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Impact of E-Logistic Transparency on Customer Decision-Making in Sustainable E-Commerce

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ABSTRACT

The research highlights that transparent communication regarding packaging materials and methods significantly influences customer satisfaction and purchase intentions. Customers are more likely to prefer brands that clearly outline their use of eco-friendly packaging and demonstrate a commitment to reducing environmental impact. This preference extends to the delivery process, where detailed information on carbon footprint reduction and sustainable delivery practices can enhance customer trust and loyalty. Furthermore, the study emphasizes the prominence of providing comprehensive and easily accessible information about the entire e-logistics process. Customers prioritize brands that offer real-time updates and detailed insights into the sustainability of their logistics operations. This transparency not just bolsters customer confidence but also promotes a deeper linking between the consumer and the brand, leading to increased satisfaction and loyalty. In conclusion, the findings suggest that e-logistics transparency is a pivotal element in shaping customer decision-making in sustainable e-commerce. By prioritizing transparency in packaging, delivery, and overall logistics information, businesses can significantly boost customer purchase intentions, satisfaction, and loyalty. This approach not only supports sustainable business practices but also aligns with the growing consumer demand for eco-conscious shopping experiences.

Keywords: Sustainable E-Commerce, Delivery, Packaging, Transparency, Information Preference, Satisfaction and Loyalty

INTRODUCTION

India's e-commerce sector has experienced a meteoric rise in recent years, driven by a confluence of factors. Increased penetration of the Internet and smartphones, especially in rural areas, has opened the door to a new consumer base. The rise in disposable incomes and the change in consumer behaviour have further driven the industry to move forward. The handiness and inexpensive prices offered by different online platforms have significantly changed the retail landscape, making online shopping the preferred choice for a growing segment of the population. This rapid expansion is expected to continue, with the size of the Indian electronic commerce market expected to reach an astonishing $350 billion by 2030. During this impressive growth, however, a key concern has emerged: the environmental impact of this vibrant industry. Although e-commerce offers undeniable benefits, its operations have significant environmental impacts, especially in terms of packaging waste and delivery methods.

The e-commerce boom has revolutionized retail, but its rapid growth also has cast on environmental sustainability. Packaging waste and carbon emissions from delivery are the significant contributors to this concern. To address this issue the sustainable e-commerce has emerged. Sustainable e-commerce refers to conducting online retail in a way that minimizes its environmental and social impact throughout the entire business lifecycle.

Sustainable e-commerce prioritizes eco-friendly packaging solutions. Opting for recycled or compostable materials like cardboard, paper pulp, or mushroom packaging significantly reduces the environmental footprint. These materials are derived from renewable resources and decompose naturally, minimizing landfill waste and reduces the impact on environment. Oversized packaging is a common issue. Sustainable practices advocate for

right-sizing packaging to fit the product snugly, minimizing the amount of material used. This not only reduces waste but also optimizes transportation efficiency. Clearly indicating the type of packaging materials used and their end-oflife options empowers customers to make informed choices. Labels like "recyclable" or "compostable" guide proper disposal and promote responsible consumer behaviour. With the growing request of the customer for environmentally sustainable options in packaging the Indian e-commerce is committed to shift from the traditional way to the new environmental friendly options.

For reducing the environmental impact Flipkart is committed to achieving net zero emissions by 2024.They focus on minimising packaging waste through initiatives like reducing single-use plastic and promoting recycled or biodegradable packaging. Similarly, Amazon India focuses on reinventing packaging to delight customers and reduce waste. Initiatives include eliminating single-use plastic increasing recyclability and promoting sustainable packaging. On the other hand, during the Big Fashion Festival 2021, Myntrafruit fully applied 100% plastic free packaging in its complete logistics, adhering to its binder outlined in August'2019.Myntra's sellers 4 across the country adopted green packaging practices. They have introduced RFID-tagged multitime-use polyester bags for reverse consignments. This initiative has diverted 670 tonnes of plastic as of September 2021.

Nykaa, India's first online beauty e-market place whose used smaller boxes with paper fillers instead of plastic. They utilized eco-friendly paper products for over 70% of packaging needs. Similarly, many of the ecommerce has been changed their operations and chooses more sustainable options in their packaging. Big basket, Swiggy, Zomato, The Bath & Body Works, H&M etc are using ecofriendly packaging and they are focusing on sustainability and to reduce environmental Impact. Many new initiatives are introduced by several e-commerce Zepto a quick e-commerce app which delivers groceries, fruits, vegetables, electronics and much more focus on sustainability and introduced an interesting option at check out that "I don't need paper bag". They focusing on eliminating paper bags reduces waste and help to conserve resources. Paper bag production requires trees, water and energy. While many of the e-commerce platform has changed their packaging to more eco0friendly option still a few of the ecommerce remain same and uses the single use plastic packaging at checkout like Ajio, Meeshoetc

Delivery processes within e-commerce also contribute significantly to environmental impact. By 2030, the number of parcels sent annually in the Indian e-commerce business is predicted to climb tenfold from the current levels of 4 billion (400 crore) to 40 billion (4,000 crores). The sector is also estimated to generate 8 million (80 lakhs) tonnes of CO2 in total annual emissions.Reports state that last mile CO2 emissions from e-commerce deliveries in India account for about half of total emissions, and that the country's 285 g CO2 last mile emissions per delivery are much higher than the 204 gCO2 global weighted average (Desk, 2022). Sustainable practices aim to minimize carbon emissions and optimize logistics. Offering customers a variety of delivery options, including standard, expedited, and carbon-neutral choices, allows them to make decisions based on their priorities.

E-commerce has revolutionized shopping, offering convenience and accessibility. However, its rapid growth comes with environmental consequences, primarily stemming from packaging and delivery practices. This necessitates transparency in e-logistics, allowing customers to make informed choices and driving the industry towards sustainable practices.

Packaging waste is a significant concern in e-commerce. Customers often receive oversized boxes filled with unnecessary void-fill materials, leading to increased carbon footprint during transportation and disposal challenges. Transparency in packaging requires e-commerce businesses to disclose packaging materials, clearly communicate the type of materials used in packaging, highlighting the use of recycled, compostable, or biodegradable alternatives. Optimize packaging size is one of the important thing. Match the packaging size to the product, minimizing unnecessary space and void-fill materials. Provide customers with the option to opt for reusable packaging solutions, such as returnable boxes or pouches. By providing such information, customers can assess the environmental impact of their purchases and choose brands prioritizing sustainable packaging practices.

Transparency in this area involves disclosing delivery methods. Clearly outline the delivery options available, including their associated carbon emissions per kilometre. This allows customers to choose more sustainable options like bicycle couriers or consolidated deliveries. Zepto ,10-minute quick e-commerce app use bicycle delivery options to deliver the products to the nearest customers. Utilizing route optimization algorithms to minimize the distance travelled by delivery vehicles, reducing fuel consumption and emissions.

REVIEW OF LITERATURE

JuditOlahet al., (2023) studied acomprehensive analysis of sustainable e-commerce and its environmental implications. The study examined the rapid growth of e-commerce and the associated environmental challenges, such as increased shipping, high return rates, and the use of non-recyclable packaging. The authors highlight the consumer trend towards eco-friendly practices and the importance of online retailers adopting sustainability

policies. The research reveals that two-thirds of consumers deem it important for e-commerce businesses to be sustainable, yet only a quarter actively avoid companies that fail to meet sustainability standards. The paper contrasts the 9 advanced sustainability policies in European e-commerce with the minimal policies in African countries, with Kenya being an exception. The authors propose that all stakeholders, including governments, retailers, and consumers, must collaborate to enforce policies that govern sustainable e-commerce and minimize environmental impact. This study provides valuable insights for integrating sustainability into e-commerce strategies to ensure long term environmental health. JuditOlah, Nicodemus Kitukutha, Hossam Haddad, Miklos Pakurar, Domician Mate and Jozsef Popp (2018) in their paper explored achieving sustainability in e-commerce across environmental, social, and economic aspects. It highlights the need to consider all three dimensions for a truly sustainable industry. The authors emphasize that trade-offs between these dimensions are inevitable. Companies must find ways to prioritize actions that maximize positive impacts while minimizing negative ones. E-commerce offers economic benefits like wider consumer reach and price comparison, but can have environmental drawbacks like increased carbon emissions due to packaging and delivery. The study argued that focusing solely on economic gains can jeopardize environmental and social well-being. Managing these factors is essential for long-term success. The authors called for integration between the three dimensions to ensure sustainable development in e-commerce. Collaboration among stakeholders is seen as essential for achieving this goal.

Elise Caspersen, Stale Nayrud (2021) in their paper explored how the sharing economy influences consumer preferences for eco-friendly last-mile deliveries. Their research focused on female consumers in Norway. The findings suggested that these consumers are willing to accept longer delivery times if it means a lower environmental impact. Additionally, providing clear information on the environmental footprint of delivery options was shown to influence their choices. Interestingly, the study also identified a generational difference, with younger demographics prioritizing sustainability more in their delivery preferences. These results highlight the potential of the sharing economy to promote eco-conscious delivery practices, while acknowledging the importance of transparent communication and catering to evolving consumer priorities. Arkadiusz Kawa (2023) in his/her paper investigated the potential of e-commerce to revolutionize logistics with a focus on sustainability. While acknowledging the environmental challenges posed by e-commerce, particularly packaging waste and increased delivery trips, the study argued that this industry holds the potential to be a game changer. The author highlighted areas where e-commerce can promote sustainability, such as optimized delivery routes that consolidate trips and improved efficiency compared to traditional brick-and-mortar stores. The author emphasized the growing customer demand for sustainable practices, urging businesses to adopt eco-friendly packaging and transparent communication about their environmental impact. The paper concluded that while e-commerce isn't a guaranteed path to sustainable logistics yet, companies that embrace these principles will gain a competitive edge in the evolving market.

Riccardo Mangiaracinaet al., (2016) in their The study employed an Activity-Based model to assess the carbon dioxide emissions of several stages, including pre-sale and sale, delivery, returns, and disposal, in order to evaluate the environmental effects of online and offline purchase procedures in the clothing business.Within the garment industry, they concentrated on business-to-consumer (B2C) transactions. Their research revealed that traditional in-store purchases may not always have a bigger environmental impact than online buying. The amount of clothing ordered online has a big influence on the environment, depending on how many things are purchased. Online shoppers typically place larger orders, frequently from many merchants, which raises the quantity of delivery and related emissions. Efficient delivery routes and aggregation tactics, however, can reduce the environmental effect of e-commerce logistics. Overall, the study made clear how crucial it is to take into account. The paper also identified the location of the consumer house and the distance between the consumer house and the store as the most significant factors affecting the environmental impact of the online and offline purchasing processes, respectively. In their study, Geisa Pereira et al. (2021) examined the degree to which B2C e-commerce customers are driven to give sustainability a higher priority than cost and speed when placing orders. According to a poll conducted among 421 participants, consumers continue to prioritise delivery speed over delivery cost and environmental information. When thinking about sustainable delivery options, customers are more ready to compromise on delivery speed than cost. Customer preferences for environmentally friendly deliveries are influenced by demographic variables like gender, age, income level, and education. Overall, the study made clear how crucial it is to take into account. The type of product also plays a role in consumer willingness to accept longer delivery times for sustainable options. The study suggested that education and incentives are needed to encourage consumers to prioritize sustainability in their e-commerce purchases. Businesses should implement sustainable practices throughout their supply chains to make eco-friendly delivery options more appealing to consumers. Collaboration between retailers, logistics providers, and policymakers is crucial to promote sustainable last-mile practices in the e-commerce industry.

Felix James and Aju Kurian (2021) in their article investigated consumer’s attitudes towards sustainable packaging in the e-commerce industry. The study utilised quantitative method to assess the purchasing

intentions of consumers when presented with product that have sustainable packaging option. Their findings suggest that a significant portion of Indian consumers hold a positive perception of eco-friendly packaging solution. This study found that factors like recyclability and ease of use significantly influenced online purchase decisions. The findings suggested that consumers might be open to sustainable packaging even without a price premium. This consumer preference for sustainable packaging aligns with growing emphasis on environmental friendly practices within e commerce logistics. Prakash Rao et al., (2021) in their paper provided an empirical analysis of the e-commerce supply chain's environmental sustainability focusing on the B2C online retail sector. Through a survey in the GCC region, the study validated two conceptual model linking customer attitude to e commerce usage. The findings highlight that while green consumerism influences consumer attitude, the convenience of e-commerce, measured by ease of use and usefulness is a stronger determinant of usage intention. Negative environmental attitudes retain their influence on consumer behaviour despite the convenience offered by e-commerce. The study also presented that e-commerce contributes to increased carbon emissions emphasizing the need for sustainable practices in the sector. Arkadiusz Kawa and BartlomiejPieranski (2021) explored the concept of green logistics in the e-commerce industry. It emphasizes the importance of minimizing environmental impact throughout the e-commerce supply chain, encompassing warehousing, transportation, and packaging. The authors discussed various green logistics practices, including route optimization, alternative fuel vehicles, and sustainable packaging materials. They acknowledged challenges such as balancing eco-friendliness with efficiency and cost. The study explored consumer preferences for sustainable delivery options, suggesting a growing willingness to prioritize environmental factors over speed or price in certain situations. The authors highlighted the need for collaboration among e-commerce businesses, logistics providers, and policymakers to develop and implement effective green logistics solutions. Overall, the paper underscored the potential of green logistics to create a more sustainable e-commerce landscape.

Chiara Siragusa , Riccardo Mangiaracina and Angela Tumino (2020) focussed on the environmental footprint of multi-item shopping within the B2C e-commerce sector. The authors presented a unique model that quantifies CO2 emissions, contrasting the environmental impacts of online versus traditional retail shopping. Key findings indicate that while e-commerce may offer a greener alternative for single-item purchases, the environmental benefits are less clear when consumers make multiple purchases from various online retailers. The paper underscored the importance of considering the cumulative environmental effects of e-commerce and highlights the need for sustainable logistics solutions. DaeheonChoi ,Chune Young Chung and Jason Young (2019) investigated the connection between sustainable logistics practices in online shopping and customer satisfaction in China. The authors surveyed 150 Chinese online shoppers and found that the quality of logistics services, particularly on-time delivery, significantly impacts customer satisfaction. Satisfied customers are more likely to make repeat purchases, highlighting the importance of logistics for online businesses. This trend is especially relevant in China's booming e-commerce market, where customer relationship management is crucial for long-term success. The study emphasizes that sustainable logistics solutions can be cost-effective ways to achieve eco-friendly and fast deliveries, meeting the growing demand for convenience among online shoppers.

SisuWu , Xuan Gong , Yunfei Wang and Jian Cao (2022) study looks into express package pollution from the perspective of customer awareness and industry management. With increased environmental awareness, the large amount of waste generated by express delivery packaging has become an urgent concern. The study underlined the necessity of knowing consumers' desire to participate in solutions, as well as the roles that governments, logistics organizations, and e-commerce companies may play in reducing pollution. The study examined consumer preferences for recyclable and green packaging choices using data from a survey of over 560 people. The findings indicated that consumers have a high interest in sustainable packaging solutions and believe that all stakeholders bear responsibility for tackling this environmental concern. The study suggested that governments intervene through regulations such as packaging fees and funding for eco-friendly materials development. It highlighted and also emphasized the importance of collaboration between logistics and e-commerce companies in establishing efficient recycling systems and encouraging consumer participation. Sunita Tiwari and Pratibha Singh (2011) investigated e-commerce's environmental impact, recognizing both the potential benefits and problems. While e-commerce eliminates the need for physical stores, lowering energy usage, it also raises new environmental problems. The authors pointed out that e-commerce has the potential to reduce transportation emissions related with consumer trips. However, the delivery aspect brings new emissions as a result of the widespread usage of logistics vehicles. Furthermore, e-commerce is strongly reliant on packing materials, resulting in enormous waste. This is exacerbated by the possibility of returns, which might result in additional packaging and transportation emissions. The research recognized e-commerce's potential to increase resource efficiency by easing the selling of second hand products. However, it emphasizes the necessity for additional research to definitively assess the overall environmental impact. The research found that e-commerce is a multifaceted subject with both good and negative environmental implications. They underlined the significance of identifying solutions to offset the negative aspects, such as improving delivery routes, adopting eco-friendly packaging, and supporting sustainable practices in the sector.

Sharon Cullinane (2009) in her article examined the environmental impact of the booming online retail industry. While online shopping is often perceived as eco-friendly due to reduced consumer travel, the study argued for a more nuanced perspective. Cullinane highlighted the complex web of transportation involved in online retail. This included not only delivery emissions from logistics companies, but also the transportation of goods from warehouses to fulfilment centres. This intricate network can potentially offset any environmental benefits gained by eliminating consumer trips. The author emphasized the need to consider both passenger and freight transport when evaluating the environmental impact of online retail. Traditional in-store shopping eliminates delivery emissions but generates emissions from individual consumer travel. The study acknowledged a lack of conclusive evidence on whether online retail is definitively better or worse for the environment. It called for further research to understand the true environmental impact across the entire online retail supply chain. The article concluded by suggesting that sustainable practices, such as optimizing delivery routes, using eco-friendly packaging, and minimizing returns, are crucial for mitigating the environmental impact of online retail. Unisallnas , Maria Bjorklund (2020) investigated how consumers can influence eco-friendly practices in e-commerce distribution. The study focused on communication between logistics providers (LSPs), e-tailers, and consumers. E-tailers, LSPs, and consumers are all crucial actors in driving sustainable distribution. Consumers currently have limited power to affect green distribution due to communication gaps. E-tailers control how delivery options are presented on their platforms. LSPs develop and offer eco-friendly delivery solutions, but consumers might not be aware of them. This lack of communication hinders consumers' ability to choose greener delivery options. The study suggested improved communication is essential to empower consumers. By understanding green delivery choices, consumers can make more sustainable decisions. E-tailers need to clearly present eco-friendly delivery options alongside traditional methods. LSPs should collaborate with e-tailers to communicate their sustainable practices. Improved transparency throughout the supply chain can incentivize consumer participation. When consumers prioritize green delivery, it pushes the industry towards eco-friendly solutions. Effective communication can be a win-win for businesses and the environment. Bridging the communication gap is crucial for consumer-driven greening of distribution.

RESEARCH METHODOLOGY

Design

Descriptive research design was chosen for this study. This methodology is particularly suited to investigating the current state of a phenomenon, such as how online shoppers consider e-logistics transparency when making sustainable e-commerce decisions. A sample of 150 online shoppers was used in this study. This sample size allows for initial exploration of the relationship between the impact of e-logistics transparency and customer decision-making in sustainable e-commerce. Sampling is used here is convenience sampling. Online Survey (Google Forms) and offline methods were used. A structured questionnaire was distributed online to collect responses from 150 participants.

OBJECTIVES

To identify the specific aspects of e-logistics transparency that are most influential on consumer choices related to sustainable e-commerce.

To investigate the impact of e-logistics transparency on packaging and delivery options in the context of sustainable e-commerce.

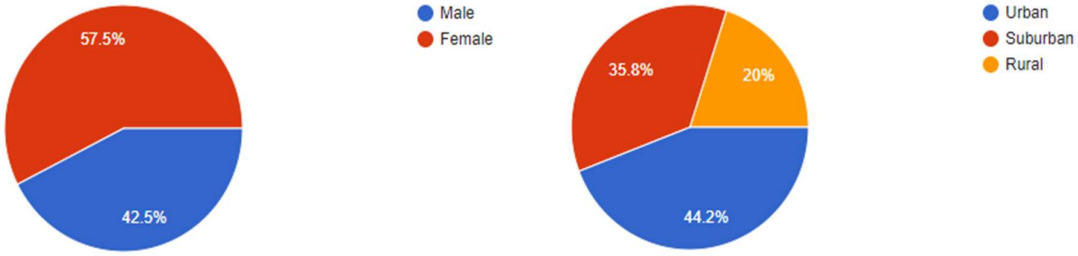
Variables in the research

- Purchase intention
- Packaging
- Delivery
- Information Preferences
- Satisfaction and Loyalty
- Transparency

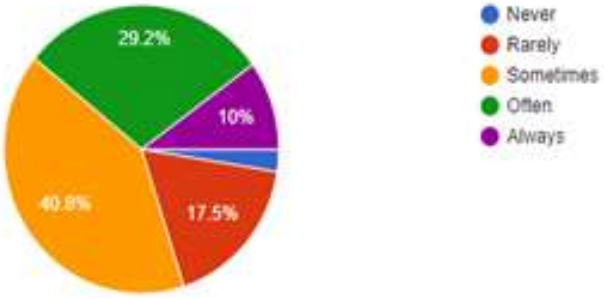
ANALYSIS AND DISCUSSIONS:

Fig 1: Gender

Fig 2: Location



Fis 3: Frequency of purchase



Of the respondents, 57.5% of them are Male, 44% of them belong to urbanareas and 40% of the respondent's purchase frequency is sometimes.

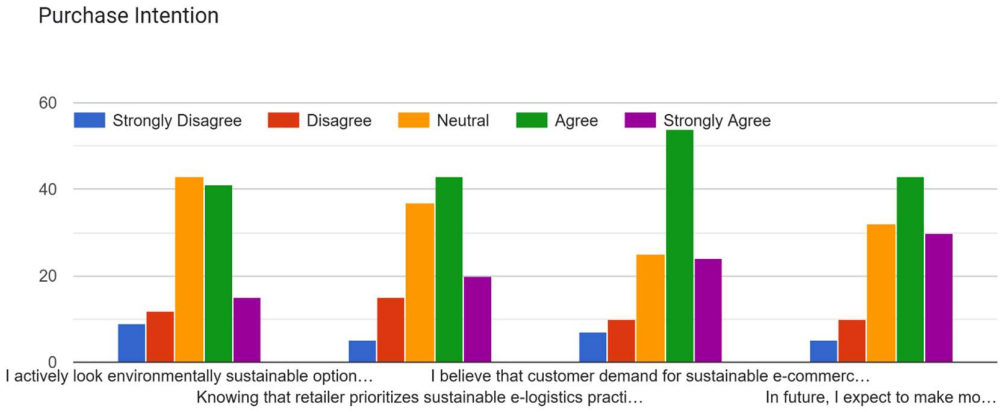


Figure 4: Purchase intention

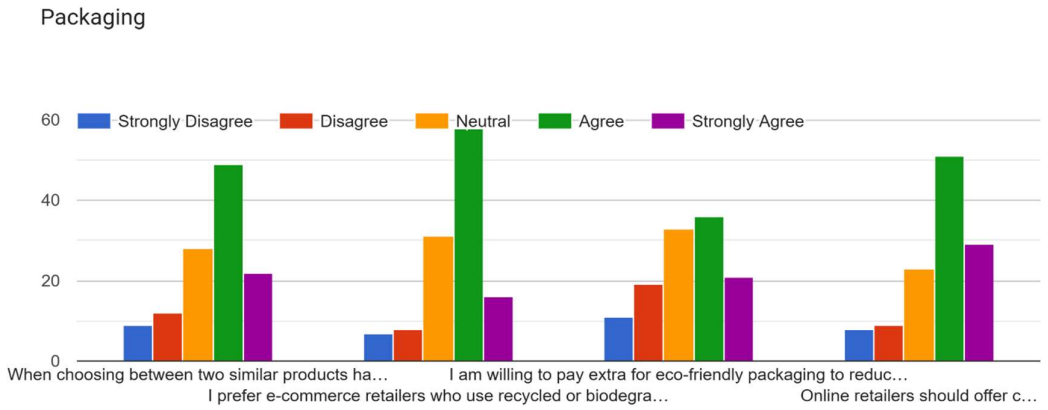


Fig 5: Packaging

Packaging was measured through 4 questions, like eco-friendly packaging as a decision factor, preference when bio-degradable or recyclable material is used, willingness to pay extra for eco-friendly packages, and options to choose eco-friendly packages.

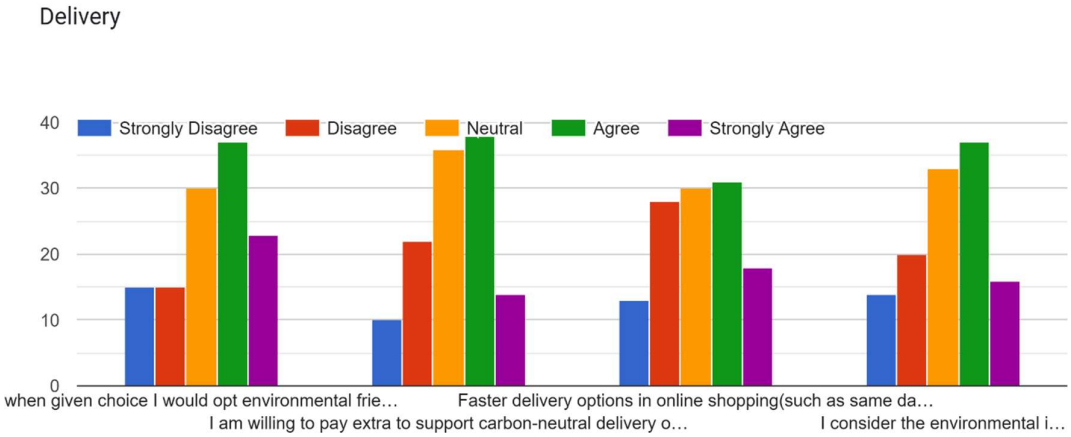


Fig 6: Delivery

Delivery was measured through 4 questions, like eco-friendly delivery methods, willingness to pay extra for carbon-neutral delivery, negative impact of faster delivery options and delivery timeliness.

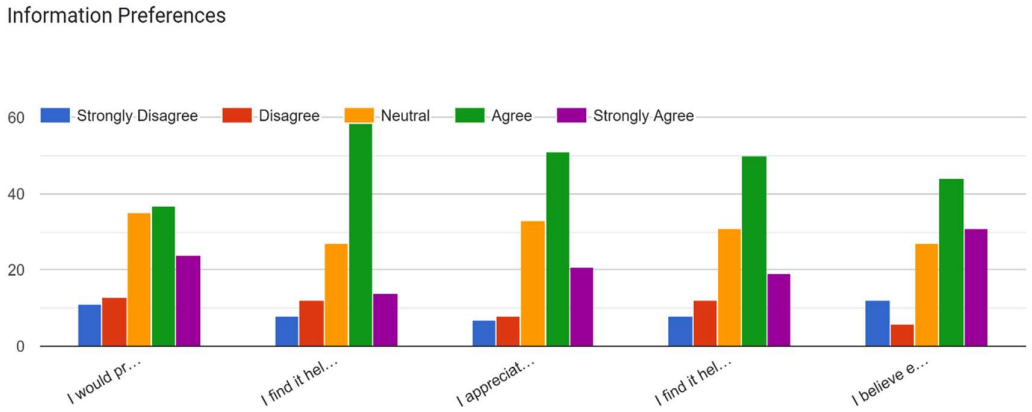


Fig 7: Information Preferences

Information preferences were measured through five questions, like information about sustainable practices, dedicated sustainability page on website, delivery option with clear information about environmental impact, information on types of packaging, transparency on entire environmental impact.

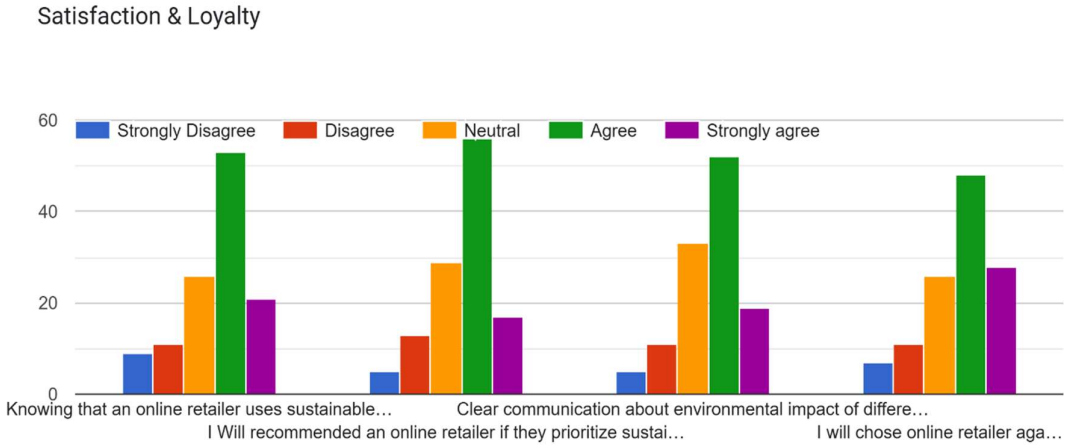


Fig 8: Satisfaction and Loyalty

Reliability test was conducted through Cronbach's Alpha. Almost all the constructs considered returned a healthy figure of more than 0.85, which implies the items used to measure the construct are highly reliable.

Table 1: Reliability test:

CONSTRUCT	Cronbach's Alpha
Purchase Intention	.885
Delivery	.897
Packaging	.895
Information Preferences	.957
Satisfaction & Loyalty	.937

Table 2: Correlation

Correlations	PI	PK	DY	IP	SL
PI	1				
PK	0.83	1			

DY	0.65	0.683	1		
IP	0.702	0.734	0.671	1	
SL	0.808	0.796	0.666	0.768	1

Purchase Intention has a strong positive correlation with Packaging (0.830), Delivery (0.650), Information Preference (0.702), and Satisfaction & Loyalty (0.808). This indicates that as purchase intention increases, so do perceptions of packaging, delivery, information preference, and satisfaction & loyalty.
Packaging also shows strong positive correlations with Delivery (0.683), Information Preference (0.734), and Satisfaction & Loyalty (0.796). This suggests that favourable perceptions of packaging are associated with favourable perceptions of delivery, information preference, and satisfaction & loyalty.

Delivery has a positive correlation with Information Preference (0.671) and Satisfaction & Loyalty (0.666). This indicates that positive delivery experiences are linked to preferences for information and satisfaction & loyalty.

Information Preference correlates positively with Satisfaction & Loyalty (0.768), suggesting that those with preferred information experiences tend to be more satisfied and loyal. These correlations suggest strong interrelationships between purchase intention, packaging, delivery, information preference, and satisfaction & loyalty, highlighting the importance of these factors in consumer behaviour and satisfaction.

REGRESSION

A regression model with step wise model is used to test the relationship between the dependent variable (Purchase intention) with the independent variables(Packaging, Delivery, Information preferences and Satisfaction and loyalty)

Table 3: Regression model

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.851[a]	.724	.722	.484
2	.879[b]	.772	.768	.441
3	.883[c]	.781	.775	.435
a. PK with constant				
b. PK, SL with constant				
c. PK, SL, DY with constant				

The best R square is achieved in model 3 which considered the three dependent variables say Packaging, Delivery, and Satisfaction and loyalty

Coefficients of regression model

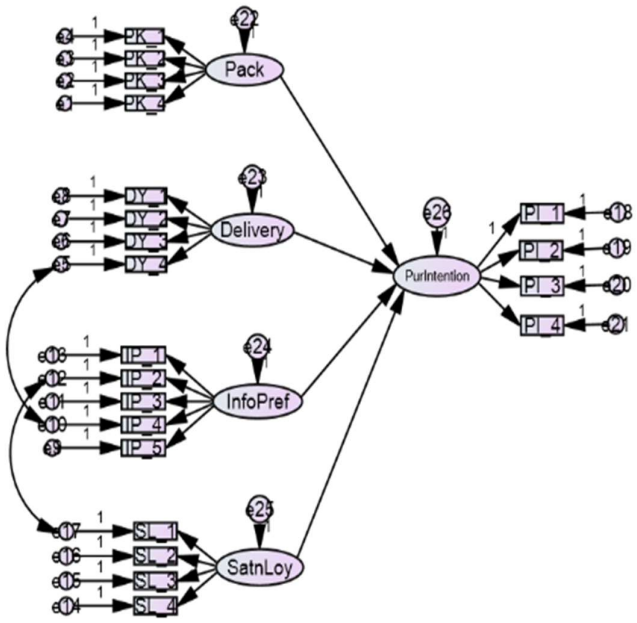
Model 3 which considered Packaging, Delivery, and Satisfaction and loyalty is significant to influence the dependent variables Purchase intention.

Table 4: Coefficients of regression model

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		

1	(Constant)	.720	.166		4.329	.000
	PK	.801	.045	.851	17.602	.000
2	(Constant)	.452	.161		2.807	.006
	PK	.527	.069	.560	7.641	.000
	SL	.343	.069	.364	4.962	.000
3	(Constant)	.435	.159		2.739	.007
	PK	.476	.072	.506	6.582	.000
	SL	.291	.073	.308	4.006	.000
	DY	.121	.057	.139	2.106	.037
a. Dependent Variable: PI						

Fig 9: Structural Equation Model



Even though the initial discussions suggested Information Preference is not a significant factor in influencing purchase intention, it was included in the SEM model further explore, the model returned a GFI of 0.728 and AGFI of 0.649. The model seems to fit the requirement but showed a scope of improvement if the construct can be relooked. Almost all the items in the path analysis are significant enough to influence their respective constructs and the independent variable (Packaging, Delivery, Information preferences and Satisfaction, and loyalty) in turn influence the dependent variable(Purchase intention) which is evident from the table related to regression weights.

Table 5: Regression Weights

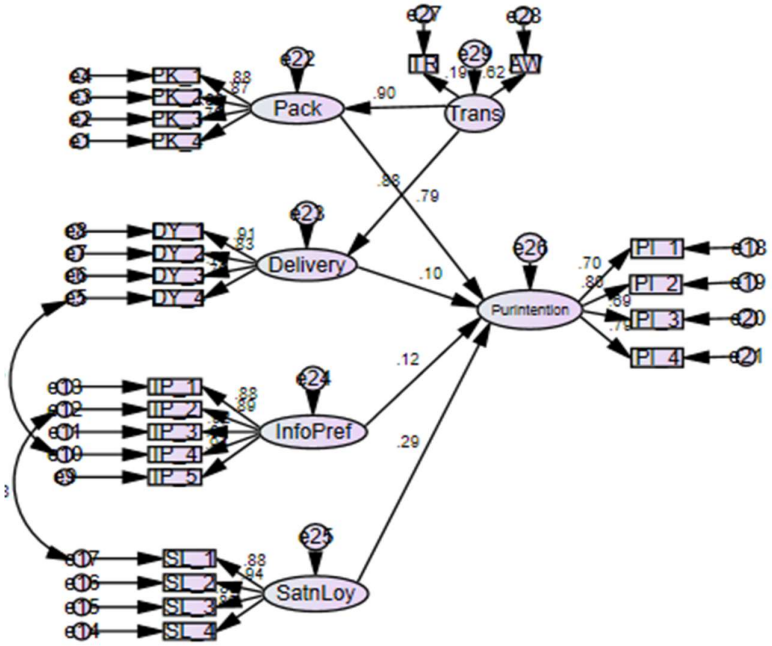
			Estimate	S.E.	C.R.	P
PurIntention	<---	Pack	0.528	0.082	6.412	***
PurIntention	<---	Delivery	0.121	0.042	2.878	0.004

PurIntention	<---	InfoPref	0.086	0.035	2.433	0.015
PurIntention	<---	SatnLoy	0.202	0.047	4.334	***
PK_4	<---	Pack	1			
PK_3	<---	Pack	1.086	0.122	8.923	***
PK_2	<---	Pack	1.022	0.099	10.292	***
PK_1	<---	Pack	1.173	0.112	10.486	***
DY_4	<---	Delivery	1			
DY_3	<---	Delivery	1.016	0.094	10.759	***
DY_2	<---	Delivery	0.894	0.088	10.21	***
DY_1	<---	Delivery	1.094	0.095	11.477	***
IP_5	<---	InfoPref	1			
IP_4	<---	InfoPref	0.889	0.046	19.224	***
IP_3	<---	InfoPref	0.846	0.045	18.629	***
IP_2	<---	InfoPref	0.853	0.047	17.965	***
IP_1	<---	InfoPref	0.927	0.057	16.225	***
SL_4	<---	SatnLoy	1			
SL_3	<---	SatnLoy	0.921	0.069	13.357	***
SL_2	<---	SatnLoy	0.984	0.065	15.217	***
SL_1	<---	SatnLoy	1.04	0.075	13.889	***
PI_1	<---	PurIntention	1			
PI_2	<---	PurIntention	1.084	0.157	6.913	***
PI_3	<---	PurIntention	1.011	0.165	6.144	***
PI_4	<---	PurIntention	1.105	0.16	6.9	***

SEM model with a new variable TRANSPARENCY

With the existing model a new variable called transparency was introduced to know the influence with packaging and delivery. It was observed that the model returned a GFI of 0.836 and AGFI of 0.734, which is much better compared to the earlier model without the construct “transparency”.

Fig 10: SEM with the variable TRANSPARENCY



The model had a GFI of 0.922 and AGFI of 0.823. The model seems to fit the requirement.

Standardized Regression Weights

Through the standardised regression co-efficient after introducing the variable Transparency, the influence of Information preference towards Purchase intentions is observed to be low and this is confirmed earlier through the regression model too.

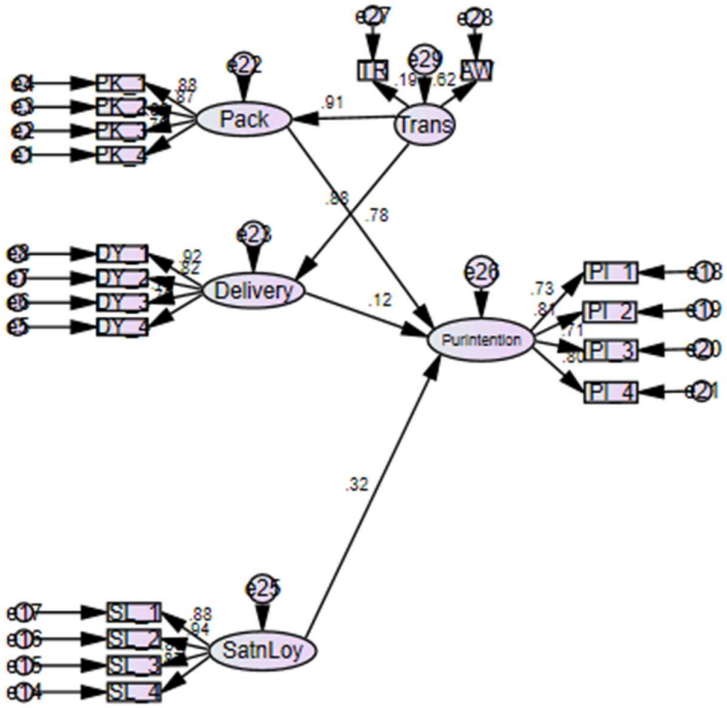
Tale 6: Standardized Regression Weights

			Estimate
Pack	<---	Trans	0.904
Delivery	<---	Trans	0.877
PurIntention	<---	Pack	0.788
PurIntention	<---	Delivery	0.099
PurIntention	<---	InfoPref	0.12
PurIntention	<---	SatnLoy	0.293

SEM mode without Information Preference

Owing to the earlier outcome on Information preferences, the said construct was ignored and the model was again tested which resulted in a GFI of 0.921 and 0.AGFI of 826. The model returned a better fit than the earlier model considered.

Fig 11: Final SEM model



"REFERENCES

[1] Oláh, J., Popp, J., Khan, M. A., &Kitukutha, N. (2023). Sustainable e-commerce and environmental impact on sustainability. Economics and Sociology, 16(1), 85- 105.doi:10.14254/2071-789X.2023/16-1/6

[2] Ol-ah, J., Kitukutha, N., Haddad, H., Pakur-ar, M., M-at-e, D., Popp, J., 2018. Achievingsustainable E-commerce in environmental social and economic dimensions by taking possible trade-offs. Sustainability 11 (1), 89. https://doi.org/10.3390/su11010089.

[3] Caspersen, E. and Navrud, S. (2021), "The sharing economy and consumer preferences for Environmentally sustainable last mile deliveries", Transportation Research Part D: Transport and Environment, 95, 102863

[4] Kawa, A. (2023). E-Commerce as a Game Changer for Logistics in a Sustainable Context. European Management Studies, 21(1), 100ñ118. https://doi.org/10.7172/1644-9584.99.5.

[5] Mangiaracina, R., Perego, A., Perotti, S., Tumino, A. (2016), "Assessing the environmental impact of logistics in online and offline B2c purchasing processes in the apparel industry", International Journal of Logistics Systems and Management, Vol. 23, No. 1, pp. 98-124. DOI: 10.1504/IJLSM.2016.073300

[6] Nogueira, G. P. M., de Assis Rangel, J. J., Shimoda, E. (2021),Sustainable last-mile distribution in B2C E-commerce: Do consumers truly care?, Cleaner And Responsible Consumption, 3,100021

[7] James, F., Kurian, A., 2021, Sustainable Packaging: A Study on Consumer Perception on Sustainable Packaging Options in E-Commerce Industry. Nveo-Natural Volatiles & Essential Oils Journal| Nveo, 10547-10559.

[8] Prakash Rao, SreejithBalasubramanian, Nitin Vihari, ShaziJabeen, Vinay Shukla &JanyaChanchaichujit | (2021) The e-commerce supply chain and environmental sustainability: An empirical investigation on the online retail sector, Cogent Business &Management, 8:1, 1938377, DOI: 10.1080/23311975.2021.1938377

[9] Kawa A., Pierański B., 2021. Green logistics in e-commerce. LogForum 17 (2), 183- 192, http://doi.org/10.17270/J.LOG.2021.588

[10] Siragusa, Chiara; Mangiaracina, Riccardo; Tumino, Angela (2020): Environmental sustainability in B2C e-commerce: The impact of multiitem shopping, In: Jahn,CarlosKersten, Wolfgang Ringle, Christian M. (Ed.): Data Science in Maritime and City Logistics: Data-driven Solutions for Logistics and

Sustainability. Proceedings of the Hamburg International Conference of Logistics (HICL), Vol. 30, ISBN 978-3-7531- 2347-9, epubliGmbH,Berlin, pp. 71-95,https://doi.org/10.15480/882.3153

[11] Choi, D., Chung, C. Y., & Young, J. (2019). Sustainable online shopping logistics for customer satisfaction And repeat purchasing behavior: Evidence from China. Sustainability, 11(20), 1–20. Doi:10.3390/su11205626

[12] Wu, S.; Gong, X.; Wang, Y.;Cao, J. Consumer Cognition and management Perspective on Express Packaging Pollution. Int. J. Environ.Res. Public Health 2022, 19, 4895. https://doi.org/10.3390/ijerph19084895

[13] Tiwari, S. and Singh, P. (2011), "E-commerce: prospect or threat for environment", International Journal of Environmental Science and Development, Vol. 2 No. 3, pp. 211-217.

[14] Sharon Cullinane (2009) From Bricks to Clicks: The Impact of Online Retailing on Transport and the Environment, Transport Reviews, 29:6, 759-776, DOI:10.1080/01441640902796364

[15] Sallnäs, U., Björklund, M., (2020), Consumers influence on the greening of distribution – exploring the Communication between logistics service providers, etailers and consumers, International Journal of Retail & Distribution Management. https://doi.org/10.1108/IJRDM-07-2019-0213"