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Behavioural Determinants of Health Insurance Buying Intention of Missing Middle Consumers: A Study During Covid-19 Pandemic

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ABSTRACT

Through this study, we intend to highlight the determining factors of missing-middle consumers' health insurance purchase intention in the purview of COVID-19 induced behavioural changes. 228 Indian respondents were sampled using a multi-stage random sampling technique. PLS-SEM & ANN method has been used for the data analysis. The structural model in this study can explain around two-thirds variance of attitude as well as intention toward health insurance purchases. The PLS path analysis demonstrates the significance of attitude, customer trust, herd behaviour, decision delegation preference and subjective norms on health insurance purchase intention. Besides, perceived usefulness, purchase decision involvement and health insurance awareness have been found as significant predictors of attitude towards health insurance purchase behaviour. As per ANN sensitivity analysis, health insurance purchase intention is best predicted by attitude, followed by customer trust, decision delegation preference and herd behaviour. Similarly, attitude is best predicted by health insurance awareness followed by perceived usefulness, subjective norms, purchase decision involvement and perceived risk, respectively. Health insurance awareness significantly moderates the relationship between perceived risk and attitude towards health insurance purchase behaviour. Additionally, this study offers practical implications for insurance companies, senior executives & other stakeholders by analysing the determining factors of consumers' health insurance purchase intention in the purview of COVID-19 induced behavioural changes.

Keywords - Health insurance, COVID-19, consumer behaviour, purchase intention, theory of planned behaviour, herd behaviour, attitude, SEM-ANN.

Introduction

Among 17 sustainable development goals (SDGs), the attainment of sustainable health for all is one of the universal goals proclaimed by the United Nations (UN) under SDG-3. It emphasizes "good health and well-being" through Universal Health Coverage (UHC) and intends to achieve equal and affordable access to necessary healthcare services for all. As part of the worldwide effort to achieve UHC, an increasing number of low and middle-income countries are overhauling their healthcare systems to lower financial barriers and broaden access to essential medical care for all residents (Weir-Smith et al., 2022). India is one such nation that strives to offer affordable and accessible healthcare to its people. As of now, low government spending on health, high out-of-pocket expenses (OOPE), and an inadequate financial cushion against health issues are still the hallmarks of India's healthcare system.

Although, India's OOPE as a percentage of healthcare spending has declined in the past few years thanks to Ayushman Bharat, a flagship health insurance scheme of the government launched in 2018 toward UHC. The scheme seeks to provide UHC and financial protection to reduce OOPE and envisages covering the costs of secondary and tertiary hospitalization of more than 107.4 million underprivilege households for up to a maximum of 5 lakh Indian rupees (INR) per family per year using information from the 2011 socio-economic caste census (Shrisharath et al., 2022). Still, as per the latest reports of NITI Aayog published in 2021, a sizable Indian population of over 30%, i.e., more than 400 million people remain uninsured under any health insurance scheme. This section of the population is termed 'India's missing-middle, between the underprivileged poorer sections and relatively well-off groups under the organized sector (Kumar & Sarwal, 2021). It

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is because the health insurance needs of the poorer are taken care of by government-sponsored schemes, whereas well-off people in the organized sector are either insured under the social health insurance schemes or can afford the private health insurance schemes that are currently operational. Surprisingly, the missing middle section remains uninsured despite their capability to pay for contributory health insurance schemes.

The number of infected individuals during COVID-19 rendered India's public and private healthcare institutions completely unprepared, even though only a fraction required hospitalization. Households without health insurance had to pay massive out-of-pocket medical expenses. Therefore, the present study aims to ascertain how India's missing middles perceive the variables influencing the decision to buy medical insurance during COVID-19. Moreover, we examine the consequence of herding behaviour on purchase intention towards health insurance, among other novel determinants. This investigation was conducted during the COVID-19 epidemic, distinguishing it from other bodies of literature. The current study will add to the corpus of knowledge on attitudes towards health insurance and offer fresh insights into various managerial and policy implications.

The following is an overview of the paper's sequential organization. After the introduction, the literature review section includes the body of prior research, literature gaps, the study's objectives, and the formulation of hypotheses. The third section outlines the construction of the questionnaire and the procedure for obtaining data, followed by a description of the research method. The fourth section then discusses the data analysis results, theoretical insights & novelty, managerial and policy implications.

Literature Review and Research Gap

Considering the full-budgetary allocation still hanging for existing state-funded health insurance schemes and budgetary constraints for covering the sizable missing middle population, the possibility of additional state-funded health insurance remains bleak (Gopichandran, 2019; Pandey et al., 2021). Since the target segment is capable of paying towards contributory health insurance schemes, private health insurers need to tap such a sizable portion of the population. Majority of the research on the demand for health insurance focuses on consumers' willingness to pay and purchasing power. Factors such as accessibility of healthcare facilities, the cost of health insurance relative to the cost of treatment and an individual's financial status, the service quality of health insurers, risk-taking behaviour, medical and health problems, the existence of state-funded health insurance coverage, and an individual's vulnerability to health issues have been part of previous studies (Miti & Metteri, 2021). Budgetary policies, personal disposable income, and the country's economic growth have also been studied as macroeconomic factors. A growing pool of literature is there to determine how the demand for health insurance affects people's ability to receive healthcare (Prigge et al., 2015). Additionally, studies have looked at supply-side preparation and the planning and funding of health insurance awareness campaigns (Kharazmi et al., 2021).

The COVID-19 illness drove a large group of people to seek prolonged quarantines and hospitalization requirements (Verma et al., 2021). Many families experienced significant hospital expenses and income loss at that time. Due to security needs in the wake of such shocks, customers frequently respond conservatively and cautiously (Kim et al., 2022). Consumers who've been experiencing financial hardships are forced to adopt prudent measures as a result of such a security-seeking tendency, which makes them risk-averse. Having health insurance is one such risk-coping strategy that shields a family from significant out-of-pocket expenditures and safeguards them against massive household debts, insolvency, and bankruptcy.

Existing research on COVID-19 has looked into how it affects people's investment, consumption, and risk-taking behaviour. However, understanding the connection between the pandemic and the demand for health insurance is still inadequate. An extremely negative event creates panic and anxiety, which is intensified by abundant online and digital information sources. These cause behavioural changes such as risk-coping strategies, herding behaviour, panic buying and discretionary purchasing & investment decisions (Kilgo et al., 2019). Researchers have linked this tendency to COVID-19 induced effects on consumers' socioeconomic condition, lifestyle changes, and dynamic purchasing conditions due to market forces, external cues like diverse information channels and social media exposure (Loxton et al., 2020). This raises the possibility of looking into how COVID-19 affects uninsured people's attitudes toward health insurance. Besides, we could not find any literature in the Indian context that looks into behavioural determinants of health insurance purchase intention. As a result, the current research considers both COVID-19 induced changes in consumer behaviour and behavioural antecedents to buying health insurance. The changes in people's health insurance purchase behaviour brought on by COVID-19 are consistent with the body of research covering shifts in consumer demands and preferences brought on by environmental, social, biological, cognitive, and behavioural factors (Billore & Anisimova, 2021; Laato et al., 2020).

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Theoretical Background

Behavioural studies signify the importance of psychological factors in explaining the anomalies in economic activities. There are some behavioural factors besides purchasing power and willingness to pay that measure a consumer's desire to purchase a particular product (Sai Krishnan et al., 2022). It explains why many people in India still don't have health insurance despite having the means to pay for it. Consumer behaviour theories like TPB and TRA have earlier been extended to include perceived usefulness, perceived trust, perceived risk, religious belief and awareness as additional variables (Aziz et al., 2019; Raza et al., 2019; Tam et al., 2021). Buying health insurance is considered difficult for common people since it is not like buying usual products and involves some technical understanding. It has two dimensions- first, knowledge about the cost of having medical insurance, i.e., insurance premium and second, the risk coverage of specific medical insurance scheme, i.e., sum insured, disease covered, waiting periods, deductibles, cashless facility in empanelled hospitals (Cucinelli et al., 2021; Raza et al., 2019).

After COVID-19, people have become quite conscious about their purchase decisions, especially when a decision concerns one's health. COVID-19 has also caused some behavioural changes such as risk-coping strategies, herding behaviour, panic buying and discretionary purchasing & investment decisions (Kilgo et al., 2019; Loxton et al., 2020). Therefore, apart from the previously known factors, we have also introduced some novel variables relevant to the context of the global COVID-19 epidemic in our study. Among novel variables, we have introduced herd behaviour, purchase decision involvement and decision delegation preference based on studies in different fields of business research.

Hypothesis Development

The TRA and TPB are two important intention-behaviour theories that suggest people's intentions drive their behaviour (Madden et al., 1992). They defined a person's buying intention as the willingness to pay for a certain product or service. It is determined by how eager a person is to perform a particular behaviour. According to previous research, behavioural intentions are the main predictors of purchasing behaviour. Ajzen (1991) contends that the more powerful the intentions, the more probably the behaviour will be carried out. According to Ajzen (1991) an attitude refers to how positively or negatively an individual perceives a behaviour. In empirical research, strong attitude-behaviour associations result from high correspondence between the object and action constituents of the attitude and behavioural intention. Existing research offers adequate proof that favourable attitude leads to increased buying intentions.

H1: *Attitude towards behaviour (ATB) positively correlates with consumers' intention to purchase health insurance (PI).*

Trust is the conviction that the opposite party will live up to the promise without preying on the trustee's weak spots (Aziz et al., 2019; Tam et al., 2021). It might be characterized as a notion that insurance companies are reliable and won't act dishonestly. Trust is the key element in determining the possibility of a financial transaction between two parties. It is a crucial factor in B2B and B2C relationships. It is seen as a critical tool needed for any industry's success. Trust shows consumers' self-assurance in the service provider's integrity, trustworthiness, and capability to deliver on their expectations (Benedicktus et al., 2010; Lee, 2009). Consumer perception & willingness to pay is also affected by customers' trust. Some Past research has also demonstrated the critical connection between trust and intentions (Tam et al., 2021).

H_2: *Customer Trust (CT) positively relates to health insurance purchase intention (PI).*

The term "herd behaviour" refers to the affiliation of ideas and behaviours of a group that develops naturally via informal interactions rather than through intentional organization (Kilgo et al., 2019). It usually appears during stressful or shocking situations, like the COVID-19 period, in a range of domains, such as stock prices, customer buying patterns, and broader social concerns (Loxton et al., 2020; Mishra et al., 2022). Whenever there is a knowledge gap and a sense of impending danger, customers are more likely to follow the herd than to take a more rational, personalized approach (Loxton et al., 2020). According to scholarly neuroeconomic theory, the unpredictable situations underlying the ongoing health crisis intensify customers' anxiety and distress, making them more prone to herd behaviours (D'Arcangelis & Rotundo, 2021; Loxton et al., 2020). People were found to rush their purchases, including that health insurance, after the outbreak of COVID-19 to cover themselves against a rise in unexpected future expenditure (Billore & Anisimova, 2021; Kim et al., 2022).

H_3: *Herd behaviour (HB) positively relates with health insurance purchase intention (PI).*

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Decision delegation means giving someone the explicit right to decide on one's behalf. In other words, it is transferring purchase decisions in part or complete to others instead of deciding oneself. This is very common in a product or service where customers find it challenging to decide on a product since such a product or service requires expertise for decision-making due to preference uncertainty, trade-off difficulty and task complexity (Broniarczyk & Griffin, 2014). Often, these decisions involve huge financial consequences. Hence, customers generally delegate the decision to the respective area expert, as they believe they can make a better decision on their behalf. Similarly, in the case of health insurance, customers usually delegate the power to insurance agents, friends, and family members (Marín-García et al., 2021). In fact, some areas in the financial industry where decision delegation is quite common are insurance, mutual funds, stocks, and derivatives. Thus, consumers place greater emphasis on advice when they believe they have limited capabilities to make decisions. If they perceive that the advisor can take the best decision, they build a positive purchase intention towards a product.

***H_4**: Decision delegation preference (DDP) positively relates to a health insurance purchase intention (PI).*

Subjective norm involves close and important people's viewpoint on a particular behaviour performed by a person (Ajzen, 1991). In other words, perceived social pressure to engage in or refrain from engaging in the behaviour is what subjective norms mean. If people perceive that the suggested behaviour is positive and others want them to perform, it increases their motivation to comply (Kan & Fabrigar, 2017). Therefore, it depends on people's perception of the value of other people's approval as well as their thoughts about what they may expect from important ones. Subjective norms may be positive or negative based on social pressure and may not be identical to a customer's purchase behaviour. It often manifests in consumer behaviour and influences buying behaviour psychologically. Numerous research indicates a direct relationship between subjective norm to customer's attitudes and intentions (Ajzen, 1991; Marín-García et al., 2021).

***H_5**: Subjective norms (SN) have a positive relationship with attitude towards behaviours (ATB).*

The ease and difficulty with which a specific behaviour is carried out demonstrate consumer's perceived behavioural control (Ajzen, 1991). It involves controllability and self-efficacy. Control beliefs, which reflect resources versus barriers for effectuating the behaviour, are considered the foundation of this concept. When added to the perceived power of each control factor, control beliefs lead to the formation of overall perceived behavioural control. Individuals with greater autonomy and self-belief may exert more commitment when carrying out an activity, while others with low confidence levels may find their talents compromised. Negative self-belief typically makes an individual more hesitant to engage in a certain action, whereas someone with a complete conviction is believed to make better decisions (Mishra et al., 2022). Competence strongly impacts decision-making and is a prerequisite for conviction in economic decisions. Numerous research has revealed that the attitude toward buying behaviour and perceived behavioural control are positively correlated (Kan & Fabrigar, 2017; Mishra et al., 2022).

***H_6**: Perceived behavioural control (PBC) has a positive relationship with attitude towards behaviour (ATB).*

The extent to which a person feels purchasing a product would increase its utility is known as perceived usefulness. In other words, perceived usefulness is the consumers' perceptions regarding the outcome of the experience. It is the user's feeling concerning the benefits of using a product or service (Kamimura et al., 2016). It shows how much a consumer believes performing particular behaviour would add value and increases their comfort (Kamimura et al., 2016). The customer's evaluation of an item's utility, both at the time of purchase and in the future, significantly impacts the impulse to acquire that particular good or service. High perceived usefulness typically positively influences the attitude toward a certain activity since the customer can quickly assess the outcomes of the behaviour. (Mou et al., 2017).

***H_7**: Perceived usefulness (PU) for the service directly impact attitude towards behaviour (ATB).*

Purchase decision involvement is a consumer's level of interest and concern before making a purchasing decision (Meesala & Paul, 2018)**.** People like to analyse essential details of the product and evaluate its characteristics against those of alternative items. Cognitive efforts and involvements are very high if the consumer believes the decision is important. Similarly, low involvement can be seen as a less important decision (Buehler & Maas, 2018a). If people believe the decision will have a significant consequence, participation in decision-making is strong. High engagement also impacts customers' drive to make wise decisions regarding the products they purchase (Kim et al., 2022). Information search for product/service and its processing depends on the level of purchase decision involvement, resulting in its influence on attitudes and intentions. If the intensity of involvement is high, the impact on attitude will be high and vice-versa (Jain, 2019).

***H_8**: Purchase decision involvement (PDI) is directly related to attitude towards health insurance purchases (ATB).*

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Health insurance awareness is regarded as having the knowledge, skills, and conviction to obtain and analyse the details of a health insurance plan, choose the right policy for economic and medical conditions and avail of the benefits after enrolment (Cucinelli et al., 2021; Raza et al., 2019). It is focused on a customer's capacity to choose and use health insurance in an informative way. Authors have studied customers' understanding of health insurance by using factors including insurance premiums, sum insured, diseases covered, tax benefits and cashless healthcare facilities (Politi et al., 2014). Awareness helps consumers in shaping their attitudes towards particular goods or services. Therefore, It is expected that a person with higher knowledge of benefits associated with health insurance will be more inclined to get it (Aziz et al., 2019; Mishra et al., 2022; Tam et al., 2021).

H_9: *Health insurance awareness (HIA) positively relates to attitude towards behaviour (ATB).*

A person's calculation of the likelihood of a negative consequence, usually concerning a particularly risky behaviour, is perceived risk (Byrne, 2005). The two elements of perceived risk are uncertainties and adverse outcomes. Theories of purchase behaviour contend that risk is indeed a matter of perception and that it is difficult for customers to calculate the likelihood of an event (Harrison et al., 2006). Customer purchase behaviour entails risk since every decision a customer makes will have effects that he cannot predict precisely. In the insurance domain, perceived risk is regarded as anticipation of a loss when service providers don't keep their promises. An inverse relationship exists between perceived risk and attitude towards a particular behaviour. This clarifies the notion that customers prefer to avoid potential risks. If the risk-return trade-off is unfavourable, a customer will always want to abstain from purchasing a product (Kling et al., 2022; Mishra et al., 2022).

H_{10}: *Perceived risk (PR) negatively affects health insurance purchase intention (PI).*

Moderation Effect

Previous research on how risk perceptions affect attitudes and purchase intention has produced mixed results. Therefore, when the results for the latent constructs are contradictory, we must incorporate a moderating factor (Baron & Kenny, 1986). According to the theories of buying behaviour, factors such as awareness, experiences, character, beliefs, and way of life all impact an attitude towards a purchase behaviour. Awareness entails understanding customers' risks, advantages, and utility of goods & services. It facilitates a deeper understanding of how customers assess the products and services. Previous research suggests that knowledge alone is inadequate to change one's opinion about certain goods or services. However, a consumer having adequate knowledge is more prepared to analyse the risks and rewards of a purchase. Those having a complete understanding of the product may more accurately assess the risks and advantages than the less informed ones (Bartholomae et al., 2016). Even if consumers have a favourable mindset about health insurance, a lack of knowledge may result in an improper assessment of risk, which may limit the completion of the actual purchase (Cucinelli et al., 2021; Raza et al., 2019). The impact of perceived risk on attitude toward health insurance might therefore be stimulated by awareness, as shown by the preceding reasons.

H_{11}: *Health insurance awareness (HIA) moderates the relationship between perceived risk (PR) & attitude towards behaviour (ATB).*

Methodology

Data Collection

The data were collected using the multi-stage stratified random sampling technique. Based on a national income of ₹ 1,50,000/person, Indian states, including union territories, have been segmented into two broader groups, i.e., above and below the national average. It may also be segmented as populations in urban and rural areas. Respondents in our sample comprised rural and urban people from both groups of states/UTs. Target respondents were those not covered under any health insurance plans. It was ensured by a filter question that whether the respondents had any health insurance coverage. From the first group, respondents from 7 major states formed part of the sample, whereas respondents from the second group belonged to 6 major states and 2 UTs. The data was gathered using a structured questionnaire, and the respondents were reached using online mediums for broader reach and efficiency. Besides demographic details, the questionnaire included 36 attitudinal indicators representing 11 variables. Items for respective variables were drawn from past studies to ensure reliability and validity. However, some indicators required minor tweaking to suit the COVID-19 perspective in the study *(Appendix-A).* A 5-point Likert scale having anchors “Strongly Agree” to “Strongly Disagree” was used to elicit responses on attitudinal indicators. All the fields in the online questionnaire except the respondent’s name were marked as

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mandatory to avoid incomplete responses. After discarding 23 respondents who were already covered under health insurance, 228 valid responses were collected and used for further analysis.

Results

Demographics

Table 1 provides demographic information of the respondents.

Table 1- Respondent's profile

Variable	Variable Elements	Frequency	Percentage (%)
Gender	Male	157	68.86
	Female	71	31.14
Age	18 to Less Than 28	141	61.84
	28 To Less than 38	63	27.63
	38 To Less than 48	21	9.21
	48 and above	3	1.32
Qualification	Doctoral	28	12.28
	Master	121	53.07
	Bachelor	62	27.19
	Diploma Holders	6	2.63
	Higher Secondary	11	4.83
Monthly Income	Less Than 15000	85	37.28
	15001 – 30000	46	20.18
	30001 – 45000	46	20.18
	45001 – 60000	21	9.21
	Above 60000	30	13.16

Common Method Bias

The common method bias was initially evaluated using the Harman single-factor test, later supplemented by the variance inflation factor (VIF) test to verify the result. The test result shows single factor could explain 38.07% of the variance, which is less than the permissible threshold of 50%. Additionally, the VIF test result indicates that, for each construct & its indicators, the inner and outer variance inflation factor (VIF) values are below the threshold of 5 *(Table 2)*. Therefore, both tests guarantee no common method bias in the current study.

Table 2- VIF (Multicollinearity)

Outer VIF						Inner VIF		
ATB1	2.797	**HB3**	1.453	**PR3**	2.819	**Construct**	**ATB**	**PI**
ATB2	2.076	**HIA1**	1.653	**PR4**	2.640	**ATB**		1.907
ATB3	2.096	**HIA2**	1.643	**PI1**	2.068	**CT**		1.936
CT1	1.625	**HIA3**	1.582	**PI2**	2.820	**DDP**		1.424
CT2	1.604	**PBC1**	2.282	**PI3**	1.833	**HB**		1.575
CT3	1.799	**PBC2**	2.422	**PI4**	2.831	**HIA**	1.791	
CT4	1.417	**PBC3**	1.764	**PU1**	1.414	**PBC**	1.728	
DDP1	1.433	**PDI1**	2.524	**PU2**	3.728	**PDI**	1.855	
DDP2	1.720	**PDI2**	2.713	**PU3**	3.633	**PR**	1.576	
DDP3	1.579	**PDI3**	2.270	**SN1**	1.599	**PU**	2.205	
HB1	2.581	**PR1**	1.202	**SN2**	1.754	**SN**	2.211	
HB2	2.479	**PR2**	2.068	**SN3**	2.208			

Multivariate Statistical Assumption

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Afterwards, we tested data for multivariate statistical assumptions viz linearity, normality, homoscedasticity and multicollinearity. Ramsey's RESET test was performed in RStudio and ANOVA in SPSS, revealing a non-linear association of several exogenous variables with the endogenous variable. Further, we carried out the Kolmogorov-Smirnov test for normalcy, which shows the distribution of data is not normal for some observations. Hence, variance-based PLS-SEM using SmartPLS was used for analysis as it is robust for non-normal data sets. Next, we looked at the scatter plot (residuals) to verify homoscedasticity *(Figure 1)*. The error terms appeared to be distributed evenly around the fit line, though some were quite off the fit line. Therefore, we used RStudio to carry out the Breush-Pagan test. The computation yields BP = 12.179 and p-value = 0.2733, which indicates homoscedasticity in data. Finally, we looked at the indicator's VIF values, which were less than the recommended threshold of 5, ensuring the absence of multicollinearity issues.

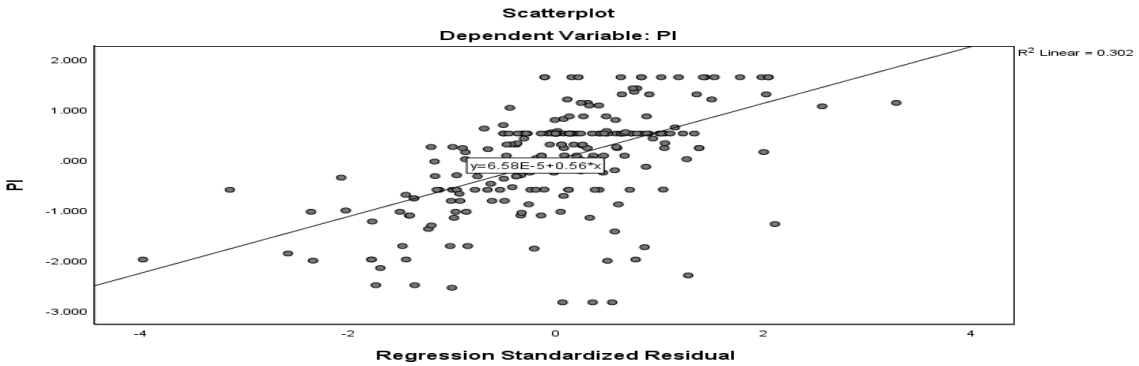

Figure 1- Regression standardized residual scatter plot

The internal consistency of the model & its reliability is reported in *Table 3*, as Cronbach's alpha (**α)** and composite reliability (CR) for all the constructs are above the threshold value of 0.70. Convergent validity is confirmed as the average variance extracted (AVE) > 0.50. The most widely used two approaches have been considered in this study to establish discriminant validity. Fornell-Larcker's criterion was the first method requiring AVE's square route to be greater than the inter-construct correlation. As a second and more robust measure, the HTMT ratio criterion has been used, requiring the HTMT ratio between two constructs to be less than 0.90. Both criteria are met for discriminant validity, as exhibited in *Table 4*.

Table 3- Construct validity

Constructs	Cronbach's alpha (α)	Composite reliability (CR)	The average variance extracted (AVE)
ATB	0.859	0.914	0.781
CT	0.791	0.861	0.608
DDP	0.762	0.862	0.677
HB	0.820	0.894	0.738
HIA	0.782	0.873	0.696
PBC	0.848	0.908	0.766
PDI	0.882	0.927	0.809
PR	0.820	0.852	0.592
PI	0.880	0.917	0.735
PU	0.836	0.902	0.754
SN	0.800	0.880	0.711

Table 4 – Discriminant validity table

Fornell-Larckers Criterion											
Construct	**ATB**	**CT**	**DDP**	**HB**	**HIA**	**PBC**	**PDI**	**PFR**	**PI**	**PU**	**SN**

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ATB	**0.884**										
CT	0.666	**0.779**									
DDP	0.225	0.337	**0.823**								
HB	0.412	0.400	0.520	**0.859**							
HIA	0.646	0.631	0.147	0.304	**0.834**						
PBC	0.520	0.519	0.363	0.415	0.528	**0.875**					
PDI	0.598	0.597	0.239	0.480	0.561	0.467	**0.900**				
PR	0.439	0.496	0.472	0.543	0.438	0.451	0.524	**0.769**			
PI	0.753	0.711	0.378	0.483	0.529	0.555	0.520	0.427	**0.858**		
PU	0.699	0.623	0.332	0.421	0.519	0.535	0.540	0.482	0.658	**0.868**	
SN	0.648	0.568	0.400	0.458	0.524	0.550	0.525	0.476	0.638	0.686	**0.843**
Hetrotrait-Monotrait Ratio (HTMT)											
ATB											
CT	0.790										
DDP	0.282	0.417									
HB	0.491	0.479	0.659								
HIA	0.782	0.796	0.184	0.370							
PBC	0.604	0.613	0.444	0.495	0.647						
PDI	0.687	0.723	0.296	0.558	0.674	0.535					
PR	0.396	0.495	0.654	0.674	0.426	0.501	0.511				
PI	0.860	0.805	0.460	0.569	0.636	0.632	0.583	0.394			
PU	0.817	0.744	0.415	0.509	0.638	0.631	0.626	0.464	0.757		
SN	0.763	0.683	0.524	0.571	0.643	0.670	0.611	0.494	0.752	0.830	

Measurement model Assessment and Model Predictive Relevance

Usually, a higher coefficient of determination (R^2) is considered desirable for the model's explanatory power. R^2 is 0.674 for purchase intention and 0.645 for attitude toward behaviour in the current study *Table 5*. It suggests that the research framework has a medium predictive ability since it can explain 67.4% of the variance in purchase intention and 64.5 % in attitude toward behaviour. Along the same line, a model's Q^2 value above 0, 0.25 & 0.5 shows low, medium and large predictive power, respectively. The blindfolded cross-validated redundancy procedure having omission distance (OD) = 7 yielded Q^2 values of 0.485 for purchase intention and 0.481 for attitude toward behaviour, which shows the moderate predictive ability of the model, reported in *Table 5*. Ultimately, Q^2 predict has been computed using PLS-predict and is reported in *Table 6*. Q^2 predict greater than zero in our study validates the model's predictive accuracy. The RMSE value obtained through PLS is compared with the benchmark linear model (LM) (Shmueli et al., 2019). A comparison of the two indicates that for the majority of items, *PLS RMSE* < *LM RMSE*. Thus, the proposed model reflects moderate predictive power.

Table 5 – Models predictive Power

Construct	R^2 Square	R^2 Adjusted	Q^2 Value
ATB	0.645	0.634	0.481
PI	0.674	0.668	0.485

Table 6 - PLS Predict

PLS-Predict				
Indicators	**Q^2 predict**	**PLS RMSE**	**LM RMSE**	**(PLS RMSE) - (LM RMSE)**
ATB3	0.466	0.684	0.708	**-0.024**

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ATB2	0.423	0.765	0.782	**-0.017**
ATB1	0.521	0.666	0.700	**-0.034**
PI2	0.409	0.821	0.837	**-0.016**
PI4	0.418	0.806	0.802	0.004
PI3	0.318	0.944	1.008	**-0.064**
PI1	0.561	0.630	0.628	0.002

Structural Model Assessment

Hypothesis testing was done using Bias Corrected & Accelerated bootstrapping procedure. Out of eleven structural paths in the present model projected in *Figure 2*, nine paths were statistically significant out of eleven; the same has been presented in *Table 7*. The outcome of hypothesis testing and its implications are discussed in upcoming sections.

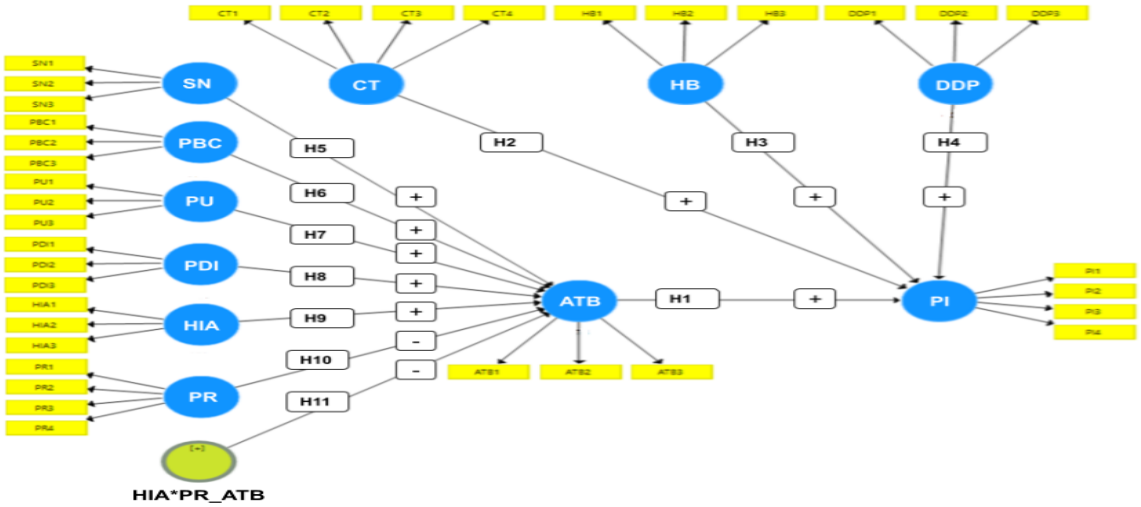

FIGURE 2- A PROPOSED MODEL

Table 5 - Path coefficients & hypothesis testing

Hypothesis	Path	Coefficient (β)	STDEV	T-Stats	2.50%	97.50%	P-Value
H1	**ATB -> PI**	0.476	0.064	7.411	0.349	0.599	**0.000**
H2	**CT -> PI**	0.315	0.062	5.062	0.188	0.431	**0.000**
H3	**HB -> PI**	0.103	0.047	2.174	0.009	0.192	**0.030**
H4	**DDP -> PI**	0.112	0.041	2.751	0.031	0.189	**0.006**
H5	**SN -> ATB**	0.169	0.075	2.267	0.011	0.301	**0.023**
H6	**PBC -> ATB**	0.051	0.060	0.864	-0.068	0.166	0.388
H7	**PU -> ATB**	0.304	0.074	4.130	0.159	0.446	**0.000**
H8	**PDI -> ATB**	0.138	0.062	2.213	0.017	0.263	**0.027**
H9	**HIA -> ATB**	0.479	0.097	4.916	0.317	0.699	**0.000**
H10	**PR -> ATB**	0.279	0.171	1.630	-0.011	0.673	0.103
H11	**HIA*PR-> ATB**	-0.075	0.035	2.174	-0.158	-0.019	**0.030**

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Artificial Neural Network (ANN) Analysis

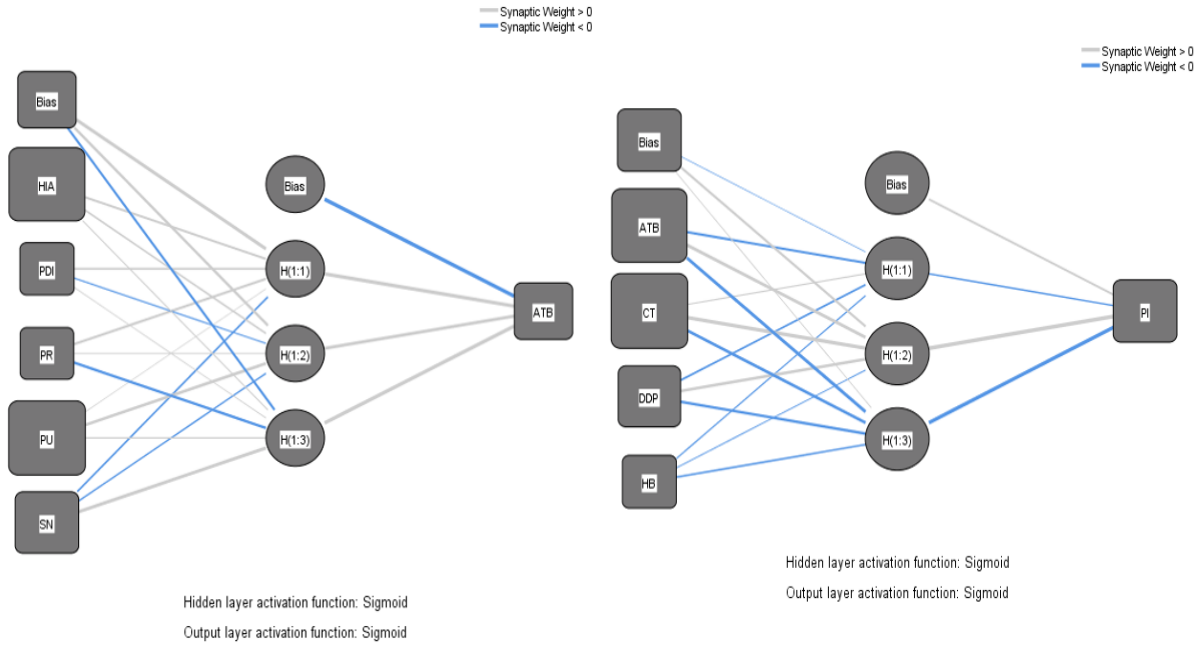

FIGURE 3- ANN MODEL

The adoption of ANN is recommended because our study found some observations to be non-linear and non-normal. Additionally, ANN is robust when dealing with noise, outliers, and smaller sample sizes. Statistically significant variables from PLS path analysis were introduced as input nodes to conduct the ANN modelling *(Figure 3)*.

The feed-forward-backwards-propagation (FFBP) method was used to train the model representing two-way iterations results. At first, input weights are calculated in a forward step, whereas the second involves computing weight updates and error rates in a backward step. Seventy per cent of the total observations were utilized for training the model, while the remaining thirty per cent underwent the testing procedure. To prevent overfitting and improve predictive accuracy, we employed a 10-fold cross-validation approach and noted the RMSE. The mean RMSE of ten-fold ANN iterations for purchase intention was reasonably small at 0.090 and 0.085 for the training and testing set.

Similarly, it was also sufficiently low at 0.090 and 0.098 for attitude towards behaviour *Table 8*. After ensuring good model fitness through RMSE, a sensitivity analysis was conducted to determine the important factors. The average importance of all ten iterations was calculated for all the input neurons and was normalized in percentage form based on the score of the most important factor, as depicted in *Table 9***.**

TABLE 6- ANN RMSE

	PI						ATB					
	Training Set			Testing Set			Training Set			Testing Set		
Case	**N**	**SSE**	**RMSE**	**N**	**SSE**	**RMSE**	**N**	**SSE**	**RMSE**	**N**	**SSE**	**RMSE**
ANN1	162	1.281	0.089	66	0.449	0.082	168	1.52	0.095	60	0.546	0.095
ANN2	151	1.177	0.088	77	0.538	0.084	157	1.052	0.082	71	0.92	0.114
ANN3	162	1.182	0.085	66	0.581	0.094	156	1.034	0.081	72	0.891	0.111
ANN4	148	1.131	0.087	80	0.630	0.089	162	1.471	0.095	66	0.546	0.091
ANN5	153	1.122	0.086	75	0.592	0.089	165	1.303	0.089	63	0.622	0.099
ANN6	159	1.448	0.095	69	0.364	0.073	149	1.013	0.082	79	1.043	0.115
ANN7	146	1.254	0.093	82	0.645	0.089	155	1.479	0.098	73	0.402	0.074
ANN8	158	1.252	0.089	70	0.504	0.085	165	1.198	0.085	63	0.603	0.098
ANN9	158	1.353	0.093	70	0.417	0.077	161	1.224	0.087	67	0.605	0.095

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ANN10	162	1.524	0.097	66	0.554	0.092	164	1.758	0.104	64	0.491	0.088
Mean			**0.090**			**0.085**			**0.090**			**0.098**
SD			**0.004**			**0.007**			**0.008**			**0.013**

Table 7- ANN- Sensitivity analysis

Case	Dependent (ATB)					Dependent (PI)			
	HIA	**PDI**	**PR**	**PU**	**SN**	**ATB**	**CT**	**DDP**	**HB**
ANN1	100.0%	50.6%	15.5%	84.2%	52.1%	100.0%	70.1%	24.9%	12.1%
ANN2	100.0%	24.1%	12.4%	87.8%	43.5%	100.0%	62.4%	21.0%	22.9%
ANN3	99.6%	58.8%	14.9%	100.0%	40.6%	98.1%	100.0%	21.0%	22.2%
ANN4	100.0%	42.8%	8.3%	97.3%	49.6%	100.0%	88.9%	30.0%	18.9%
ANN5	88.6%	40.3%	9.6%	100.0%	46.7%	100.0%	70.1%	20.7%	19.2%
ANN6	100.0%	39.0%	11.7%	77.6%	48.7%	100.0%	90.5%	18.4%	17.5%
ANN7	63.6%	28.1%	26.0%	100.0%	51.0%	100.0%	92.1%	10.4%	13.3%
ANN8	100.0%	11.1%	23.5%	77.3%	39.4%	100.0%	90.0%	21.6%	33.7%
ANN9	97.8%	64.2%	58.9%	100.0%	58.3%	100.0%	84.6%	24.4%	20.0%
ANN10	100.0%	73.8%	14.5%	54.4%	71.1%	94.6%	100.0%	44.7%	11.4%
Average Importance	95.0%	43.3%	19.5%	87.9%	50.1%	99.3%	84.9%	23.7%	19.1%
Normalized Importance	**100.0%**	**45.6%**	**20.6%**	**92.5%**	**52.8%**	**100.0%**	**85.5%**	**23.9%**	**19.3%**

Discussion

This study provides novel and insightful findings of great importance from managerial and policy perspectives. This study aimed to develop a comprehensive framework of the factors influencing customers' decisions to purchase health insurance. The TPB has been extended in this work to take into account important variables pertaining to COVID-19, increased information sources and rising awareness among consumers. A significant positive relationship was observed for ATB, CT, HB and DDP with PI leading to acceptance of H_1(β=0.476; t-stats=7.411), H_2(β=0.315; t-stats=5.062), H_3(β=0.103; t-stats=2.174) and H_4(β=0.112; t-stats=2.751) respectively.

The positive relationship between attitude and buying intention shows that attitude towards behaviour is the most important indicator of the intention to get health insurance. The research's findings are consistent with those (Aziz et al., 2019; Buehler & Maas, 2018a; Raza et al., 2019; Tam et al., 2021). Additionally, it has been discovered that customer trust positively correlates with intending to purchase health insurance. The result finds similarities with previous research (Aziz et al., 2019; Tam et al., 2021). As postulated, herd behaviour has also positively influenced health insurance purchase intention. Although herd behaviour has not been studied earlier as a predictor of health insurance purchase intention, this finding is consistent with prior studies conducted in various business fields (Loxton et al., 2020; Mishra et al., 2022). Decision delegation preference directly influences the purchase intention towards health insurance. Earlier, DDP was not studied as a health insurance purchase intention predictor. However, the finding is in congruence with the studies that suggest consumers purchase products via agents and advisors who possess expertise in specific product categories. It is usually seen in the case of financial products such as insurance, mutual funds, stock market investment and real estate properties (Marín-García et al., 2021).

Moving forward, a positive relation was also found for SN, PU, PDI and HIA, with ATB confirming H_5 (β=0.169; t-stats=2.267), H_7 (β=0. 0.304; t-stats=4.130), H_8 (β=0.138; t-stats=2.213) and H_9 (β=0.479; t-stats=4.916) respectively. Interestingly, it was discovered that PBC and PR did not significantly influence the attitude that led to a rejection of H_6 (β=0.051; t-stats=0.864) and H_{10} (β=0.279; t-stats=1.630). However, after interaction with HIA, PR was found to have a negative relation with attitude leading to confirmation of H_{11} (β=-0.075; t-stats=2.174).

Concerning the above outcome, the SN is a significant driver among the predictors of attitude towards health insurance. The result finds similarities with previous research (Kan & Fabrigar, 2017; Marín-García et al., 2021). However, contrary to previous studies, perceived behavioural control does not significantly predict attitude towards behaviour (Kan &

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Fabrigar, 2017; Mishra et al., 2022). This could imply that common people have a narrow understanding of health insurance and that their inability to make health insurance purchase decisions leads them to feel indifferent towards the benefits of having health insurance. On the other hand, perceived usefulness positively relates to attitude towards health insurance purchases. The outcome conforms to the previous studies (Kamimura et al., 2016; Mou et al., 2017). Purchase decision involvement shares a direct relation with attitude. This study uses PDI for the first time as a predictor of attitude toward purchasing health insurance. The outcome, however, is similar to previous research in different domains of businesses (Jain, 2019; Kim et al., 2022; Meesala & Paul, 2018). More importantly, health insurance awareness is a crucial driver of attitude towards health insurance purchases. The result is consistent with prior studies (Aziz et al., 2019; Mishra et al., 2022; Tam et al., 2021). Contrary to what we initially believed, perceived risk is not a significant predictor of attitude in this study. In past research, perceived risk is supposed to have a negative relationship with attitude (Kling et al., 2022; Mishra et al., 2022). However, previous studies had inconsistent findings concerning perceived risk's effect on attitude. Therefore, we introduced health insurance awareness as a moderator to check its influence on the relationship between perceived risk and attitude. The outcome suggests that when perceived risk interacts with health insurance awareness, it negatively affects attitude towards health insurance. Similar to the results of previous studies (Kling et al., 2022; Mishra et al., 2022); a negative relationship has been observed between perceived risk & attitude.

Novel Theoretical Insight

The current study is a pioneer attempt to identify behavioural determinants of health insurance purchases by India's missing middle, considering the COVID-19 pandemic. It builds on the earlier research, which has identified purchasing power, willingness to pay, government policy initiative, etc., as the key determinants of health insurance purchase intention. This study is important in light of this global pandemic, as it necessitated many households to have health insurance coverage to meet unexpected health expenditures. Extreme negative events often create anxiety and distress, and the same is fuelled by digital information sources such as social media, blogs and online news. Customers have become very cautious and conservative in decision-making after the COVID-19 outbreak, especially when the decisions concern one's health. It is manifested in risk-mitigating behaviours and precautionary decision-making by consumers. Keeping the above issues in mind, we have extended TPB by introducing relevant variables such as herd behaviour, purchase decision involvement and decision delegation preference to predict the behavioural intention of India's missing middle towards health insurance. Moreover, a sophisticated data analysis technique in the form of PLS SEM-ANN has been used considering all the multivariate statistical assumptions that ensure high predictive accuracy of the research outcome. Hence, the current study provides a smooth pathway for future research concerning the behavioural dimensions of consumers in pursuit of universal health coverage and health insurance penetration in India and abroad.

Managerial and Policy Implications

Building a positive attitude in customers is crucial for managers to develop favourable intentions toward health insurance. Thus, managers must carefully address the issues regarding determinants of attitude towards health insurance discussed previously. The study's outcome suggests that customers take every purchase decision cautiously and conservatively after COVID-19, especially when it has a bearing on one's health. They consequently prefer risk-mitigating purchase decisions. Hence, Insurance companies should publish comprehensive, pertinent information, including the benefits of the plans.
It will facilitate easy comparison of the product with other companies' competing plans, enabling them to make a better choice. The study also establishes health insurance awareness as the most important factor, implying a need to spread health insurance awareness among uninsured people. Businesses should highlight health insurance's usefulness in their advertisements. Besides, customer trust building is also an important factor. Some of the effective trust-building mechanism includes emphasizing hassle-free claim settlements, expanding the empanelled hospital network, stating clear terms and conditions, providing comparative features with competing products etc. Usually, for a financial product like health insurance, common people prefer to delegate their purchase decision to their insurance agents and advisors, who are considered experts in the respective products and services. However, consumers often see them in a bad light when they face problems at the time of claim settlement despite paying a hefty insurance premium due to wrong product selection. In such cases, it is perceived that the agents sell random health insurance products without considering the customer's requirements. AI/ML-powered mobile applications could be used to provide customized health insurance plans to customers. It will assist the advisors and agents in recommending appropriate health insurance plans.

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Appendix – A

Attribute	Construct
HIA	**Health Insurance Awareness**
HIA1	Health insurance provides risk coverage against Covid-19
HIA2	Health insurance provides coverage against critical illness.
HIA3	Health insurance provides tax benefits.
CT	**Customer Trust**
CT1	Customers are concerned about security while purchasing health insurance products.
CT2	Customers have trust in words and promises.
CT3	Employees must be able to fulfil obligations to customers to increase their trust.
CT4	I rely on health insurance products.
PI	**Purchase Intention**
PI1	I would intend to purchase health insurance products.
PI2	My willingness to purchase health insurance products is high.
PI3	I am likely to purchase any health insurance products.
PI4	I have a high intention to purchase health insurance products.
ATB	**Attitude Towards Behaviour**
ATB1	I think that buying health insurance is a good choice.
ATB2	I like my decision in purchasing health insurance.
ATB3	Buying health insurance is a good idea.
PU	**Perceived Usefulness**
PU1	Purchasing health insurance enables me to ease my future expenses.
PU2	Purchasing health insurance improves my health benefits.
PU3	Purchasing health insurance makes my health benefits better.
SN	**Subjective Norm (SN)**
SN1	My environment thinks I should purchase health insurance.
SN2	People around me like it when I purchase health insurance.
SN3	Those who influence my behaviour think that I should buy Health Insurance.
PBC	**Perceived Behavioural Control (PBC)**
PBC1	I have sufficient knowledge to purchase health insurance.
PBC2	I can buy health insurance without any help from anyone.
PBC3	I can buy health insurance reasonably well on my own.
PR	**Perceived Risk (Risk)**
PR1	I fear making mistakes while selecting a health insurance plan.
PR2	I am not sure if I would get the health insurance benefits promised to me.
PR3	I feel uneasy about ever getting claims met or costs settled
PR4	I feel uneasy about whether health insurance provider would honor their promises.
DDP	**Decision delegation preference**
DDP1	My adviser should make important decisions about my insurance, not me.
DDP2	I should follow the advice of my adviser even when I do not agree with it.
DDP3	When I take out new insurance policies, I should not make any of the decisions myself.
PDI	**Purchase decision involvement**

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PDI1	I care a great deal as to which health insurance, I buy.
PDI2	It is important for me to make the right choice of the health insurance.
PDI3	I'm very concerned about the outcome of my choice regarding health insurance.
HB	**Herd Behaviour**
HB1	During Covid-19, others' decisions of buying health insurance stimulated my purchase decision.
HB2	During Covid-19, others' decisions of choosing insurance types had an impact on my purchase decision.
HB3	I usually follow others' health insurance purchases.