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ANALYSING THE CONSUMER INTENTIONS TOWARDS PURCHASE OF PROBIOTIC PRODUCTS USING THEORY OF PLANNED BEHAVIOUR

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ABSTRACT

In recent decades, probiotics have emerged as a popular category within functional foods, driven by growing consumer awareness of digestive health and wellness. This study investigates the purchase intentions of consumers towards probiotic products in Metropolitan city through the Theory of Planned Behaviour (TPB). The TPB theory comprising of attitude, subjective norms, and perceived behavioural control was applied to examine how these factors shape consumer decisions. Date were collected using Structured questionnaire distributed online and supplemented with retailer interviews for deeper insights. Statistical analysis revealed that demographic factors such as gender, age, and income significantly influence awareness but do not have a notable impact on purchase intention. Based on SEM analysis, Attitude, subjective norms and perceived behavioural control could jointly predict behavioural intention of probiotic products to the extent of 54%, confirming the applicability of the TPB framework in this context. The findings highlight that subjective norms and perceived behavioural control as strong predictors of behavioural intention. The study provides practical implications for brands and retailers to strengthen probiotic product adoption and suggests avenues for future research in this growing market segment.

Keywords: Probiotics, Consumer Behaviour, Behavioural Intention, Theory of Planned Behaviour (TPB), Subjective Norms, Attitude, Perceived Behavioural Control.

1. Introduction

The concept of probiotics have witnessed significant evolution over the last few decades. The term "probiotics" is derived from the Greek phrase meaning "for life," and was first formally defined by an expert panel convened by the FAO and WHO as "live microorganisms which, when administered in adequate amounts, confer a health benefit on the host" FAO/WHO, (2006)[1]; Reid et al., (2003)[2]. According to Stanton et al. (2001)[3], the probiotic market, particularly within the dairy sector, has experienced rapid growth, with long-term sustainability relying heavily on effective marketing strategies. As public interest in health-promoting products continues to rise, probiotics are increasingly viewed as valuable dietary components that support digestive health and overall well-being. Soccol et al. (2015)[4] highlight the global proliferation of probiotic usage, emphasizing their role in maintaining and enhancing host health. The increasing global popularity of probiotic products is closely tied to rising health consciousness. Economic data further reinforces this trend. The global probiotics market was valued at USD 87.70 billion in 2023 and is projected to grow at a compound annual growth rate (CAGR) of 14.1% between 2024 and 2030. This growth is primarily driven by heightened awareness of the link between gut microbiota and general wellness. Grand View Research (2024)[5].

The valuation of Indian probiotics market was approximately ₹1,016 crore (about USD 125 million) in 2021 and is expected to reach ₹2,070 crore (about USD 250 million) by 2025,

nearly doubling in five years (Economic Times, 2024)[6]. The probiotic food sector in India is expanding at a compound annual growth rate (CAGR) of 22%, driven by increasing consumer awareness of gut health and immunity (IMARC Group, 2024)[7]. According (Nuffoods Spectrum, 2024)[8] the key demand factors include urbanization, rising health consciousness, and growth in the retail sector, with companies launching innovative products like probiotic butter, chocolates, and drinks to reach diverse demographics.

From a behavioural perspective, the Theory of Planned Behaviour (TPB) offers a strong framework to understand consumer intention and behaviour toward probiotic consumption. The Theory of Planned Behaviour (TPB), developed by Icek Ajzen (1991)[9], is a prominent framework used to comprehend and predict human behaviour across many domains, comprising health, environmental, and organizational behaviour. TPB extends the Theory of Reasoned Action (TRA) by incorporating perceived behavioural control (PBC) as a key predictor of behaviour, alongside attitude and subjective norm, making it particularly useful for foreseeing behaviours over which individuals may have incomplete control. Ajzen, (1991)[10].

The Theory of Planned Behaviour (TPB) and its components

TPB posits that an individual's behaviour is directly influenced by three factors: attitude toward the behaviour, subjective norm affecting the behaviour, and perceived behavioural control Ajzen, (1991)[11]. These factors, in turn, are shaped by underlying beliefs.

a. **Attitude Towards a particular Behaviour**: This refers to the positive or negative evaluation of performing a behaviour. According to this theory individuals are more likely to engage in a behaviour when they perceive it to lead to favourable outcomes Ajzen & Fishbein, (2005)[12].
b. **Subjective Norm**: This component refers to the perceived social pressure to perform or not perform a behaviour. It reflects how others' opinions and societal expectations influence an individual's behaviour. According to Fishbein and Ajzen (2010)[13], subjective norm significantly predicts behaviours in contexts where social influence is salient, such as in health-related decisions.
c. **Perceived Behavioural Control (PBC)**: PBC represents a person's perception of their ability to execute a given behaviour. It incorporates elements of self-efficacy and external factors that may facilitate or hinder the behaviour. Ajzen (2002)[14] emphasized that PBC is a crucial predictor of actual behaviour when the behaviour is difficult or involves external constraints.

2. Review of literature

2.1 Advantages of Probiotic products

a. Health Benefits of Probiotic products

Probiotic products are primarily marketed for their gut health benefits. Numerous studies indicate that probiotics can enhance digestion, boost the immune system, and improve the balance of good bacteria in the gut (Singh & Sabharwal, 2020)[15]. Probiotics are also linked to reducing the risk of gastrointestinal disorders such as irritable bowel syndrome and diarrhea (Rungpitarangsi, 2019)[16]. In India, where the prevalence of digestive disorders is high, probiotic yogurt is becoming a popular choice among health-conscious consumers (Kaur & Sharma, 2020)[17]. This health focus drives the demand for probiotic products both in the domestic and international markets.

b. Growing Market Demand

The demand for probiotic drinks and yogurt has seen an upward trend due to increasing awareness of their health benefits. This trend is particularly evident in markets such as the United States and Europe, where probiotic drinks have become mainstream products (Pereira et al., 2020)[18]. The Indian market, though relatively nascent, has also witnessed a surge in consumer interest in functional foods (Lal & Sharma, 2021)[19].

c. Marketing Potential

Probiotic products and yogurt benefit from being positioned as functional foods in marketing strategies. They can capitalize on the growing global trend toward health and wellness. Successful branding and advertising campaigns that highlight the probiotic benefits have helped increase product visibility (Sharma et al., 2020)[20].

2.2 Challenges of Probiotic products

a. Consumer Perception and Education

While probiotics are gaining popularity, consumer education remains a challenge. In many markets, including India, there is a lack of awareness about the specific benefits of probiotics (Gupta & Shankar, 2018)[21]. Despite substantial health claims made by brands, consumers are often sceptical of such claims without clear scientific evidence. In India traditional dairy products are already entrenched, convincing consumers to switch to or adopt probiotic variants can be difficult.

b. Pricing and Affordability

Probiotic drinks and yogurt products, particularly those branded as premium health foods, can be more expensive than regular dairy products (Ghosh et al., 2021)[22]. This price differential can be a significant disadvantage in price-sensitive markets such as India, where cost-conscious consumers may be hesitant to purchase these products regularly.

c. Shelf Life and Distribution Challenges

The shelf life of probiotic products can be a limitation. These products require careful handling and specific storage conditions, resulting in an increase costs and complicate distribution (Roberts & Thomas, 2019)[23]. International brands face challenges in maintaining the viability of probiotics during long transportation or across varying climates. In India, where the cold supply chain is underdeveloped in some regions, this issue is more pronounced.

2.3 Application of Theory of Planned Behaviour (TPB)

The TPB has been widely applied to understand and predict behaviour in domains like health, environmental sustainability, consumer behaviour, and organizational settings.

In the health domain, TPB has been used extensively to predict behaviours such as smoking cessation, exercise, and diet. Armitage and Conner (2001)[24] conducted a meta-analysis showing that TPB's components—attitude, subjective norm, and PBC—predict intentions and behaviour in health-related actions. Similarly, with respect to physical activity, Courneya and McAuley (1995)[25] found that PBC and attitude were the strongest predictors of exercise behaviour.

In environmental sustainability, TPB has been applied to understand pro-environmental behaviours, such as recycling, energy conservation, and sustainable consumption. Studies by Bamberg (2003)[26] and Ajzen (1991)[27] demonstrated that individuals' intentions to engage in pro-environmental behaviours are strongly influenced by attitudes, social norms, and PBC. For instance, in predicting recycling behaviour, attitudes towards recycling, perceived social pressure, and perceived control over recycling opportunities were key predictors (Tanner & Wölfing Kast, 2003)[28].

The TPB is also a valuable tool in consumer behaviour research. For instance, studies examining consumer decision-making have applied TPB to explain behaviours related to purchasing organic products, choosing eco-friendly products, or adopting new technologies. A study by Yadav and Pathak (2017)[29] reflected that attitudes and perceived behavioural control could predict consumers' intention to purchase green products.

Despite its widespread applicability, TPB has faced criticism regarding its assumptions and limitations. One key critique is the theory's assumption of rational decision-making. Critics argue that TPB overlooks emotional, habitual, and automatic influences on behaviour (Sniehotta, 2009)[30]. Moreover, the model couldn't explain the changes in behaviour over time, as intentions may not always translate into behaviour, especially in the face of competing motivations (Sheeran, 2002)[31].

Additionally, researchers have called for more research on the role of moderators, such as cultural factors or individual differences, in the TPB model (Bamberg & Möser, 2007)[32]. The combination of TPB with other models, such as the Health Belief Model or the COM-B system, may offer improved all-inclusive insights into behaviour prediction (Michie et al., 2011)[33].

3. Existing Research Gap/Rational of the Study

With the growing demand for probiotic products globally, it becomes increasingly important to understand consumer behaviour at the local level. Inspite of the rising trend, there is a noticeable gap in research focused specifically on consumer attitudes and perceptions towards probiotic consumption in Metropolitan city. Recognizing this gap, the present study aims to explore the awareness, perceptions, and purchase intentions of consumers in Metropolitan city, using the TPB.

4. Research Questions

1. What are consumers' perceptions and attitudes towards probiotic products?
2. Can the TPB effectively explain consumer purchase intentions regarding probiotic drinks?

5. Objectives of the Study

1. To examine the level of awareness among consumers regarding probiotic products
2. To analyse the association between demographic variables (age, gender and income) and consumer awareness and behavioural intentions towards probiotic drinks
3. To explore the relationship between consumer attitude, subjective norms, perceived behavioural control, and behavioural intentions with respect to probiotic products
4. To evaluate the predictive influence of attitude, subjective norms, and perceived behavioural control on behavioural intentions, based on the TPB

5.1. Hypotheses

Based on the research objectives the following hypotheses were studied

Hypothesis 1: There is no significant association between demographic variables (Gender, Income and Age) and consumer awareness towards probiotic products.

Hypothesis 2: There is no significant relationship between attitude, perceived behavioural control, subjective norms and behavioural intentions towards probiotic drinks.

Hypothesis 3: There is no impact of attitude, subjective norms, and perceived behavioural control on behavioural intentions of probiotic products.

Hypothesis 4: There is no significant association between demographic variables (Gender, Age and Income) and consumer purchase intentions of Probiotic products.

6. Research Methodology

Type of Research: This study adopts a descriptive research design aimed at understanding consumer behaviour and purchase intentions related to probiotic products, with a specific focus on the applicability of the Theory of Planned Behaviour (TPB). It also explores the general effectiveness of marketing mix elements influencing probiotic consumption.

Questionnaire: Structured Questionnaire was designed and circulated through Google Forms. The form consisted of demographic questions followed by specific variables related questions. The details of constructs and its items along with its reliability are discussed in the table 8. Additionally, eight retailers in Metropolitan city were interviewed offline to gain qualitative insights into product demand and marketing challenges in the probiotic segment. So a mixed approach is applied here wherein along with structured questionnaire, interviews were also conducted to understand the demand for probiotic products from retailers. The questions were based on the marketing mix (4 P's)

Sr. No.	Type	Availability of Probiotic Product	Brand available	Observations	Distributors	Price
1	Local retailer	NO	-	No demand from customers, customers were not happy with taste of the products	Not happy with distributors	-
2	Local retailer	NO	-	There was no regular supply by distributor. Short shelf life	Not happy with distributors	-
3	Local retailer	NO	-	No demand from customers and dissatisfaction with distributors	Not happy with distributors	-
4	Local retailer	YES	Yakult & Epigamia	Great demand for products	no issues reported with respect to distributors	Affordable
5	Super markets	YES	Yakult, Mother Dairy, Epigamia, and many more	Huge demand for probiotic products	No issues reported with respect to distributors	Affordable
6	Super markets	YES	Yakult, Mother Dairy, Epigamia	Huge demand for probiotic products	No issues reported with respect to distributors	Affordable
7	Medical	NO	Tablets	Too much demand for the tablets	No issues reported with respect to distributors	Affordable
8	Medical cum some dairy products & beverages	YES	Tablets, Epigamia, Yakult, Mother dairy	Great demand for products	No issues reported with respect to distributors	Affordable

Table 1: Compiled responses of retailers

Source: Structured interview of retailers
Timeline for data collection: March 2025 to June 2025.
Tools used for data collection: Google forms
Sample selection: The target population for this study consists of individuals in Metropolitan city. The online questionnaire was distributed to 150 individuals based on convenience sampling method out of which 116 responses were received.
Data Cleaning: Nine responses were excluded from the analysis due to incomplete information while data cleaning.
Analysis Techniques:

- Descriptive Statistics: Summarizing the data (frequencies, cross tabs)
- Inferential Statistics: Testing hypotheses (Chi-square, Correlation, and SEM Analysis)
- Tool used for analysis: SPSS & AMOS Software were used for analysis of data and to verify the reliability of the data.

7. Data Analysis

7.1 Descriptive analysis

Age wise Majority of participants belong to 15–20 years (38.3%), followed by 50+ (27.1%) and smallest group was 41–50 years (5.6%). According to gender, female were 60 respondents (56.1%) and Male were 47 respondents (43.9%). On the basis of occupation, Students make up the largest group (48.6%), followed by Service (21.5%) and Professionals (13.1%), least represented by Retired individuals (2.8%). According to education the classification of the respondents were Undergraduates form the largest group (47.7%), followed by: Postgraduates (23.4%) and Graduates (21.5%) and Doctorate/PhD holders were (6.5%). Income wise maximum respondents earns less than ₹5,00,000 per annum (35.5%), followed by: ₹5–9.99 lakh (29%) and above ₹15 lakh (22.4%), least represented from the income group ₹10–14.99 lakh (13.1%). On the basis of awareness of probiotic products it was observed that 74.8% (80 respondents) were aware of these products and 25.2% (27 respondents) were not aware of it.

Amongst the retail outlets, 4 were small local retailer, 2 super markets and 2 medical shops. Three local retailers reported that they do not stock probiotic products due to consistently low demand, low shelf life of the products and delayed deliveries from distributors. They expressed a lack of motivation to keep such products, as they rarely sell. In contrast, one local retailer observed positive customer feedback and noted a steady demand for brands like Yakult and Epigamia. Representatives from supermarkets corroborated this, stating there is significant demand for probiotic products, with Yakult emerging as the most sought brand. Additionally, two medical stores confirmed high demand for probiotic tablets such as VIBACT, BIFILAC, Enterogermina, and Vizylac.

Rank	Brand	Frequency
1	Yakult	76
2	Amul	32
3	Mother Dairy	28
4	Nestlé a+	21
5	The Good Bug	17
6	Epigamia	7
7	Dahlicious, Milk Mantra, Nutoras, Gokul, Natural yogurt (generic)	2

Table 2: Awareness of probiotic brands amongst respondents

Yakult is the most frequently mentioned brand, showing high recall or preference. Amul and Mother Dairy also appear significantly, showing strong presence in the probiotic space. Newer or niche brands like The Good Bug, Epigamia, and Dahlicious are mentioned but less frequently by respondents. One of the supermarket authority stated that Epigamia is one of fast moving probiotic products.

7.2 Hypotheses Testing

7.2.1 Hypothesis testing (Hypothesis 1)

H_0: There is no significant association between demographic variables (Gender, Income and Age) and consumer awareness towards probiotic products.

H_1: There is a significant association between demographic variables (Gender, Income and Age) and consumer awareness towards probiotic products.

H_{01} - There is no significant association between gender of the respondents and awareness about the probiotic products

	Value	Df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	13.327[a]	1	.000		
Continuity Correction[b]	11.740	1	.001		
Likelihood Ratio	13.549	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	13.202	1	.000		
N of Valid Cases	107				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 11.86.

b. Computed only for a 2x2 table

Table 3: Chi-Square Tests between gender and awareness on probiotic products

On application of Pearson Chi-Square it was found that p values is less than 0.05, stating there exists statistically significant association between the gender and awareness of probiotic products .

H_{02} - There is no significant association between income of the respondents and awareness about the probiotic products

			Are you aware of Probiotics products?		
			Yes	No	Total
Family income	Less than 5,00,000	Count	20	18	38
		% within Family income	52.6%	47.4%	100.0%
	5,00,000 –9,99,999	Count	28	3	31
		% within Family income	90.3%	9.7%	100.0%
	10,00,000 –14,99,999	Count	13	1	14
		% within Family income	92.9%	7.1%	100.0%
	15,00,000 and above	Count	19	5	24
		% within Family income	79.2%	20.8%	100.0%
Total		Count	80	27	107
		% within Family income	74.8%	25.2%	100.0%

Table 4: Family income * Are you aware of Probiotics products? Crosstabulation

On application of Fisher's Exact Test, the p-value is 0.001, indicating that there exist a statistically significant association between family income and awareness of probiotics. Since $p < 0.05$, we reject the null hypothesis that income and awareness are independent.

H_{03} - There is no significant association between age of the respondents and awareness about the probiotic products

			Are you aware of Probiotics products?		
			Yes	No	Total
Age	15-20 years	Count	24	17	41
		% within Age	58.5%	41.5%	100.0%
	21-30 years	Count	18	3	21
		% within Age	85.7%	14.3%	100.0%
	31-40 years	Count	9	1	10
		% within Age	90.0%	10.0%	100.0%
	41-50 years	Count	4	2	6
		% within Age	66.7%	33.3%	100.0%
	50 years and above	Count	25	4	29
		% within Age	86.2%	13.8%	100.0%
	Total	Count	80	27	107
		% within Age	74.8%	25.2%	100.0%

Table 5: **Age * Are you aware of Probiotics products? Crosstabulation**

Fisher's Exact Test was applied and the p-value is 0.034, therefore it can be concluded that statistically significant association between age and awareness of probiotics exists. Since $p < 0.05$, we reject the null hypothesis that age and awareness are independent.

7.2.2 Hypothesis testing (Hypothesis 2)

H_0: There is no linear relationship between Attitude, Subjective norms, Perceived Behavioural control and Behavioural intentions

H_1: There is a linear relationship between Attitude, Subjective norms, Perceived behavioural control and Behavioural intentions

			Estimate
A	<-->	SN	0.46
SN	<-->	PBC	0.555
A	<-->	PBC	0.511
A	<-->	BI	0.585
PBC	<-->	BI	0.68
SN	<-->	BI	0.671

Table 6: Correlations (Default model)

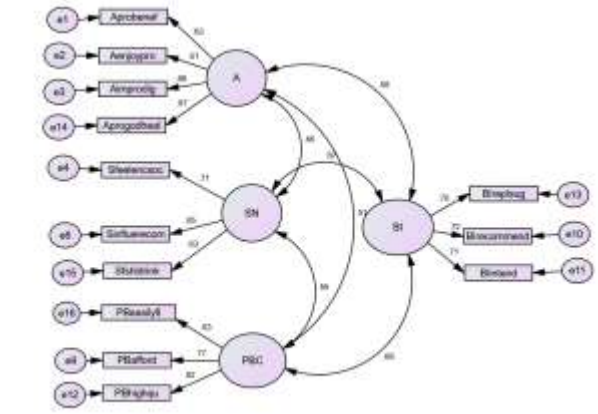

Fig 1: Correlations between variables ***Source: AMOS output***

The key constructs are **A** = Attitude, **SN** = Subjective Norms, **PBC** = Perceived Behavioural Control and **BI** = Behavioural Intention

Constructs	Estimate	Strength & Direction	Interpretation
A ↔ SN	0.46	Moderate positive	People with positive attitudes toward probiotics are moderately influenced by social pressure or norms.
SN ↔ PBC	0.555	Moderate-strong positive	Individuals who feel social pressure (norms) tend to also feel more control over the behaviour (e.g., accessing or consuming probiotics).
A ↔ PBC	0.511	Moderate-strong positive	Favourable attitudes are moderately associated with feeling capable or in control of performing the behaviour.
A ↔ BI	0.585	Moderate-strong positive	People with positive attitudes are more likely to intend to use probiotic products.
PBC ↔ BI	0.68	Strongest positive	Feeling in control is the strongest predictor of intention to consume probiotics.
SN ↔ BI	0.671	Strong positive	Social pressure or expectations also strongly influence a person's intention to consume probiotics.

Table 7: Linear Relationship between constructs

There is positive and significant relationship between all the constructs and strongest relationship is between perceived behavioural control and behavioural intention (r=0.68).

7.2.3 Hypothesis testing (Hypothesis 3)

H_0: There is no impact of attitude, subjective norms, and perceived behavioural control on behavioural intentions of probiotic products.

H_1: There is a significant impact of attitude, subjective norms, and perceived behavioural control on behavioural intentions of probiotic products.

Independent Variables are (**A)** Attitude, (**SN)** Subjective Norms, (**PBC)** Perceived Behavioural Control and Dependent variable is (**BI)** Behavioural Intention

Code of items	**Variables and items**	**KMO**	**AVE**	**CR**	**MSV**	**ASV**	**Factor loading**
A	**Attitude Toward Probiotic Drinks**	0.72	0.54	0.82	0.34	0.27	
Aprogodheal	Drinking probiotic beverages is good for my health.						0.89
Aimprodig	Probiotic drinks help improve my digestion and immunity. (product)						0.86
Aenjoypro	I enjoy the taste of probiotic drinks. (product)						0.48
Aprobenef	I believe probiotic drinks are more beneficial than regular soft drinks.(product)						0.61
SN	**Subjective Norms**	0.63	0.54	0.78	0.45	0.32	
Sfshldrink	My family/friends think I should drink probiotic beverages.						0.62
Sinfluerecom	Health influencers or fitness professionals recommend probiotic drinks. (promotion)						0.84
Spraised	I am praised for drinking probiotic drinks.	Removed					0.35
Sfeelencsoc	I feel encouraged						0.69
PBC	**Perceived Behavioural Control**	0.69	0.56	0.79	0.46	0.34	
PBeasilyfi	I can easily find probiotic drinks in stores or online.(place)						0.64
PBafford	I can afford to buy probiotic drinks regularly.(price)						0.79
PBhighqu	I am confident in choosing a high-quality probiotic drink. (product)						0.80
PBtimeop	I have the time and opportunity to consume probiotic drinks daily.	Removed					0.43
BI	**Behavioural Intention**	0.69	0.55	0.83	0.46	0.42	
BIintend	I intend to buy a probiotic drink in the next week.						0.69
BIrecommend	I will recommend probiotic drinks to my friends or family.						0.70
BIreplsug	I plan to replace sugary beverages with probiotic alternatives.						0.68

Table 8: The KMO, factor loadings of units, convergent and discriminant validity of DV and IDVs

Source: Compiled from SPSS and AMOS output

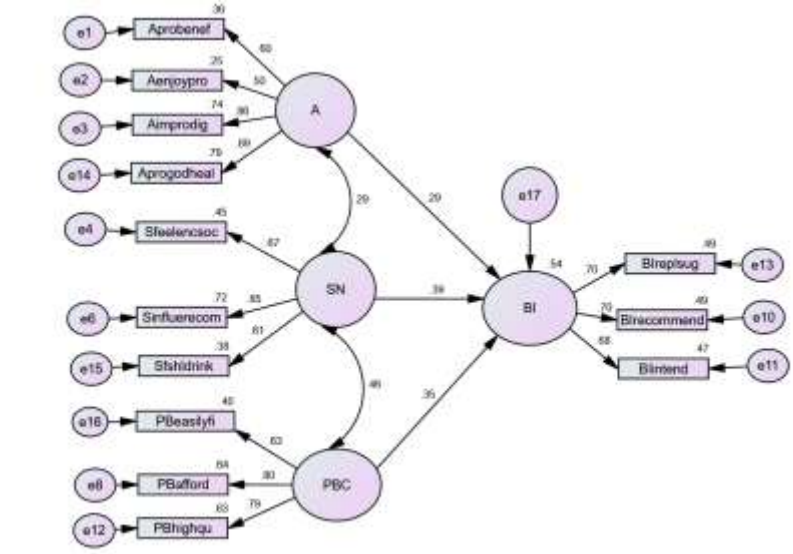

Fig 2: SEM Analysis ***Source: Amos Output***

Table 8 determines the eligibility of the items and it's construct based on which they were qualified for SEM Analysis. Two items were removed (Spraised = 0.35 & (PBtimeop = 0.43) due to poor loading, so convergent validity is preserved with remaining items based on their factor loadings, AVE and CR. The loading for one item (Aenjoypro = 0.48) is below threshold (Factor loading > 0.6, AVE ≥ 0.5 and CR≥ 0.7) yet considered in the model as the convergent validity range was met.

Reliability checks how consistently the items measure the construct. It is determined by CR (Composite Reliability) ≥ 0.7 and KMO ≥ 0.6 (for sampling adequacy). Subject norms (SN) and Perceived Behavioural Control (PBC) has shown the acceptable CR i.e. 0.78 & 0.79 whereas Attitude (A) and Behavioural Intention **(**BI) reflected strong reliability i.e.. 0.82 & 0.83 respectively.

Discriminant Validity determines whether constructs are distinct from each other. It is observed that all the constructs have Maximum Shared Variance (MSV) < AVE and Average Shared Variance (ASV) < AVE

DV		**IDV**	**Estimate**	**S.E.**	**C.R.**	**P**	**Interpretation**
BI	<---	A	0.32	0.15	2.12	0.03	**Significant**: A positive attitude has a **moderate**, statistically significant impact on behavioural intention.

BI	<---	SN	0.5	0.22	2.28	0.02	**Significant**: Influence from family/friends/media has a **strong** and significant effect on behavioural intention.
BI	<---	PBC	0.3	0.13	2.27	0.02	**Significant**: Ease and confidence in accessing/using the product also significantly affect on behavioural intention.

Table 9: Regression Weights: (Group number 1 - Default model)

All 3 predictors (Attitude, SN, and PBC) significantly influence and predict Behavioural Intention as p value is less than 0.05, validating the TPB. SN has the strongest impact ($\beta = 0.50$), followed by Attitude and PBC.

ITEMS		Constructs	Estimate	S.E.	C.R.	P
Aprobenef	<---	A	1			
Aenjoypro	<---	A	0.7	0.18	3.8	***
Aimprodig	<---	A	1.16	0.21	5.58	***
Sfeelencsoc	<---	SN	1.18	0.26	4.58	***
Sinfluerecom	<---	SN	1.64	0.34	4.87	***
PBhighqu	<---	PBC	0.89	0.15	5.93	***
PBafford	<---	PBC	1			
BIreplsug	<---	BI	1			
BIrecommend	<---	BI	0.66	0.13	4.95	***
BIintend	<---	BI	0.79	0.16	4.88	***
Aprogodheal	<---	A	1.43	0.26	5.6	***
Sfshldrink	<---	SN	1			
PBeasilyfi	<---	PBC	0.64	0.13	5.12	***

Table 10: Regression Weights of units

Measurement Model is Valid as all factor loadings are statistically significant ($p < 0.05$) and all items contribute meaningfully to their respective constructs.

Index	Value	Threshold	Interpretation
CMIN/DF	1.738	Between 1 and 3	**Acceptable**
RMR (Root Mean Residual)	0.082	< 0.10	**Acceptable**
GFI (Goodness-of-Fit Index)	0.848	> 0.90	**Moderate fit**.
PGFI (Parsimony GFI)	0.544	> 0.5 (no strict cut-off)	**Acceptable**
IFI (Incremental Fit Index)	0.902	> 0.90	**Good fit**
TLI (Tucker Lewis Index)	0.865	> 0.90	**Acceptable**
CFI (Comparative Fit Index)	0.898	> 0.90	**close to good**
RMSEA	0.097	< 0.10	**Acceptable**

Table 11: Model fit Index

Based on the above index and interpretation the model can be considered good fit. As per graph 2, 54% of the variance in Behavioural Intention is explained by the variables of the model i.e. Attitude, Subjective Norms, Perceived Behavioural Control.

7.2.4 Hypothesis testing (Hypothesis 4)

H_0: There is no significant association between demographics (age, gender and income) of the respondents and buying behavioural intentions of probiotic products

H_1: There is significant association between demographics (age, gender and income) of the respondents and buying behavioural intentions of probiotic products

The Behvioural intention is the imputed value from the model developed.

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
BI	80	1.74	5.23	3.5546	.62773	-.091	.269	.406	.532
Valid N (listwise)	80								

Table 12: Descriptive statistics of Imputed value of Behavioural Intention

From the above table 10 it is evident that the buying intention was determined from the sample who were aware of the probiotic products and since the skewness and kurtosis values lies in between +1 and -1, the distribution can be considered normal and therefore suitable for application of parametric tests.

On application of t test to verify the association between gender and intention it was found that p-value is greater than 0.05 hence no significant association is determined between gender and buying behaviourial intention similarly on application of one way Anova, it was observed that P value was greater than 0.05 hence it can be inferred that there was no significant association between age and income with buying behavioural intentions.

8. Findings and Discussions

Approximately 74.8% of respondents reported being aware of probiotic products, with Yakult emerging as the most frequently mentioned brand (76 mentions), followed by Amul (32 mentions) and Mother Dairy (28 mentions). This reflects Yakult's strong brand awareness and dominant presence in the probiotic market, a fact further confirmed by local retailers.

Yakult's popularity among both consumers and retailers can be attributed to its extensive presence in broadcast media and strategic celebrity endorsements. Beyond advertising, Yakult distinguishes itself through its unique direct-to-consumer "Yakult Lady" program, enhancing its market reach and visibility.

In contrast, Epigamia, though also gaining traction, benefits from celebrity endorsement through Deepika Padukone, who not only promotes but also invests in the brand. Meanwhile, Amul and Mother Dairy primarily focus on in-store promotions such as discounts and combo offers in supermarkets to encourage repeat purchases. While Yakult maintains a robust presence across both traditional and digital media, other brands rely more heavily on digital platforms, which may limit their overall brand visibility and consumer recall.

The gender-wise awareness data, combined with celebrity endorsements, reveals a meaningful correlation between consumer demographics, health consciousness, and marketing strategies.

A significantly higher percentage of females (88%) were aware of probiotic products compared to males, 43% of whom were not aware. This disparity aligns with the insight that women tend to be more proactive in personal and family health management. This inclination likely increases

their exposure and responsiveness to health-focused marketing, especially for products like probiotic drinks, which are often associated with preventive wellness and digestive health.

Marketing strategies of probiotic products appear to have capitalized on this trend effectively. For instance, Yakult's endorsements by Ajay Devgan and Kajol strategically position the product within a family health narrative. Kajol, portrayed as a caring mother, directly appeals to women, particularly homemakers and mothers who make key health-related purchasing decisions for their families. Similarly, Shilpa Shetty's association with Yakult Light reinforces its appeal among health-conscious female consumers. Her public persona, rooted in fitness and wellness, strengthens the product's positioning as a calorie-conscious, health-friendly beverage. Furthermore, the endorsement of Yakult Light's mango variant by Sanya Malhotra appears to target the younger demographic, especially health-aware female youth, blending taste with health benefits. On the other hand, Epigamia's association with Deepika Padukone, a symbol of modern, independent, and health-oriented living, complements its brand image and resonates with urban, millennial women. This suggests that the marketing of probiotic products is not only gender-sensitive but also tailored to specific lifestyle profiles.

In essence, the higher awareness among women and the nature of celebrity endorsements indicate that probiotic product branding has strategically aligned with the health-oriented values and preferences of female consumers, thereby reinforcing and expanding product visibility and acceptance. By reframing the marketing narrative around performance, strength, energy, and efficiency, and using male-aligned channels and role models, marketers can successfully increase male awareness and adoption of probiotic products.

Highest awareness was observed amongst 50 years and above age group i.e. 31.3%, possibly due to greater health consciousness and lowest awareness was observed amongst 15-20 years age group, 41% of the respondents from this age group were not aware of probiotic products. Younger individuals are generally less health-conscious and more drawn to traditional or fast-food options. They may also have limited exposure to health-related information unless influenced by family or formal education.

Among respondents earning less than ₹5,00,000 annually, 47% (18 out of 38) were unaware of probiotic products. It is possible that Lower-income groups might have limited access to premium health products, and price sensitivity may prevent them from exploring probiotic options. Additionally, marketing of such products often targets urban, middle- to high-income consumers, leading to uneven awareness across economic segments. As per the retailers response the prices of the probiotic products are affordable and there is not much difference in the regular and probiotic products. For example, below is the table demonstrating the price of different brands offering variants of Yogurt/Dahi at big basket.

Product	**Price (400 g)**	**Remarks**
Amul Dahi (Masti/regular)	₹46–50	₹46 from Jammu; ₹40–45 common on bigbasket/unitprice (jammubasket.com)
Amul Premium Dahi	₹ 65	₹65 for 400 g cup
Amul Probiotic Dahi	₹50–70	₹50 for 400 g, ₹25 for 200 g
Yakult pack of 5	₹90-100	90 for regular and 100 for mango and health light (non dahi category)
Mother dairy Dahi	₹ 50	-
Mother dairy probiotic Dhai	₹ 60	-
Epigamia classic Curd	₹ 65	-
Epigamia natural Greek yogurt	₹ 250	-

Epigamia flavoured Greek yogurt	₹ 35 - ₹ 80	For 75g-90g

Table 13 Comparison of price of different brands

Source: Compiled by authors from bigbasket.com accessed on dt: 06.7.25

Gender, income, and age significantly associated with awareness ($p < 0.05$), indicating that these demographics influence consumer familiarity with probiotics. At the same time these demographics didn't show significant impact on behavioural intention of consumers. This indicates that marketing efforts should target behavioural and psychological segmentation also.

The role of social norms (e.g., family, influencers) and perceived behavioural control (e.g., ease of access and affordability) significantly shape consumer intentions in case of probiotic products against the findings of Yadav and Pathak (2017)[34] and Courneya and McAuley (1995)[35] where attitude and PBC were the predictors of consumers' intention to purchase green products and towards physical activity respectively. R^2 value for BI = 0.54, showing that 54% of the variance in Behavioural Intention is explained by jointly by attitude, social norms, and perceived behavioural control.

Based on insights from three local retailers, several challenges have been identified in the distribution and promotion of probiotic products. Local retailers expressed dissatisfaction with distributors due to inconsistent and delayed deliveries. Additionally, they reported low consumer demand at local outlets, indicating that current promotional efforts are insufficient, particularly in reaching lower-income segments. This suggests a lack of awareness and limited perceived value of probiotic products among these groups.

To bridge this gap, mass advertising campaigns are essential to effectively communicate the benefits, uses, and affordability of probiotic products. In contrast, supermarkets reported higher demand, likely due to their customer base comprising middle and upper-middle-income groups, who are generally more health-conscious and informed.

These findings imply that while Perceived Behavioural Control (PBC) consumers' confidence in accessing and using probiotic products is a significant factor influencing purchase behaviour, marketing efforts to enhance PBC remain limited. The exception is Yakult, which was widely available across most outlets, reflecting stronger distribution and brand visibility.

Furthermore, one retailer highlighted unsatisfactory taste as a concern, pointing to the need for product reformulation or flavour diversification to better suit local palates and improve repeat purchases.

9. Managerial implications

This study highlights the need for inclusive awareness campaigns targeting younger audiences, males and lower-income groups, using affordable options and simplified health communication also suggested by (Gupta & Shankar, 2018)[36]. Since Subjective Norms are a strong driver of behavioural intention, it is suggested to include authenticity of the products by health professionals, influencers, and peer recommendations in marketing strategies.

Perceived Behavioural Control (PBC) is a key determinant of behavioural intention. Retailer insights reveal that small local shops often do not stock probiotic products due to low perceived demand, whereas supermarkets are experiencing high demand for such items. This disparity highlights the need to ensure consistent product availability across both online and offline channels, including small neighbourhood stores that cater primarily to middle-income consumers. To enhance reach and awareness, especially among low-income groups, it is recommended to promote probiotic drinks through prominent counter displays in smaller retail outlets as mentioned by (Sharma et al., 2020)[37]. In summary, to expand market reach and increase PBC among diverse consumer segments, companies must improve distribution

efficiency, invest in broader advertising, and consider enhanced taste preferences in product development.

10. Limitations and future scope of the Study:

- The study is geographically limited to Metropolitan city, and therefore, the findings cannot be generalized to rural or semi-rural populations.
- The research considers marketing perspective only; it does not evaluate the clinical efficacy or health impact of probiotic products.
- This model is able to explain only 54% of the behavioural intention of the consumers. Other variables/factors affecting intention can be identified.
- Some retailers have reported huge demand for the tablets like VIBACT, BIFILAC, Enterogermina, and Vizylac, doctor-prescribed probiotic supplements have been excluded from the scope of this study.

11. Conclusions

This study successfully applied the Theory of Planned Behaviour to understand consumer purchase intentions towards probiotic products in Metropolitan city. The findings affirm that Attitude, Subjective Norms, and Perceived Behavioural Control are all significant predictors of intention to consume probiotic drinks. While demographic factors influence awareness, they do not significantly impact behavioural intention, emphasizing the need for behavioural and psychological segmentation in marketing strategies. Probiotic brands should focus on increasing visibility, access, and credible health messaging to convert awareness into actual purchase behaviour and long-term loyalty.

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