

Master's Degree Program in **Data-Driven Marketing**

Specialization in
Data Science for Marketing

Dynamic Pricing and Sustainability: Impact on Consumer Decisions.

Understanding the Influence of Price Fairness, Trust,
and Environmental Awareness on Consumer
Behavior.

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on Consumer Behavior

by

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STATEMENT OF INTEGRITY

I hereby declare having conducted this academic work with integrity. I confirm that I have not used plagiarism, any form of undue use of information or falsification of results along the process leading to its elaboration. I further declare that I have fully acknowledged the Rules of Conduct and Code of Honor from the NOVA Information Management School.

[Lisbon, 27/4/2026]

Diogo Ferreira

DEDICATION

This thesis is dedicated to the memories of those who are no longer here, but who continue to mold and inform who I am today.

To my grandmother for the part she played in my life and the ideals that were passed on to me which I still use as a guideline today.

And to a person, who although no longer here, is still an integral part of who I am.

To my mother and father, who gave me support when no other had and never let me fall when I could not see a clear way forward.

This paper is also presented to the dreamers, who continue to reach past the boundaries of the conceivable, and to the doers, who find a way to persevere when the path is no longer in focus. As someone once told me: " There comes a point when you realize the strength you were searching for was never outside of you. "

In many aspects this paper is not a product of me alone, but of all who in one capacity or another helped to allow me to be in this place today.

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Writing this thesis, is for me, not just the closing of an academic step but the closing of a process of personal and intellectual development. The long path that I walked had some people that I count on, who helped me, in several ways, to write this research and in that, I would like to thank them sincerely.

Firstly, I thank my supervisor for her support, the willingness to help and the support provided throughout the development of this process. The efficiency to answer me in any doubt that would arise was always present and it helped me in many occasions.

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ABSTRACT

The purpose of this study is to examine how dynamic pricing affects consumers' purchase intention and satisfaction toward perishable products. A quantitative experimental method was used, where participants were assigned to either a dynamic pricing or a traditional pricing group randomly, exploring the mediating effects of perceived price fairness and trust on consumers' responses, and the moderating effect of environmental consciousness on their responses. The findings show that dynamic pricing did not significantly affect consumer purchase intention and satisfaction, and both consumer perceived price fairness and trust did not mediate the effect of pricing strategy on consumer outcomes, while they both contributed to predict satisfaction and purchase intention. Consumer environmental consciousness did not moderate the effect of pricing strategy on consumer responses, while its effect on consumers behavioral intention was significant. This reveals that the effectiveness of dynamic pricing may rely heavily on consumers' understanding of its dynamics. Although the fundamental psychological principles, fairness and trust, will be influential in consumers' decision-making. The dynamic pricing mechanism, which this experiment implemented, did not lead to consumers to activate those psychological mechanisms, and also demonstrates the difference between attitudinal and behavioral motivators; consumers were more influenced by fairness and trust on their satisfaction where more by environmental consciousness on their purchase intention. This research makes theoretical implications to the body of knowledge by demonstrating that dynamic pricing cannot always be presumed to benefit customers. It makes managerial implications by addressing the role of communication, disclosure and framing sustainability in implementing pricing strategies. In conclusion, the study is evidence to that effective dynamic pricing needs effective implementation of the strategies beyond how they operate but also creating psychological and value response from the customers.

KEYWORDS

Dynamic Pricing; Purchase Intention; Consumer Satisfaction; Price Fairness; Trust; Environmental Awareness

Sustainable Development Goals (SDG):



TABLE OF CONTENTS

Statement of Integrity.....	ii
Dedication	iii
Acknowledgements.....	iv
Abstract	v
List of Figures.....	viii
List of Tables.....	ix
List of Appendixes.....	x
List of Abbreviations and Acronyms.....	xi
1. Introduction	1
2. Literature review	3
2.1 Dynamic Pricing for Perishable Products.....	3
2.2 Purchase Intention	4
2.3 Consumer Satisfaction.....	5
2.4 Price Fairness	6
2.5 Trust	7
2.6 Moderating effects of consumer environmental awareness	8
2.7 Conceptual Framework.....	9
3. Methodology	10
3.1 Research Design.....	10
3.2 Measures	11
3.3 Data Collection	12
3.3.1 Pre-Test and study 1: Dynamic vs Traditional pricing	14
4. Data Analysis	16
4.1 Pre-Test.....	16
4.2. Study 1	17
4.2.1. Manipulation checks	17
4.2.2. Normality checks	18
4.2.3. Reliability Analysis	18
4.2.4. Control Variables	19
4.2.5. Multivariate Tests.....	19
4.2.6. Mediation Analysis.....	19
4.2.6.1. Mediation Analysis: IV → Price Fairness → Satisfaction	20
4.2.6.2. Mediation Analysis: IV → Trust → Satisfaction.....	21
4.2.6.3. Mediation Analysis: IV → Trust → Purchase Intention.....	21

4.2.6.4. Mediation Analysis: IV → Price Fairness → Purchase Intention	22
4.2.7. Moderation Analysis	23
4.2.7.1. Trust as Mediator	23
4.2.7.2. Price Fairness as Mediator	24
4.3. Additional Analysis	24
4.3.1. Multiple Regression Analysis: Antecedents Of Consumer Satisfaction	24
4.3.2. Multiple Regression Analysis: Antecedents Of Purchase Intention	25
4.3.3. Additional Moderation analysis: Environmental Awareness and Satisfaction	26
4.3.4. Additional moderation analysis: Environmental Awareness on Purchase Intention	27
5. Results and Discussion	28
6. Conclusions and Future Research	32
6.2. Theoretical Contributions	32
6.2. Managerial Contributions	33
6.3. Limitations and Future Research	35
Bibliographical References	38
Appendix A	43

LIST OF FIGURES

FIGURE 1: CONCEPTUAL MODEL.....	9
FIGURE 2: DYNAMIC PRICING CONDITION (REAL-TIME PRICE ADJUSTMENT WITH FOOD WASTE FRAMING)	14
FIGURE 3: TRADITIONAL PRICING CONDITION (STANDARD PRICE DISCOUNT WITHOUT CONTEXTUAL FRAMING).....	15
FIGURE 4:MEDIATION: IV → PRICE FAIRNESS → SATISFACTION.....	20
FIGURE 5:MEDIATION: IV → TRUST → SATISFACTION	21
FIGURE 6:MEDIATION: IV → TRUST → PURCHASE INTENTION.....	21
FIGURE 7: MEDIATION: IV → PRICE FAIRNESS → PURCHASE INTENTION.....	22
FIGURE 8: MODERATED MEDIATION MODEL – TRUST AS MEDIATOR (IV → TRUST → SATISFACTION/PURCHASE INTENTION)	23
FIGURE 9: MODERATED MEDIATION MODEL – PRICE FAIRNESS AS MEDIATOR (IV → PRICE FAIRNESS → SATISFACTION/PURCHASE INTENTION)	24
FIGURE 10: MODERATION: ENVIRONMENTAL AWARENESS ON SATISFACTION	26
FIGURE 11: MODERATION: ENVIRONMENTAL AWARENESS ON PURCHASE INTENTION.....	27

LIST OF TABLES

TABLE 1: SCALES USED FOR STUDY 1	12
TABLE 2: HYPOTHESIS SUMMARY	30

LIST OF APPENDIXES

APPENDIX A: ETHICS COMMITTEE APPROVAL 1	43
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LIST OF ABBREVIATIONS AND ACRONYMS

AI – Artificial Intelligence

ANOVA – Analysis of Variance

B2C – Business-to-Consumer

CLT – Central Limit Theorem

DV – Dependent Variable

GLM – General Linear Model

IoT – Internet of Things

IV – Independent Variable

MANOVA – Multivariate Analysis of Variance

PROCESS – PROCESS macro

Q-Q – Quantile-Quantile

R² – Coefficient of determination

SD – Standard Deviation

SDG – Sustainable Development Goals

SEM – Structural Equation Modeling

SPSS – Statistical Package for the Social Sciences

η^2 – Eta squared



1. INTRODUCTION

The growing demand for reducing food waste, and resource efficiency has been forcing retailers to adopt more flexible and data-driven pricing strategies, particularly in dealing with perishable goods. Dynamic pricing strategy "the concept of charging a different price at a given time depending on demand, supply and products life" has been found to be a useful approach to reduce perishability and waste, and it is particularly suited to food retailing sector due to relatively short life cycles for many foods such as fresh fish which need to continuously update its prices according to the changes in supply and demand (Yang et al., 2022; Kayikci et al., 2022).

Besides operational benefits, dynamic pricing has also a significant effect on consumer perception and behaviors. Previous studies have highlighted the role of price in affect consumer perceived value, purchase intention and consumer satisfaction (Zeithaml, 1988; Chang & Wildt, 1994), but consumer reactions to dynamic prices not only determined by the price levels, but also by consumer perception of the dynamic pricing strategies. Perceived price fairness and trust have been confirmed as important mediators of consumer responses in a setting where prices fluctuate and uncertainty exists (Haws & Bearden, 2006; Bolton et al., 2003; Huang & Rust, 2021).

Simultaneously, increasing environmental consciousness has exerted its impact on consumers' decision-making processes. As consumers are more aware of sustainable aspects such as food waste and are more prone to contribute to behaviors that correspond with their values. Thus, consumer's awareness towards environment is a significant dimension in affecting attitudes and behavioral intentions, especially when consumption behavior has relevance in sustainable development results (Piligrimiene et al., 2020; Puteri et al., 2022).

Even though the importance of dynamic pricing and sustainability is gaining recognition in the retail sector, not much empirical study is carried out to evaluate the effect of dynamic pricing strategies on consumer behavior in the perishable product category. It has been known how dynamic pricing might improve business operations and reduce losses, the consumers' perspectives towards dynamic pricing are much less clear and if such strategies contribute to desirable behavior patterns is uncertain. Especially, how dynamic pricing affects consumer behavior through psychological mechanisms such



as perceived price fairness and trust, and whether environmental consciousness may moderate such effects are not clear at all.

This research attempts to fulfill the missing link by exploring how price dynamism can influence purchase intention and satisfaction of consumers regarding perishable products. It investigates the mediation effects of perceived price fairness and trust, as well as the moderating role of environmental consciousness, and intends to have a better understanding of the interaction between price strategy and psychological/value considerations.

The following research questions are used to give the study direction and focus:

1. How does dynamic pricing, compared to traditional pricing, influence consumer purchase intention and satisfaction in the context of perishable products?
2. To what extent do perceived price fairness and trust mediate the relationship between pricing strategy and consumer responses?
3. Does environmental awareness moderate the relationship between pricing strategy and consumer outcomes?

This study answers the previous questions by making contributions to both academicians and managers. In terms of academic contribution, it expands the literature on pricing strategies and consumer behavior by integrating psychological and value-based processes into the study of dynamic pricing. In terms of management contribution, this study offers implications to retailers in how they can develop their pricing strategies to be profitable without overlooking consumer' expectation and sustainability.



2. LITERATURE REVIEW

2.1 DYNAMIC PRICING FOR PERISHABLE PRODUCTS

As outlined by Tellis (1986), a pricing strategy is presented as a well-founded choice among alternatives aimed at maximizing profits in response to specific scenarios, considering factors such as demand, costs, and competition. Pricing methods in the food retail industry that deal with perishable goods confront difficulties because of the products' short shelf lives, supply chain unpredictability, and shifts in consumer and demand patterns (Liu et al., 2008). In this context, dynamic pricing of perishables is defined as the continuous adjustment of prices, considering real-time market trends. When applied to perishables, it allows price changes based on their consumption status and exposure time. As a result, the perishables industry has increasingly adopted dynamic pricing as a strategic tool (Hansen et al., 2024; Kayikci et al., 2022; Marchetti et al., 2024). Utilizing data analysis, artificial intelligence, and the Internet of Things (IoT), dynamic pricing improves stock management, lowers food waste, and boosts earnings (Shekhawat, 2022; Syed et al., 2024). Additionally, latest findings also demonstrate that the data-driven and automatic system has a strong positive impact to improve efficiency of pricing of perishables under dynamic pricing environments (Yang et al., 2022).

Recent studies highlight its operational benefits, particularly in food retail, where perishables must be sold within a limited timeframe to avoid losses (Marchetti et al., 2024; Riesenegger & Hübner, 2022). As demonstrated by Kayikci et al. (2022), dynamic pricing techniques can greatly reduce surplus stock and, consequently, the environmental effect associated with organic waste when combined with predictive analytics. Hansen et al. (2024) found that companies that employ dynamic pricing can meet the increasing demand from consumers for sustainable practices while also improving their financial performance. In addition to being a tactic to increase profits, these results suggest that dynamic pricing may be a way to solve environmental issues in the market for perishable items.

The most recent research reports both the operational potential as well as the behavioral risks of dynamic pricing in perishable products. It is shown by Villa et al. (2026), that both the time-lost and the quantity discount are capable to raise the retailer profits by nearly 20% and at the same time can significantly reduce waste. However,



the authors point out the importance of the time of and amount of price cuts: Too many price decreases closer to expiration can result in negative perceptions on the quality of a product, harming customer satisfaction and trust. Strategic customer behavior can thus become a huge risk: customers can choose to delay the purchase in expectation of a further price reduction and even manipulate return behavior in order to influence future price decisions harming the long term profit (Otte et al., 2025).

2.2 PURCHASE INTENTION

Purchase intention, a predictor of future behavior, is the likelihood that a customer would select one good or service over another (Chang & Wildt, 1994). Due to its significant correlation with the efficacy of pricing and marketing techniques and its ability to predict contemporary consumer behavior, this indicator has been extensively researched in the marketing industry (Beneke et al., 2015; Grewal et al., 1998).

In the context of perishable products, purchase intention is especially sensitive to factors such as price, perceived freshness, convenience and environmental concerns (Ferreira et al., 2025). Yang et al. (2022) claim that consumers' growing awareness of sustainability and food waste has a direct impact on their purchasing decisions. As long as they don't damage views of justice or trust, dynamic pricing tactics that convey environmental value like cutting down on food waste can have a favorable impact on purchase intention (Aschemann-Witzel et al., 2018). Furthermore, price serves as an important indicator of value, quality, and fairness. Price variations especially in dynamic contexts can be perceived as discriminatory or manipulative if not properly justified (Choi et al., 2023). Even when prices are lower than normal, purchase intention can be negatively affected, as it is not only the monetary value that matters, but the consumer's perception and interpretation of the pricing process (Zeithaml, 1988). In this specific context, dynamic pricing occurs mostly through automated and data driven mechanisms, which is to say that consumers not only react to price fluctuations, but to how these fluctuations are interpreted.

Empirical studies suggest that consumers' purchase intention is mediated by variables such as the perception of price fairness and trust in the adopted pricing strategy. Specifically, when consumers perceive that a pricing strategy is not only about economic efficiency but also about social goals such as reducing waste and increasing food security their purchase intention tends to increase significantly (Hansen et al.,



2024; Nunan & Di Domenico, 2022). On the other hand, when the strategy is perceived as merely opportunistic, it can generate resistance from consumers, even if prices are lower. Thus, the acceptance of dynamic pricing for perishable products has less to do with the price itself and more to do with subjective perceptions of fairness and trust in the pricing process (Nunan & Di Domenico, 2022). These two variables, essential for consumer behavior in dynamic contexts, will be explored in more detail in the following sections.

Hypothesis 1 (H1): Dynamic pricing applied to perishable products will influence consumer purchase intentions more positively than traditional pricing.

2.3 CONSUMER SATISFACTION

Consumer satisfaction is a psychological state that results from evaluating the experience of a product or service in relation to expectations (Oliver, 2014). Huang and Rust (2020) argue that the perception of fairness, transparency, and congruence of pricing mechanisms with consumer values are essential components of happiness, particularly in service contexts that involve relational and emotional elements, such as perishable products. As a result, contentment is seen as a byproduct that represents the affective and behavioral effects of price and service exchanges (Huang & Rust, 2021).

Depending on the situation and the customer's interpretation, dynamic pricing can either increase or decrease pleasure by introducing volatility and uncertainty into the shopping experience. Recent studies have shown that consumers are happy with dynamic pricing when they think the system is fair, particularly when it accounts for elements that affect the product's worth, including urgency or freshness (Kopalle et al., 2023). Furthermore, when dynamic pricing is supported by moral justifications, such as reducing food waste, environmentally conscious consumers are more likely to be satisfied (Puteri et al., 2022). Perceived manipulation can reduce satisfaction even if the final price is low (Choi et al., 2023).

Trust is a key component in deciding satisfaction. According to Chen et al. (2024), customers who have faith in the retailer's price intentions express greater levels of satisfaction, particularly when pricing is controlled by AI. In interpreting the detrimental emotional effects of perceived ambiguity, trust serves as a buffer to preserve



contention in potentially contentious situations. Considering that perishable products create waste; it's assumed that consumers may consider it a misuse of resources. In this sense, by seeing dynamic pricing that could potentially reduce waste of products could be perceived as positive by customers, hence increasing satisfaction.

Hypothesis 2 (H2): Dynamic pricing applied to perishable products will influence consumer satisfaction more positively than traditional pricing.

2.4 PRICE FAIRNESS

According to Xia et al. (2004), price fairness is the degree to which customers believe a price or pricing procedure is reasonable, fair, and appropriate in a particular circumstance. pricing fairness assessment is a subjective opinion that is impacted by social comparisons, market standards, and individual expectations, as opposed to objective pricing levels (Bolton et al., 2003). Because of its substantial influence on consumer satisfaction, brand specification, and purchase intentions, this idea has grown in importance in behavioral economics and marketing (Haws & Bearden, 2006). The sense of fairness becomes even more crucial in a dynamic pricing situation, when prices change over time or among various clients, particularly when these variations are perceived as ambiguous or unjust (Choi et al., 2023).

Empirical research indicates that price fairness plays a substantial mediating role in the link between pricing strategies and purchase intention. Regardless of whether dynamic prices reflect demand, life cycle, or social and environmental goals, customers are more likely to accept them and finish the transaction if they think they are fair (Hufnagel et al., 2022; Kahneman et al., 1986). However, strong negative emotions like anger or mistrust emerge when customers believe that prices are set arbitrarily, manipulatively, or that they unfairly disadvantage particular groups. This can result in a decrease in the likelihood of making a purchase and reactions against the retailer (Bolton et al., 2003; Xia et al., 2004). This is particularly important for perishable products, where price variations can be justified by reducing waste or expiration dates, but open communication is still necessary to avoid adverse reactions.

Perceptions of fairness in sustainable food environments are influenced by social justice, environmental benefits, and economic value (Aschemann-Witzel et al., 2015). In conclusion, although dynamic pricing can give rise to feelings of unfairness, these can be mitigated as long as customers believe that pricing is transparent and has



socially beneficial objectives (Bolton et al., 2003). Price fairness not only influences purchasing decisions but also helps build consumer trust, especially in environments where algorithms are used (Haws & Bearden, 2006).

Although recent technological advancements in dynamic pricing (such as AI and IoT) offer significant operational benefits, they can simultaneously raise consumer concerns regarding fairness and transparency. Wu et al. (2025) show that, under Markovian (randomized) pricing, the use of price guarantees allows companies to segment customers more effectively, according to their willingness to pay. However, when consumers perceive these strategies as exploitative, they can lead to a reduction in the overall benefits received by customers. This highlights the central role of perceived price fairness and trust as essential mediating factors in consumers' acceptance of dynamic pricing for perishable goods. The role of trust, as a key mediating construct in this model, will be explored in the following section

Hypothesis 3 (H3a): Price fairness mediates the relationship between dynamic pricing and purchase intention.

Hypothesis 3 (H3b): Price fairness mediates the relationship between dynamic pricing and consumer satisfaction.

2.5 TRUST

Trust, in consumer behavior, refers to the belief that a brand, retailer or system will act conscientiously and reliably, ensuring the quality of products or services even in situations of uncertainty (Garbarino & Johnson, 1999; Urban et al., 2000). In pricing contexts, consumer trust is based not only on previous experiences and brand reputation, but also on the perception of transparency, fairness and clarity of the objectives underlying the pricing strategy (Li et al., 2023). This is especially important in dynamic pricing environments, since costs change in real time and are often determined by variables that the customer is unaware of. Such tactics can generate suspicion or even rejection of the offer if there is no apparent honesty or clear justification. Recent evidence also suggests that consumer responses to pricing strategies are influenced by how these strategies align with expectations regarding product condition and timing, reinforcing the importance of consistency and perceived legitimacy in pricing decisions (Villa et al., 2026).



When it comes to perishable goods, trust is even more crucial. Consumers must have trust in the product's freshness and safety as well as the pricing strategy. It tends to boost purchase intention and satisfaction and foster trust when dynamic pricing is publicly communicated as a way to reduce food waste or promote sustainability (Aschemann-Witzel et al., 2015; Hufnagel et al., 2022). On the other hand, pricing that is seen as opportunistic or algorithmically manipulative can lead to a sense of betrayal and lower customer engagement (Bolton et al., 2003; Xia et al., 2004).

Furthermore, trust mediates customer emotional reaction and enduring loyalty, as well as acceptance of the pricing plan (Garbarino & Lee, 2003). It serves as a buffer against potential fairness issues, since customers who trust the brand are more likely to accept price changes as acceptable (Nunan & Di Domenico, 2022). For this reason, trust is a crucial psychological process that links price fairness, dynamic pricing, and downstream effects such as purchase intention.

Hypothesis 4 (H4a): Trust mediates the relationship between dynamic pricing and purchase intention.

Hypothesis 4 (H4b): Trust mediates the relationship between dynamic pricing and consumer satisfaction

2.6 MODERATING EFFECTS OF CONSUMER ENVIRONMENTAL AWARENESS

According to Nguyen et al. (2016), consumer environmental consciousness is the extent to which people are motivated to lessen adverse environmental effects and are aware of the environmental repercussions of their purchasing decisions. This awareness affects how customers perceive marketing tactics, including price schemes, in addition to their preferences for certain products. When it comes to the price dynamics of perishable goods, consumers who care more about the environment are more likely to accept price changes when they believe that these tactics help to reduce food waste or promote sustainable results (Grant et al., n.d.; Scholz & Kulko, 2022). When dynamic pricing is in line with their green values, these customers are generally more open to pro-environmental messaging and are more likely to assess price fairness and trust favorably (Piligrimiene et al., 2020).

Research also suggests that environmental consciousness may act as a psychological lens through which pricing actions are judged (Biswas & Roy, 2018). Consumers with low environmental consciousness may perceive the same price change as



opportunistic or exploitative, while highly environmentally conscious consumers may interpret it as necessary and ethically justified. Therefore, environmental consciousness is viewed in this study as a moderating factor that increases the favorable indirect effects of dynamic pricing on purchase intention and satisfaction through price fairness and price trust

Hypothesis 5 (H5a): Consumer environmental awareness positively moderates the relationship between dynamic pricing and price fairness, such that the relationship is stronger for consumers with higher environmental awareness.

Hypothesis 5 (H5b): Consumer environmental awareness positively moderates the relationship between dynamic pricing and trust, such that the relationship is stronger for consumers with higher environmental awareness.

2.7 CONCEPTUAL FRAMEWORK

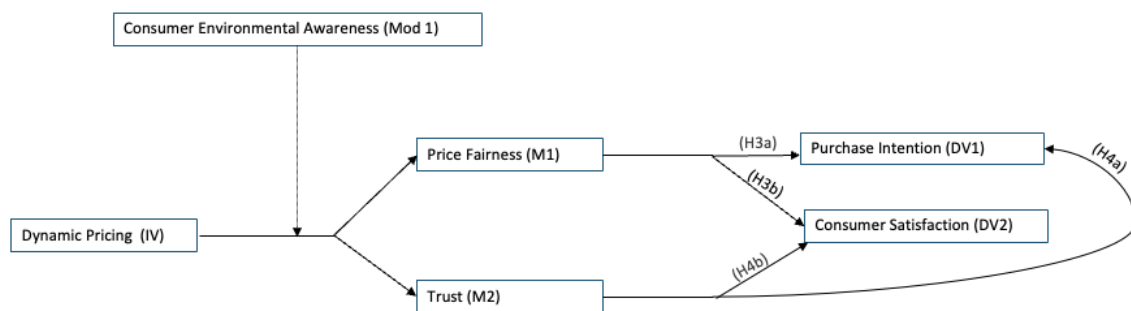


Figure 1: Conceptual Model

This study's three main goals are to: firstly, examine how dynamic pricing strategies for perishable goods, compared to traditional pricing, affect consumer satisfaction and purchase intentions; secondly, investigate how consumer environmental awareness moderates the relationship between dynamic pricing and purchase intentions; and thirdly, offer important insights into how consumer acceptance of dynamic pricing as a sustainable and successful strategy in the retail sector of perishable goods is shaped by trust and perceptions of price fairness.



3. METHODOLOGY

3.1 RESEARCH DESIGN

This study used a quantitative, experimental research design to test the effect of dynamic pricing strategies on consumer responses within the perishable food retail environment. Experimental research design is especially appropriate in this setting, as it allows researchers to manipulate the independent variable and then measure the extent of the changes in outcome variables. Thereby, it becomes possible to infer causality rather than just an association between variables (Shadish et al., 2002).

Data was gathered via a web-based, between-subjects (one-factor) experiment. The participants were recruited through Prolific and screening criteria were applied based on whether they had previously bought perishable goods in a physical retail environment. The experiment was run through Qualtrics. Furthermore, the study was randomized with a block randomizer to either the dynamic pricing condition or the traditional pricing condition.

To increase the ecological validity of the experiment, a simulated fresh fish purchasing scenario was developed. This product category was purposely selected due to its highly perishable and strongly associated with dynamic pricing strategies due to its short shelf-life and, thus, tendency for wastage. Also, using fresh fish lends ecological validity because respondents are already accustomed to purchasing the item within a retail store-like setting.

In the dynamic pricing condition, the price cuts were framed in terms of reducing food waste, which meant that the product needed to be sold because it was about to expire. In contrast, the control condition (traditional pricing) showed the same price drop without any extra context. This manipulation lets us see how consumers react not only to changes in price but also to the reasons behind those changes.

After being exposed to the assigned scenario, participants were instructed to fill out a structured questionnaire assessing their perceptions, attitudes, and behavioral intentions. All constructs were assessed utilizing multi-item Likert scales adapted from established literature, thereby ensuring psychometric reliability and facilitating rigorous statistical analysis (Field, 2013).

Independent variable in this study is the price strategy (dynamic vs. Traditional).

Dependent variables are purchase intention and satisfaction, while mediated variables



of perceived price fairness and trust represent the psychological mechanism of consumer decision-making. The moderating variable is the environmental awareness (EA) to consider the effect of individual's value of sustainability.

Experimental study using randomized design provides the benefit of isolating the effect of experimental manipulation from extraneous influences, which adds to the internal validity of the study. While the external validity of online experiments might be concerning, these issues were partially mitigated through the creation of relevant stimuli. Traditional experiments, observational study and non-experimental survey design, were not used because they do not provide the possibility to test the causal relationships proposed in the conceptual model (Shadish et al., 2002).

3.2 MEASURES

The main scales for this study were derived from prior studies to examine consumers' attitudes toward, and behaviors in response to, the pricing mechanisms used in the study. Each scale measures constructs that are related to, and important in understanding how to measure pricing strategies in retail and in a context where food waste is a significant concern. To check the reliability of the results, some control variables about customer behaviors and characteristics were also considered in the main conceptual model.

To assure that the behaviors in this study were the results of the pricing mechanism rather than previous intentions to buy, purchase intention was not only considered as the dependent variable but also used as the control variable for the participant's initial motivation to buy the product. Since participants are different, customer's buying habit, price consciousness, opinion toward sustainability, and others were measured to allow the others to take other factors into account.



Scale	Items	Source
Purchase Intention	(7-point Likert scale)	
	I intend to buy perishable products with dynamic prices. I am willing to purchase products at adjusted prices to reduce waste. I will make an effort to purchase dynamically priced products that promote sustainability.	Adapted from: (Hou & Sarigollü, 2022)
Customer Satisfaction	(7-point Likert scale)	
	I am satisfied with the dynamic pricing strategy used in the scenario. The pricing method met my expectations regarding freshness and fairness. I feel positive about the experience of purchasing perishable goods with this pricing system.	Adapted from: (Biscaia et al. 2017)
Price Fairness	(7-point Likert scale)	
	The dynamic pricing applied to the perishable product was acceptable. The dynamic pricing applied to the perishable product was fair. The dynamic pricing applied to the perishable product was reasonable.	Adapted from : Vaidyanathan and Aggarwal (2003), cited in Konuk (2022)
Trust	(7-point Likert scale)	
	I trust that the dynamic pricing system sets fair prices for perishable products. I believe that dynamic pricing system is reliable for perishable products. I am confident that the dynamic pricing system acts with integrity in price management. I believe that the dynamic pricing system is transparent in its decisions.	Adapted from: (Chi et al. 2021)
Consumer Environmental Awareness	(7-point Likert scale)	
	I am concerned about the environmental impact of wasting perishable food. I believe that sustainable practices in food retail are essential for the future of the planet. I actively consider the ecological footprint of my fresh produce purchases. I feel I have a responsibility to reduce food waste in my daily life. I prefer brands that demonstrate a proven commitment to environmental sustainability.	Adapted from: (Rustam et al. 2020)
Manipulation Checks		
	How do you think the price was determined? How clear was the link between dynamic pricing and reducing food waste? Did you feel that the price was adapted to the conditions of the product (e.g. expiration date)?	N/A

Table 1: Scales used for study 1

3.3 DATA COLLECTION

The data was collected through an online survey based experiment. In order to maintain the constancy of stimuli, data was collected with the help of an online survey-based experiment, which allows a complete control over participants perceptions and behavioral response to dynamic pricing conditions. Before the main data collection took place a pre-test was conducted on a convenience sample in order to identify and verify the credibility and realism of the stimuli and questionnaire. This pre-test collected 36 responses, however, only 32 were analyzed. The participants of the pre-test were excluded from participating in the main data collection. Based on the pre-test feedback, adjustments to the wording, stimuli design, and structure of the questionnaire were made.



On study 1, the main data collection was conducted using online experimental design approach. Participants were recruited through Prolific, the usage of the online platform provided a quality and broad participant pool. Participants responded to the questionnaire through Qualtrics ensuring that the stimuli is correctly represented to all the participants. Such a method is consistent with the experiments that require a precise method to ensure consistency and reliability and to have control over the stimuli and sample, which allows a much more conclusive argument in terms of study findings (Shadish et al., 2002). A screening mechanism was designed to ensure that respondents matched with the context of the study. Participants were requested to be at least 18 years old and they were also requested to buy perishable food products at retail locations on a regular basis. Respondents who claimed to be vegetarians were removed, as they were asked about purchase intention towards fish products, and it is unlikely that vegetarians do not respond in a biased way.

Participants were randomly allocated into two conditions: dynamic pricing or traditional pricing. Random allocation of participants into each experimental condition was adopted to enable internal validity by reducing selection bias and permitting comparability across conditions. In both cases, the participant was presented with a purchase situation involving fresh fish, which is a very perishable product that has to be dealt with special conditions in order to decrease price due to its perishable nature. Such kind of design could increase ecological validity by simulating the real situation as closely as possible. After participants were exposed to the experimental condition, they completed a structured questionnaire designed to measure the key constructs, namely purchase intention, satisfaction, perceived price fairness, trust, and environmental awareness. In each case, constructs were operationalized using multi-item Likert scales taken from prior research. The data collection lasted for about 3 weeks to ensure an adequate sample size, and reliable and valid responses, 171 valid response were collected out of the initial 185 response submitted to the experiment (all of which were included after data cleaning procedures), and this ensured high data quality and suitable methodological rigor to address the proposed model.



3.3.1 PRE-TEST AND STUDY 1: DYNAMIC VS TRADITIONAL PRICING

Manipulation: In this study, the independent variable, pricing strategy, was manipulated through two experimental conditions:

Dynamic Pricing Condition

The participant was presented with a dynamic pricing situation where the price of the product was changing in real time and with an accompanying piece of context. In the first case, the product was a discounted price that explained the reason for the price decrease as a means to decrease food waste, along with the message that the product had reached a certain expiration point. This situation mimicked how prices often work for perishable products in a retail context; in which the price is dynamically adjusted by the store.

On the display screen both the initial price (€12.99) and the decreased price (€8.99) are shown along with a message that the product price has been decreased in real time to reduce food waste and that it would expire in X number of hours.



Figure 2: Dynamic Pricing Condition (Real-time price adjustment with food waste framing)



Traditional Pricing Condition

For the traditional pricing condition, participants saw the same product and the same price reduction (from 12.99 to 8.99), but with no other contextual information or reasoning provided. This condition essentially captures a typical retail discount: price reduction is given, but there is no reason or justification. The visual appearance was kept the same as in the dynamic condition in term of layout and price information so that only presence or absence of explanatory message would differentiate between conditions



Figure 3: Traditional Pricing Condition (Standard price discount without contextual framing)

To assess if this manipulation was successful, a manipulation check was run to test if the participants understand the relevant components of the pricing situation: The degree to which price reduction was attributed to real-time modification, product expiration date, or food waste reduction, and if price reduction was seen as a "regular" discount with no further justification.



4. DATA ANALYSIS

4.1 PRE-TEST

The pre-test was implemented to measure the clarity of the questionnaire, effectiveness of the manipulation, and efficiency of measurement tools before the main experiment was conducted. A Qualtrics block randomizer was used to randomly assign participants into either a traditional or a dynamic pricing condition with a simulated environment of a fish supermarket. The reduction of prices in the dynamic condition was shown as real-time change designed to reduce food waste and was followed by the display of the available products for sale.

The pre-test had 32 valid responses. The sample was divided equally between the two experimental conditions (16 in dynamic pricing and 16 in traditional pricing). Independent samples t-tests were used to examine manipulation checks. The first manipulation check (did you notice any information regarding the product's expiration date?) showed that the manipulation was successful, and a significantly large effect was obtained as participants in dynamic pricing rated the visibility of expiration dates as much higher ($M = 6.69$, $SD = 1.014$) than participants in traditional pricing ($M = 2.00$, $SD = 1.673$, $t(30) = 9.582$, $p < 0.001$, $\eta^2 = 0.75$).

The second manipulation check (did the offer look like a traditional discount?) did not demonstrate a significantly large effect ($t(30) = -1.118$, $p = 0.272$, $\eta^2 = 0.04$) with scores of $M = 4.38$ in dynamic and $M = 5.06$ in traditional pricing; thus, it was considered an inappropriate item to use as a measure of manipulation effectiveness. The third and fourth manipulations checks (the price offer seemed to aim to reduce food waste? and, the product would expire in the near future?) did achieve statistical significance and the effect sizes were moderate to large; the item on food waste resulted in significantly higher scores in dynamic pricing ($M = 6.44$, $SD = 1.094$) than in traditional pricing ($M = 4.56$, $SD = 1.413$, $t(30) = 4.198$, $p < 0.001$, $\eta^2 = 0.37$) while the product with expiring date obtained scores of $M = 6.00$, $SD = 1.932$ in dynamic and $M = 4.75$, $SD = 1.000$ in traditional pricing ($t(30) = 2.298$, $p = 0.029$, $\eta^2 = 0.15$). Overall, it was considered that the manipulation succeeded in its manipulation of food waste and expiring date, though failed to differentiate on discount perception.

When testing the control variables using independent samples t-tests no significant difference was found between groups for purchasing habits, and there was no



significant difference in attitudes toward sustainability or price sensitivity. Therefore, these control variables were excluded from subsequent analysis.

Next, a general linear model was conducted to test the effects of the pricing condition on purchase intention and satisfaction. The overall test of the independent variable had a significantly large effect size (Pillai trace = 0.189, $F(2, 29) = 3.378$, $p = 0.048$, $\eta^2 = 0.189$). However, only the satisfaction dependent variable yielded a significant effect ($F(1, 30) = 6.899$, $p = 0.013$, $\eta^2 = 0.187$), showing a larger score for participants in the dynamic pricing condition ($M = 6.0208$, $SD = 0.93070$) compared to participants in the traditional pricing condition ($M = 5.2083$, $SD = 0.81536$). A significant main effect was not found for purchase intention, though average scores were higher for participants in dynamic pricing ($F(1, 30) = 3.085$, $p = 0.089$, $\eta^2 = 0.093$).

In sum, pre-test analysis indicated successful manipulation of price in relation to food waste and expiration date perception. The manipulation check questions also demonstrated that subjects were able to perceive and thus understand the manipulation, adding validity to the stimuli. Though one of the manipulation check questions regarding perception of discount failed to reach significance, it was considered inconsequential for this study and therefore was maintained for the manipulation during the actual data collection for Study 1. This also ensured consistency between the manipulation used in the pre-test and in the actual study for the purpose of the research.

4.2. STUDY 1

The final sample for this study consisted of 171 valid responses, after removing 14 incomplete responses from the initial total of 185. The sample shows a balanced gender distribution, with males (52.6%, $n=90$) followed by females (47.4%, $n=81$); respondents had a mean age of 32 years ($SD = 11.58$). Concerning the conditions of the experiment, 49.7% ($n = 85$) of the participants were exposed to the dynamic pricing condition, and 50.3% ($n = 86$) to the traditional pricing scenario.

4.2.1. MANIPULATION CHECKS

With the objective to verify the effectiveness of the experimental conditions, 4 manipulation checks were performed. The first manipulation check (ManCheck1_1) revealed a significant difference between groups ($p < 0.001$), with mean scores of 5.38



(SD = 1.73) for the dynamic pricing group and 2.69 (SD = 2.24) for the traditional group. The second manipulation check (ManCheck2_1) also showed a significant difference ($p = 0.016$), with means of 4.44 (SD = 1.70) for the dynamic pricing scenario and 5.02 (SD = 1.46) for the traditional pricing scenario. Regarding the third manipulation check (ManCheck2_2), it yielded a significant value of $p < 0.001$, with means of 6.27 (SD = 1.15) for the dynamic condition and 4.97 (SD = 1.71) for the traditional condition. Finally, the fourth manipulation check (ManCheck2_3) also showed a significant difference between conditions ($p < 0.001$), with means of 6.53 (SD = 0.93) for the dynamic pricing group and 5.52 (SD = 1.63) for the traditional pricing group.

4.2.2. NORMALITY CHECKS

To test if the data distribution in this study was normal, the Shapiro-Wilk and Kolmogorov-Smirnov test for normality were conducted. It was found that in this study the distributions for the dependent variables are not normally distributed ($p < 0.05$). After inspecting histograms and Q-Q plots, was observed there was some deviation from normal distribution; the data appeared in a bell shape. Skewness and kurtosis were taken to determine if the distribution was asymmetrical and how peaked it was. But since the sample size in the dataset is quite large ($N=171$), the Central Limit Theorem was used, regardless of the population distribution's shape, all distributions were normally distributed. Therefore, parametric tests can be conducted in later studies. The Levene's test was used for homogeneity of variance to check whether MANOVA can be conducted.

4.2.3. RELIABILITY ANALYSIS

Cronbach's alpha coefficients were calculated for all measures to determine the internal consistency of the measurement scales used in Study 1. All Cronbach's alpha values were well above the acceptable 0.70 cutoff, confirming that all scales had a high degree of reliability: Purchase Intention ($\alpha = 0.854$), Satisfaction ($\alpha = 0.903$), Price Fairness ($\alpha = 0.867$), Trust ($\alpha = 0.907$) and Environmental Awareness ($\alpha = 0.899$). With these results, it was confirmed that the scales could be used in further statistical analysis.



4.2.4. CONTROL VARIABLES

The influence of demographics; specifically gender and age, were examined to see if they could be accepted as covariates. There was no difference between the two groups on gender (independent samples t-test, $p = 0.505$). There was no significant relation between the main dependent variables and age (Pearson correlation analysis, $p = 0.536$). Gender and age were not entered into the subsequent MANOVA and mediation analyses as they had no statistical influence over the construct under study.

4.2.5. MULTIVARIATE TESTS

To check if the independent variable (Dynamic vs. Traditional pricing strategy) had any significant effect on the package of dependent variables (Satisfaction and Purchase intention) MANOVA was performed. The omnibus test, Wilks Lambda was not significant ($p = 0.959$), the effect size (partial $\eta^2 = 0.001$) was extremely small. The Levene's tests on Satisfaction and Purchase Intention was not significant ($p=0.518$; $p=0.681$, respectively), which means that the homogeneity of variances was satisfied in our case. Also, the univariate between-subjects effects did not reveal any significant effects for Satisfaction ($F = 0.007$; $p = 0.933$; $\eta^2 < 0.001$) or Purchase intention ($F = 0.078$; $p = 0.781$; $\eta^2 < 0.001$). This evidence can lead us to the conclusion that pricing strategy has no significant impact on consumers' results in the given experimental setting.

4.2.6. MEDIATION ANALYSIS

To explore further how pricing strategy influences Satisfaction and Purchase Intention, a mediation analysis was conducted using Hayes' PROCESS Model 4. The analysis examined whether Price Fairness, Trust, and environmental consciousness are mediators of the relationship between the independent variable (Dynamic vs. Traditional pricing) and the dependent variables of the study.



4.2.6.1. MEDIATION ANALYSIS: IV → PRICE FAIRNESS → SATISFACTION

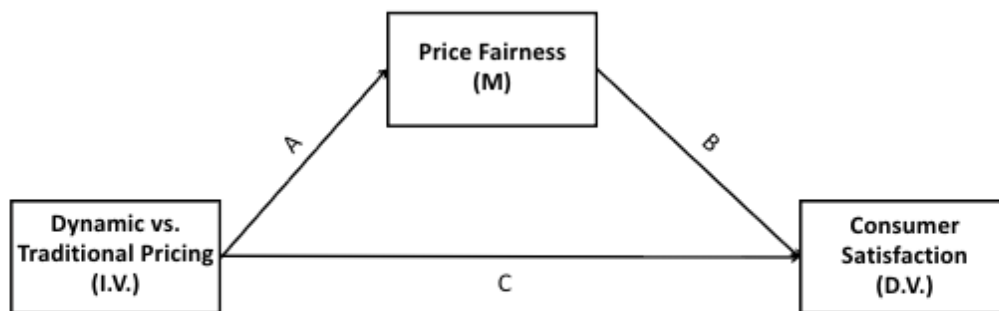


Figure 4: Mediation: IV → Price Fairness → Satisfaction

Price Fairness was influenced non-significantly by the pricing strategy, at $a = 0.203$, $p = 0.244$ (Path A), showing that the experimental condition did not influence the price fairness perceptions of consumers directly. However, Price Fairness was positively and significantly related to Consumer Satisfaction, at $b = 0.671$, $p < 0.001$ (Path B). Satisfaction was thus predicted by how fair customers perceived the pricing of the product to be. When the Price Fairness mediator was included in the analyses, the direct effect of pricing strategy on satisfaction was still non-significant ($c' = -0.204$, $p = 0.226$), consistent with the previous multivariate results. Finally, the indirect effect of pricing strategy on satisfaction through Price Fairness had a value of 0.136, with the 95% confidence interval at $[-.089, .366]$. Because the interval contains zero, it's possible to conclude that Price Fairness does not mediate the effect of pricing condition on satisfaction. These results infer that although consumers were affected by how fair the price was in their evaluation of how satisfied they were with the product, the pricing manipulation was not strong enough to change how fair participants perceived the product to be, and thus did not result in an indirect effect.



4.2.6.2. MEDIATION ANALYSIS: IV $\rightarrow$ TRUST $\rightarrow$ SATISFACTION

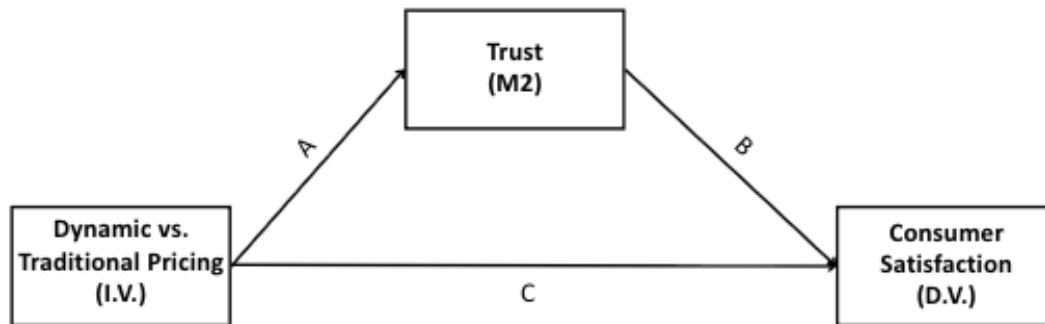


Figure 5: Mediation: IV $\rightarrow$ Trust $\rightarrow$ Satisfaction

The pricing strategy had no effect on Trust with $a = -0.303$, $p = 0.124$ (Path A), meaning the decision of which pricing type the product uses does not matter. Trust, on the other hand, significantly positively affects Consumer Satisfaction with $b = 0.594$, $p < 0.001$ (Path B), meaning there is a very significant direct relationship with increased Trust in the product resulting in higher levels of Consumer Satisfaction. There was no significant direct effect of pricing on Consumer Satisfaction when mediating it with Trust $c' = 0.126$, $p = 0.453$ (Path C). There was no indirect effect of pricing on Consumer Satisfaction through Trust. That is, the indirect effect was equal to -0.180 and the 95% confidence interval is $[-0.411, 0.046]$, which contains zero, indicating no indirect effect of the pricing condition on Consumer Satisfaction with Trust as a mediator.

4.2.6.3. MEDIATION ANALYSIS: IV $\rightarrow$ TRUST $\rightarrow$ PURCHASE INTENTION

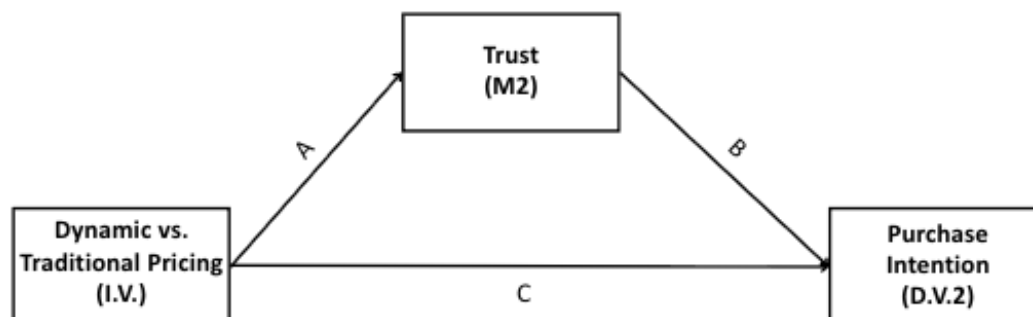


Figure 6: Mediation: IV $\rightarrow$ Trust $\rightarrow$ Purchase Intention



The pricing strategy had no significant direct effect on Trust ($a = -0.303$, $t = -1.543$, $p = 0.124$, Path a), and that the price manipulation (dynamic versus traditional pricing) did not have a direct influence on the subjects' trust level. Trust however showed a strong, positive and significant direct influence on Purchase Intention ($b = 0.450$, $t = 6.335$, $p < 0.001$, Path b). Trust is thus a strong positive predictor for the intention of purchase. The pricing strategy showed no significant direct effect on Purchase Intention when the mediator was included ($c' = 0.078$, $p = 0.548$). The indirect effect of the pricing strategy on Purchase Intention through Trust was an indirect effect of -0.136 , with a confidence interval of $[-.316, .037]$ at 95% level. Since this interval contained zero, it was concluded that Trust does not mediate the relationship between the pricing condition and purchase intention. This means that Trust is indeed an important predictor for purchase intention, but the price manipulation was not strong enough to significantly affect the level of trust.

4.2.6.4. MEDIATION ANALYSIS: IV $\rightarrow$ PRICE FAIRNESS $\rightarrow$ PURCHASE INTENTION

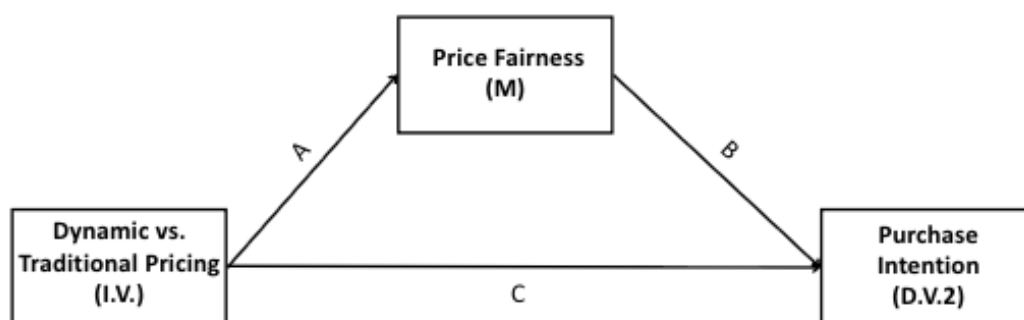


Figure 7: Mediation: IV $\rightarrow$ Price Fairness $\rightarrow$ Purchase Intention

There was no statistically significant impact of the pricing strategy on Perceived Price Fairness ($a=0.203$, $p=.244$, path a), which suggests that the experimental condition itself did not influence how fairly consumers perceived the price to be. Perceived Price Fairness, however, did exert a large and significant positive influence on Purchase Intention ($b=.476$, $p<.001$, path b), showing that fairness is a positive predictor of Purchase Intention. The direct impact of the pricing strategy on Purchase Intention, controlling for the mediator, was not statistically significant ($c' = -.156$, $p = .433$, path c). Most critically, the indirect effect of the pricing strategy on Purchase Intention, through



the mediation of Perceived Price Fairness, was .097 (95% CI [-.066, .271]). This interval contains zero and the result is therefore a non-significant mediation. This result implies that while fairness is a powerful predictor of purchase intention, the pricing manipulation did not elicit sufficient change in perceptions of fairness to provide a mediating effect.

4.2.7. MODERATION ANALYSIS

4.2.7.1. TRUST AS MEDIATOR

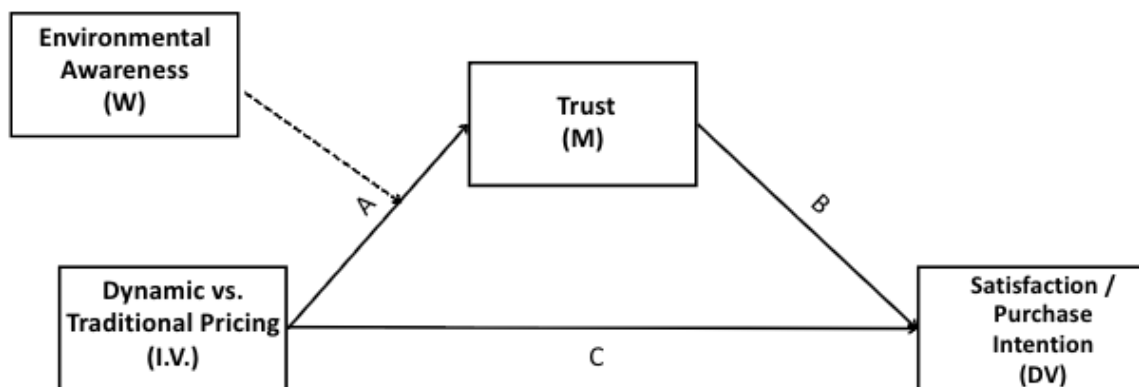


Figure 8: Moderated Mediation Model – Trust as Mediator (IV → Trust → Satisfaction/Purchase intention)

According to moderated mediation analysis (PROCESS Model 7), the mediation of pricing strategy on Trust is not significant ($a = 0.3376$, $p = 0.6565$). This means that price strategy does not influence customer's Trust. The interaction effect of pricing strategy and environmental awareness is not significant as prediction of Trust ($\beta = -0.1102$, $t = -0.8086$, $p = 0.4202$). That is, environmental awareness does not moderate the influence of pricing strategy on Trust. Trust directly and significantly influences satisfaction and purchase intention positively ($b = 0.5917$, $p < 0.001$). Price strategy affects neither satisfaction nor purchase intention, Trust positively influences satisfaction and purchase intention. In satisfaction (Index = -0.0652, BootCI [-0.2326, 0.0958]) and purchase intention (Index = -0.0496, BootCI [-0.1912, 0.0735]), the index of moderated mediation is not significant because the confidence interval includes 0, which indicates the indirect effect of pricing strategy on dependent variables through Trust is not affected by environmental awareness.



4.2.7.2. PRICE FAIRNESS AS MEDIATOR

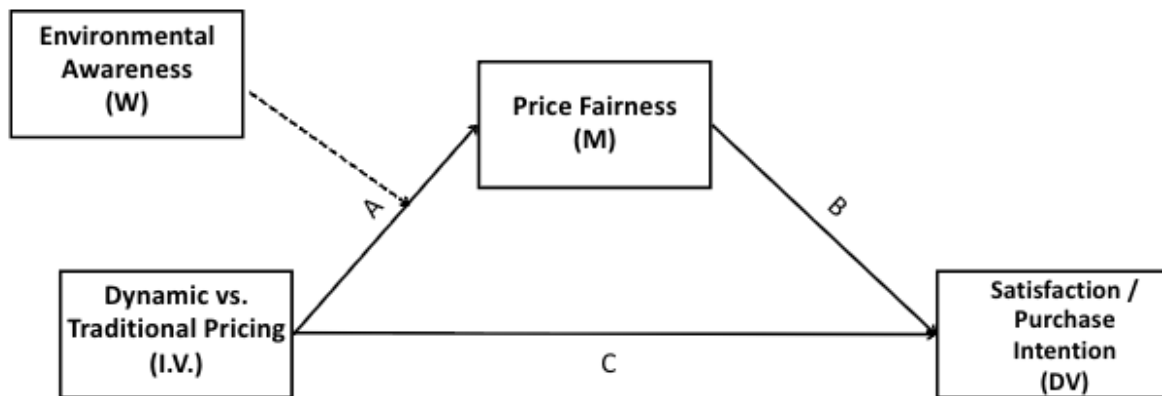


Figure 9: Moderated Mediation Model – Price Fairness as Mediator (IV → Price Fairness → Satisfaction/Purchase Intention)

In addition to this, pricing strategy was not found to have a main effect on perceived price fairness ($a = 0.203$, $p = 0.244$) which means that the manipulation had no effect on perceptions of fairness. The interaction between pricing strategy and environmental awareness regarding perceived price fairness was also not significant ($\beta = -0.0385$, $t = -0.3014$, $p = 0.7634$). Therefore, environmental awareness was not found to moderate the relationship between pricing strategy and perceived price fairness. Perceived price fairness remained a significant predictor of both satisfaction and purchase intent (reinforcing the influence of this variable) however the main effects of pricing strategy on both dependent variables were not found to be significant. The index of moderated mediation was not significant for satisfaction (Index = -0.0257 , BootCI $[-0.2199, 0.1591]$) or purchase intent (Index = -0.0184 , BootCI $[-0.1743, 0.1157]$), as the 95% confidence intervals included 0. It seems that the indirect effects of pricing strategy on satisfaction and purchase intent through perceived price fairness are not dependent on environmental awareness.

4.3. ADDITIONAL ANALYSIS

4.3.1. MULTIPLE REGRESSION ANALYSIS: ANTECEDENTS OF CONSUMER SATISFACTION

In order to get additional understanding of the relative importance of the main antecedents specified in the conceptual model, another multiple regression was run in which Consumer Satisfaction was the dependent variable, and perceived price fairness, trust and awareness to the environmental issues were set as the independent



variables. The regression was statistically significant ($R^2 = 0.403$, $F(3,164) = 36.852$, $p < .001$), a high proportion of variance of the consumer satisfaction was explained. The Durbin-Watson statistic of 2.141 confirmed no evidence of serial correlation in residuals and hence the predictors' independence. Of the three independent variables, perceived price fairness appeared to be the best predictor of the satisfaction ($\beta = 0.322$, $t = 3.928$, $p < .001$), second by trust ($\beta = 0.281$, $t = 3.279$, $p = .001$). The environmentally awareness also exerted positive and statistically significant impact but on a smaller level ($\beta = 0.156$, $t = 2.307$, $p = .022$). The analysis indicates that the evaluation of price fairness and trust in the retailer are the key determinants of consumers' attitudinal responses, while environmental concern appears to be only an underlying factor.

4.3.2. MULTIPLE REGRESSION ANALYSIS: ANTECEDENTS OF PURCHASE INTENTION

A second multiple regression analysis was performed, again with Purchase intention as the criterion and perceived price fairness, trust and environmental concern as the predictor variables. This overall model was significant ($R^2 = 0.223$, $F(3,164) = 15.710$, $p < .001$) explaining 22.3% of the variance of purchase intention. The Durbin-Watson value was 1.861, also confirming no autocorrelation and no multicollinearity problems, as these constructs represent unique dimensions. Environmental concern was found to be the most potent predictor of purchase intention ($\beta = 0.215$, $t = 2.795$, $p = 0.006$), which would seem to emphasize the core role of the consideration of eco-friendliness in determining consumers' behavioural intention. Price fairness ($\beta = 0.179$, $t = 1.913$, $p = .058$) and trust ($\beta = 0.190$, $t = 1.941$, $p = .054$) on the other hand were only marginally significant and can be considered as being positively related to purchase intention. Apparently, there is a difference between attitude-driven and behaviour-driven outcomes. Where satisfaction is more determined by the price fairness- and trust-related factors, purchase intention seem to be more affected by value considerations, especially regarding the environment.



4.3.3. ADDITIONAL MODERATION ANALYSIS: ENVIRONMENTAL AWARENESS AND SATISFACTION

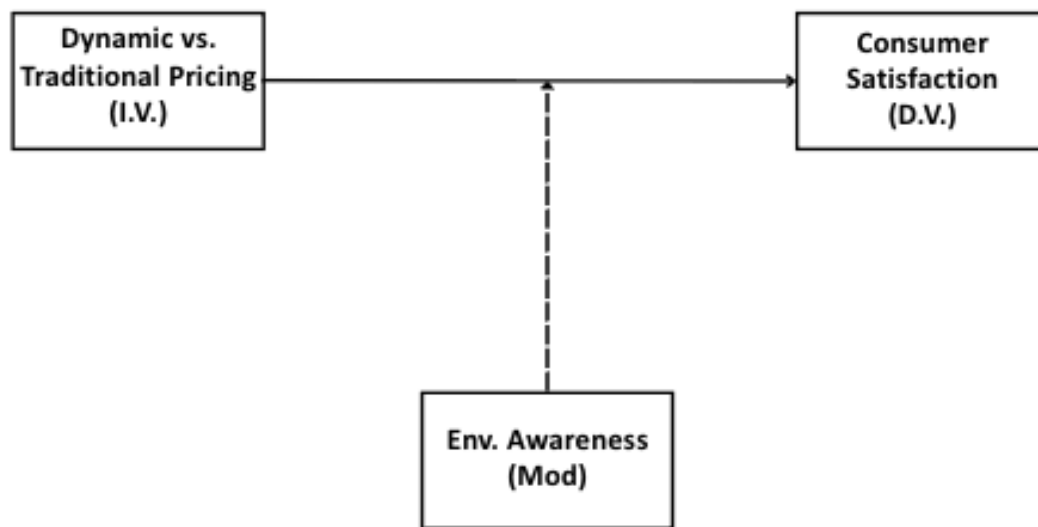


Figure 10: Moderation: Environmental awareness on satisfaction

In line with the non-significant moderated mediation findings with regard to trust and perceived price fairness, to further explored whether environmental awareness can also have a simpler direct moderating effect on the relationship between pricing strategy and customer satisfaction. Since the existing literature indicates that consumers' environmental concern may influence the way consumers react, it was applied PROCESS Model 1 in an exploratory way in order to test this direct moderation effect.

Moderation test was done to see if Environmental Awareness has a moderating effect between the pricing strategy (Dynamic and Traditional) and the Consumer Satisfaction. Overall, the model accounted for a substantial amount of variance in satisfaction ($R^2 = 0.407$, $F(3, 167) = 38.16$, $p < .001$). The direct effect of pricing strategy on Satisfaction did not turn out to be significant ($\beta = .898$, $t = 1.125$, $p = .262$), which is in accordance with the past studies. Environmental awareness, as an independent factor, had significant predictive ability for Satisfaction ($\beta = .490$, $t = 4.312$, $p < .001$). People with high environmental awareness were generally more satisfied with the situation irrespective of the pricing condition. The interaction between pricing strategy and Environmental awareness did not turn out to be significant ($\beta = -.167$, $t = -1.164$, $p = .246$). This indicates that the way in which the pricing strategy affected the satisfaction



does not change based on one's environmental awareness. Change in R^2 for the interaction was small and non-significant $\Delta R^2 = .004$, $F(1, 167) = 1.356$, $p = .246$).

4.3.4. ADDITIONAL MODERATION ANALYSIS: ENVIRONMENTAL AWARENESS ON PURCHASE INTENTION

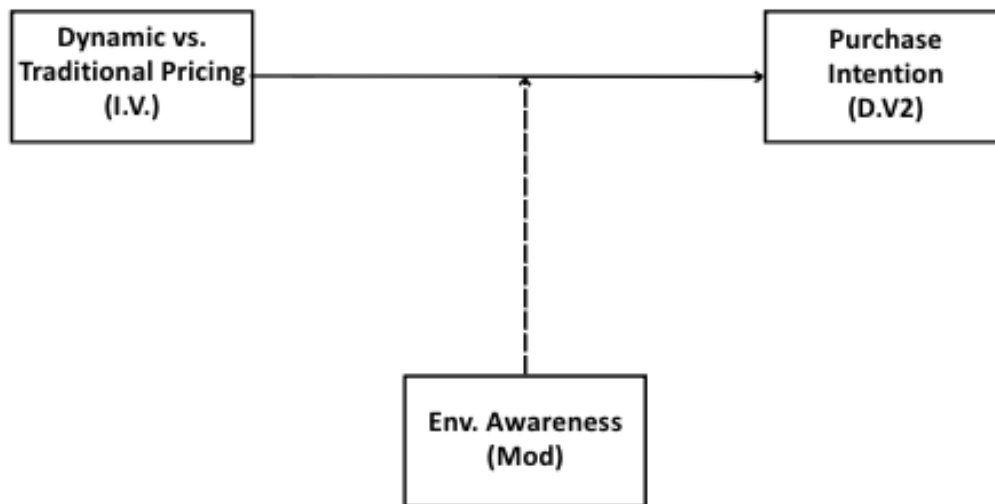


Figure 11: Moderation: Environmental awareness on purchase intention

A Moderated analysis was performed to investigate if the relationship between pricing strategy and Purchase intention can be mediated by Environmental awareness. The model was significant ($R^2 = 0.231$, $F(3, 167) = 16.71$, $p < 0.001$), which predicted 23.1% of the variance of purchase intention. Pricing strategy itself did not significantly influence Purchase intention ($\beta = 1.190$, $t = 1.398$, $p = 0.164$), as has also been predicted from the multivariate findings. However Environmental Awareness was found to be significant as an independent predictor ($\beta = 0.517$, $t = 4.195$, $p < 0.001$), indicating that individuals with higher environmental awareness are also inclined to possess higher purchase intent. Interaction between pricing strategy and Environmental Awareness was not found to be statistically significant ($\beta = -0.224$, $t = -1.460$, $p = 0.146$), demonstrating that whether the consumer is exposed to dynamic or traditional pricing has no bearing on the purchase intention of individuals depending on their level of environmental awareness. It was also observed that there was very little change in R^2 after introducing interaction term ($\Delta R^2 = 0.009$, $F(1, 167) = 2.13$, $p = 0.146$). The findings prove that Environmental Awareness does not act as a moderator but a direct predictor.



5. RESULTS AND DISCUSSION

The result of this study has contrary the predictions based upon previous literature of dynamic pricing and consumer behavior. No effects of dynamic pricing were detected on consumer purchase intention and consumer satisfaction, thus H1 and H2 have been rejected. This result contrasts previous research which pointed out that price strategy is crucial role in constructing consumer value perceptions and behavior responses (Zeithaml, 1988; Chang & Wildt, 1994). Since the significance of direct effect is none, in this study, consumers could not perceived dynamic pricing as meaningful information to affect their judgments and behavioral intention. One interpretation of these results is that the manipulation lacked sufficient psychological impact. The fact that the dynamic pricing was identifiable may not have been sufficient for participants to deem it important enough to affect their evaluations or behavioral intentions.

One reason behind this finding may be due to the choice of product category in this research. Because the product category used in this experimental setting is fresh fish, a perishable product and an extremely sensitive product, consumers might believe that the price decrease toward the end of its shelf life might imply reduced food safety or quality perceptions. In such a situation, avoidance of purchasing may occur not due to price evaluation, but rather, food safety concerns and thus the perceived risk may have a stronger influence and outweigh any potential gain from dynamic pricing.

Additionally, perhaps the core logic underpinning dynamic pricing, more specifically its ability to decrease food wastage, was not prominent enough within the experimental stimuli. Given a real world retail setting with several simultaneous stimuli and with the consumers decision-making taking place under time constraints, consumers may have used heuristics processing instead of trying to critically analyze the pricing mechanism (Tversky & Kahneman, 1974). Consequently the dynamic pricing signal may have been received by the cognitive process, but not indeed incorporated.

One of the key contributions these results make to the literature is their view on perceived price fairness. As established in the literature, perceived price fairness seems to be a key factor determining consumers responses, especially in situations that involves pricing that fluctuates and that the firms must give justification to (Haws & Bearden, 2006; Bolton et al, 2003). The results seem to support this theory to some extend since perceived price fairness has effects on consumers' satisfaction and



purchase intention. On the other hand, dynamic pricing itself did not influence consumers' perceived price fairness, therefore H3 was not supported. One reason that can be drawn from this, is that despite the role price fairness seems to play in consumers' judgment, the pricing strategy employed by firms in this experiment was unable to impact fairness perception; therefore, the expected mechanism of how dynamic pricing can influence consumers behavior is unable to work, hence limits its effect. This implies that perceived price fairness, while being the central factor influencing the consumers, and as it is mentioned in the literature; requires consumers' interpretation of whether the pricing approaches are substantial and meaningful.

Likewise trust had a similar pattern. Previous studies report that trust is the core vehicle that customers rely on in assessing the company and responding to pricing strategies, particularly in uncertain or complex environments (Huang & Rust, 2021; Nunan & Di Domenico, 2022). As predicted, the effect of trust was significant to both satisfaction and purchase intention, however it did not yield significant effect on trust, thus H4 was rejected. It could be argued that trust acts as an independent predictor rather than as a mediator, that is, in this study the pricing strategy did not pose credibility, transparency and perceived benevolence to shape trust and consequently influence the downstream behavioral responses. With regard to this, trust then looks like it is a direct predictor, not so much a mediating variable. Again, the belief that trust plays a role if its context has been activated appropriately by the context where the pricing plan is presented seems supported.

Mediation hypotheses also failed. Although the perceived price fairness and trust were found significant predictors for the dependent variables, the indirect effect of dynamic pricing on consumers' reactions through these two variables were not found significant, therefore H5 and H6 failed. An important note should be taken from these results. Having the "relevant psychological constructs" and activating them are not the same. As expected, fairness and trust seem central to the consumer's decision-making process, but their actual impact depends on the degree to which they are actually and meaningfully evoked by the situation, which was not found in the case with the manipulation used here.

A potential explanation of these results may be the separation between cognitive acknowledgment and behavioral consequences. While manipulation checks showed that subjects were indeed aware and understood the dynamic pricing strategy, this



cognitive acknowledgment did not necessarily lead to the alteration of their attitudes or behavioral intentions. These results may agree with earlier studies that have concluded that consumer judgments are influenced not only by cognitive evaluations of worth, but also by the extent to which they are found relevant or meaningful in context (Zeithaml, 1988; Liu et al., 2008). If the pricing strategy is perceived as non-relevant, or if it does not extract a powerful evaluative judgment, then behavioral influence of the strategy will be negligible. From this perspective, it may be the case that the manipulation was indeed processed in a cognitional perspective but was not internalized.

On the moderation hypothesis, the results showed that environmental awareness did not moderate the link between the pricing strategy and mediators and H7 was not supported. Although environmental awareness has a strong direct influence on satisfaction and purchase intention, environmental awareness did not act as a boundary condition that moderated the effectiveness of dynamic pricing strategy. It means that environmental awareness is a key determinant for consumers attitudes, however it might not be enough to change attitudes in response to the pricing strategy without a more explicit sustainability cue.

Hypothesis Number		Supported?
H1	Algorithmic Dynamic pricing applied to perishable products positively influences consumer purchase intention.	No
H2	Algorithmic dynamic pricing applied to perishable products positively influences consumer satisfaction	No
H3a	Price fairness mediates the relationship between dynamic pricing and purchase intention	No
H3b	Price fairness mediates the relationship between dynamic pricing and consumer satisfaction	No
H4a	Trust mediates the relationship between dynamic pricing and purchase intention.	No
H4b	Trust mediates the relationship between dynamic pricing and consumer satisfaction	No
H5a	Consumer environmental awareness positively moderates the relationship between dynamic pricing and price fairness, such that the relationship is stronger for consumers with higher environmental awareness	No
H5b	Consumer environmental awareness positively moderates the relationship between dynamic pricing and trust, such that the relationship is stronger for consumers with higher environmental awareness	No

Table 2: Hypothesis Summary

In addition, multiple regression also provides further insights for interpretation of these results. The multiple regression results show that the relative importance of the antecedents vary according to the outcome. For consumer satisfaction, perceived price fairness is the most significant predictor, followed by trust, and then relatively less so, environment. The results also correspond with prior research on consumers, which identifies the mediating role of perceived fairness and trust in forming judgments on consumption experiences (Haws & Bearden, 2006; Bolton et al., 2003; Huang & Rust, 2021) The result for purchase intention, however, shows environment as the only significant factor, while perceived price fairness and trust has negligible contribution.



This result corresponds with prior research showing that, in general, environmentally concerned values are a critical factor in shaping consumer behavioral intentions (Pilgrimiene et al., 2020; Puteri et al., 2022). By demonstrating that although the experimental manipulation fails to achieve significance effects on consumer attitudes, consumption choices still seem to be mediated through inherent psychological and values mechanisms.

These results combined leads to the conclusion that although the mechanisms specified in the model (perceived price fairness, trust, environmental consciousness) are relevant to explain consumer behavior, the dynamic pricing strategy developed for this experiment did not activate them effectively. This points out a crucial deficiency in the implementation of a dynamic pricing strategy. An effective dynamic pricing strategy is not merely dependent on the existence of these constructs but more on how the dynamic pricing strategy is perceived, internalized and psychologically interpreted by the consumer. Consistent with these results, an environmentally aware attitude also stands out as a significant direct predictor of the outcomes of consumer behavior. It strongly affects the consumption outcomes (satisfaction and purchase intention) but apparently does so directly rather than interactively. This additional finding also seems to suggest that the consumer values regarding the environment do affect attitudes regardless of the effectiveness of the pricing mechanism. This implies that while environmental concern has a relevant place in consumer choice, it may be a function of the extent to which the sustainability cues are made explicit.



6. CONCLUSIONS AND FUTURE RESEARCH

6.2. THEORETICAL CONTRIBUTIONS

This study contributes to the literature about pricing strategies and consumers behavior, by questioning the assumptions that the presence of a pricing strategy may induce consumers to certain behavior. While the literature stresses the central role of pricing strategy to affect the consumers perceptions of value and behavioral consequence (Zeithaml, 1988; Chang and Wildt, 1994), the results of the present research demonstrate that the existence of a pricing strategy does not per se have a significant impact on consumer satisfaction and purchase intentions. The merely existence of a pricing strategy does not enable to drive consumer behavior, but the perception of it by consumers is the main key factor for its success.

An important aspect of this research is the concept of perceived fairness of price. This was found to be the most important variable influencing satisfaction and purchase intention, confirming the previous studies of Haws and Bearden (2006) and Bolton, Keitzman and Wagner (2003), demonstrating its value in explaining consumers perceptions. However contrary to initial hypotheses dynamic pricing does not directly effect the fairness perception. This research also adds to existing findings by arguing that pricing does not spontaneously cause perceived fairness to emerge. This will instead be caused depending on the extent to which pricing seems justified, appropriate and relevant.

Also, in terms of trust, this study complements previous research by confirming that although trust impacts the satisfaction and purchase intention significantly it does not work as a mediating variable between the pricing strategy and consumers response. Whereas prior studies state that trust helps reduce uncertainty and increase the quality of consumers' decisions (Huang & Rust, 2021; Nunan & Di Domenico, 2022) the finding confirm that the independent variable, trust, seems to be more as a dependent variable. This indicates that one needs to further reflect under what circumstances the trusting variable should be activated in the context of pricing strategies.

In addition, this investigation contributes to the body of knowledge about how environmental consciousness influence purchase decision process. The result implies that environmental consciousness is a good predictor of satisfaction and intention to purchase and the behavioral intention to purchase is the one who is largely influenced



by it. This finding is consistent with some prior studies which revealed that pro-environmental values play an important role in affecting consumer behavior (Pilgrimienė et al., 2020; Puteri et al., 2022). What is interesting is that, based on the findings, the effect of environmental consciousness on the decision to purchase is found to be greater than the one from price evaluations which demonstrates that value drivers will increasingly have the potential to influence consumer's behavior.

Finally, this study helps the academic theory development of consumer decision making by identifying the divergence of the antecedents of attitudinal and behavioral responses. The attitudinal response is driven mainly by the cognition processes of price fairness perceptions and trust where purchase intention is driven more by value considerations such as environment consciousness. The findings have developed our deeper understanding of the different psychological process driving behavioral response and recommend future research investigating the impact of different antecedents toward various outcome variables.

At the theory level, this study has also added contribution to basic consumer behavior and marketing theory. The findings help add to value theory of consumer behavior (Zeithaml, 1988) in that price strategy has no effect on consumer's perception of value if it's not meaningful and context dependent. It also adds to fairness approaches in the fact that fairness is important in customer's assessment but is not necessarily triggered off by the mechanism of pricing itself and instead the effect is mediated by meaning-dependent approach. Lastly, it adds to the literature about the function of trust in decision-making and finds trust as an effect determinant of response rather than being impacted by pricing strategies. Finally, it adds to value approaches by suggesting increasing significance of ecological consciousness in determining purchase intention, where a customer's value has been found to be greater than economic factors like price in some cases.

6.2. MANAGERIAL CONTRIBUTIONS

From a managerial implication perspective, the conclusion of this study offers several suggestions to retail businesses intending to develop dynamic pricing strategies in a retailing environment especially in perishable product business. The result clearly suggests that dynamic pricing alone can neither affect satisfaction nor purchase intention. Thus, it may indicate that companies cannot simply implement dynamic



pricing strategies and expect good customer outcomes. The efficiency is strongly determined by customers' perceptions of dynamic pricing strategies.

The second significant implication is on perceived price fairness. Fairness has emerged as a powerful predictor for satisfaction and purchase intention; however, it is clear from this study that dynamic pricing does not directly increase the perception of fairness. This means that, businesses are responsible for communicating and justifying their pricing approaches, especially it requires their pricing strategies to be perceived as fair, transparent and justifiable to the customers. For example: A retailer can display the sale price with an in-store message, on the shelf tag, or a separate sticker that reads, "To clear before expiration date & minimize waste, all items reduced to..." along with the original and sale prices and the time left on the shelf life. Explicitly detailing why, the price is discounted will remove any perceived ambiguity and give consumers a plausible reason for the discount as opposed to perceived price manipulation. Specifically, when dealing with perishable goods where price adjustments are widely accepted and frequent.

In a parallel way, the results confirm the crucial role of trust for consumer responses. Even though it is the factor that influences satisfaction and purchase intention, it is not affected directly by the pricing strategy. This means it is not taken for granted that trust will develop through pricing actions. Managers should build trust through larger strategies such as clear communication, consistency and credibility perceptions, to make consumers trust on pricing practices of the firm.

The results of the research also point to the increase of environmental concern as a factor that affects consumer purchase behaviour. As environmental concern is one of the most powerful predictors of the intention to purchase it seems to show consumers are driven more and more by values related to the environment. This creates a clear opening for managers to embrace sustainability within their pricing strategies. For example, framing dynamic pricing as a solution to minimize food waste may help communicate the message of the technology, especially regarding eco-aware customers.

The results also point that managers should understand the difference between the drivers of satisfaction and purchase intention. Satisfaction seems to be influenced by fairness and trust more dominantly, while purchase intention is influenced by environmental consciousness more significantly. This could be deduced that managers



may need to use different strategic practices to reach their goals. Specifically, if the goal of the managers is to increase the satisfaction level, the companies should put more effort on the fairness perception and trust toward the companies. Retailers could create more transparent and less seemingly arbitrary pricing processes. For instance, retailers might apply more transparent rules about when and by how much items will be discounted, perhaps offering uniform discount schedules for a specific percentage of time left until expiration. Retailers might also allow customers to visualize price changes via digital receipts or loyalty apps, building transparency rather than merely communicating the final price at the register. But if the managers aim to maximize customer purchase intention, especially toward perishable products, the managers should give more emphasis on the sustainable purchasing issue and the impacts on environment. For example, retailers could create specific "anti-waste" areas in stores, where items nearing expiry will be merchandised and positioned in relation to a sustainability effort, or a retail app could provide personalized push notifications on near-expiry products, highlighting them as environmentally friendly options. "We've sustainability in the retail experience as opposed to making it standalone information". This may be a more effective way to leverage environment-focused purchase intentions.

In summary, this research shows that the effect of dynamic pricing strategy not only depends on how they are executed, but also how they are communicated and experienced. It will be more effective when management not only focuses on pricing mechanism, but also combines it with transparent communication and trustworthy, sustainable communications

6.3. LIMITATIONS AND FUTURE RESEARCH

Nevertheless, it is important to recognize limitations of this work and offer directions for further research. In the first place, this research looked at one single product category (perishable foods) and only the fresh fish context in that category was analyzed in detail. The rationale behind choosing this context is that it represents one of the most relevant ones for applying dynamic pricing, however, it could restrict the generalization of the findings. Consumers might interpret and react to dynamic pricing differently in different product categories, for example, high involvement and low involvement products or hedonic and utilitarian goods. Additional studies, conducted



in different retail contexts, would verify whether the null findings presented here is a product of the context or dynamic pricing limitations in general.

Second, the experimental design included only one instance of the pricing manipulation. This design is common in experimental studies but may not fully represent real-world consumer behavior in which customers are subject to numerous pricing tactics over time. One such limitation of this design could be that repeated interaction with the manipulation is not a realistic consumer behavior, potentially preventing the manipulation from having an impact on the relevant psychological constructs such as perceived price fairness and trust. Future studies should incorporate longitudinal designs to identify whether prolonged, dynamic pricing exposure builds consumer perceptions and trust.

Yet another key limitation involves the format of the experimental stimuli. The stimuli were realistic and well-defined but, was the context of static instead of a dynamic shopping environment, participants may have been less invested in the pricing context and, in turn, less sensitive to the psychological salience of the manipulation. This is an especially critical consideration since the results indicate that the pricing dynamic was psychologically perceived but not mentally internalized. In future work, researchers should incorporate more interactive experimental formats (such as simulated shopping environments or dynamic price changes occurring in real-time) to reflect real-world responses to dynamic pricing.

Beyond these findings, it was also interesting to note the difference between cognitive understanding and behavior effects. Even though the manipulation check supported the fact that participants knew what the pricing strategy was, no behavior effects were obtained for satisfaction and purchase intentions. These results indicated that merely awareness may not be sufficient to promote consumption, and it is necessary to look deeper into psychological mechanisms which mediate this gap. Other concepts such as perceived relevance, emotional investment and context might be critical for future research.

Additional results show that these important constructs, like perceived price fairness, trust, and environmental concern, are powerful determinants of consumers' reactions, but that they are not impacted by the pricing manipulation. This can imply that the strength and/or framing of the experimental stimulus is not sufficient. Future research can look into different methods for displaying dynamic pricing, such as adding more



context, providing explicit justifications, or making the frame more emotional (e.g., food waste reduction).

Lastly, the sample used in this research, although varied, was acquired via an online environment and therefore cannot adequately represent the entire diversity that consumer populations possess. Cultural characteristics, purchasing habits and sensitivity to price mechanisms could all impact consumer perceptions and reactions to dynamic pricing. Further research into different, more varied samples could further enhance understanding of how various consumer types perceive pricing mechanisms. Concerning the future direction for research, this paper suggests a couple of meaningful areas for further investigation. For the future research directions, this study highlights the fact that, in the future, research should consider how the framing of dynamic pricing may affect the consumers' perception especially in relation to the sustainability-associated topics. Given that the environmental consciousness seems to be an important influence in this research, future studies might want to focus on the possible increase in the effectiveness of dynamic pricing if it is framed as a measure in tackling the food waste or to improve the sustainability.

Second, future research could also examine the different effects of the pricing strategies on attitudinal vs. Behavioral effects. From the results in the present study, it appears that satisfaction and purchase intention are produced through different mechanisms and thus future models should distinguish these mechanisms.

Lastly, additional work can help illuminate the specific circumstances in which price strategy is particularly able to elicit the psychological constructs of fairness and trust, focusing on the potential roles of communication, transparency and contextual fit, and considering the extent to which these can be applied to design successful price strategy that fulfills consumer expectations and behavioral change.



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APPENDIX A



This is to certify that

Project No.: **DDMKT2025-1-218747**

Project Title: **Dynamic Pricing Strategies for Perishable Products: Exploring the Impact of Environmental Awareness on Consumer Purchase Behavior**

Principal Researcher: **Diogo Ferreira**

according to the regulations of the Ethics Committee of NOVA IMS and MagIC Research Center this project was considered to meet the requirements of the NOVA IMS Internal Review Board, being considered **APPROVED** on 1/21/2025.

It is the Principal Researcher's responsibility to ensure that all researchers and stakeholders associated with this project are aware of the conditions of approval and which documents have been approved.

The Principal Researcher is required to notify the Ethics Committee, via amendment or progress report, of

- Any significant change to the project and the reason for that change;
- Any unforeseen events or unexpected developments that merit notification;
- The inability of the Principal Researcher to continue in that role or any other change in research personnel involved in the project.

Lisbon, 1/21/2025

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Appendix A: Ethics Committee Approval 1

Data with Purpose.

