate this study in post covid-19 pandemic period to compare the results. Another significant limitation of this work is that this research was undertaken in a single country, especially among the millennial's generations in Indonesia, suggesting the research conclusions may not apply entirely to other nations. Hence, this article calls for extension of the research issue to another generation or nations.

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