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Exploring Psychological Drivers in Dynamic Pricing and Consumer Decision Making

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Abstract: This research aims to explore psychological aspects of consumers' decision-making process from the perspective of dynamic pricing strategies in e-commerce systems. As online retail continues to grow, exploring pricing algorithms, UX, and consumer behaviors becomes vital to businesses and researchers. Which leads to research questions. How do consumers perceive and respond to dynamic pricing; how perceived UX affects consumers' interactions with dynamic pricing; what is the effect of ethical considerations on consumers' trust and engagement. The results show that there exists a complex relation between pricing methods, customer experience components and psychological factors. Studies found that range of price dynamicity and the equity of the actions determines buyers' attitudes towards DP's changes. From the study, better UX design development of easy-to-understand interfaces and value propositions has higher acceptance by consumers. The issue of data protection and price policies occupy a significant portion of consumer credibility and brand sustainment. The discussion adds value on how psychological processes trigger consumers responses to dynamic prices. This study acts as a handbook for ethical and efficient pricing methodologies that fit the budget firm, keeping the consumer's content. Furthermore, it forms the basis for future studies of the dynamics of online retail and consumer behaviour in e-commerce.

Keywords: Dynamic Pricing, Consumer Psychology, User Experience (UX), E-commerce Ethics, Decision-Making.

JEL Code: D12, D91, M31, L81, L86

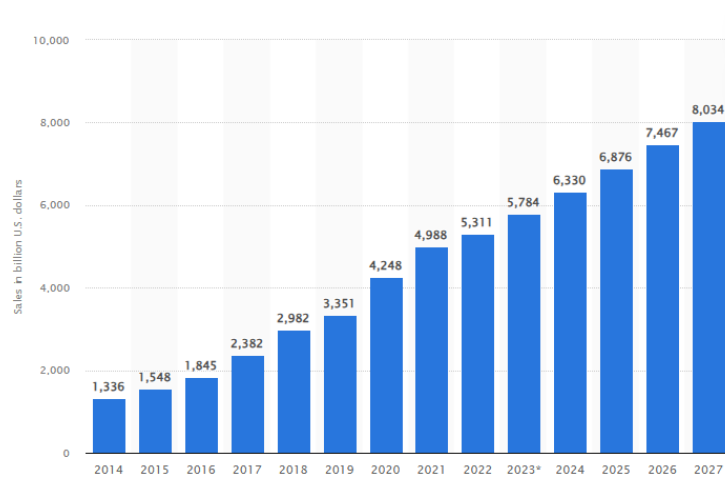
1. INTRODUCTION

E-commerce has experienced tremendous growth and future global online sales will exceed \$6.330 trillion by 2024 (Stephanie Chevalier, 2024) (See Figure 1). Given this digital transformation, there is a need to come up with unique pricing strategies that would fit the prevailing market needs. Semi-transparent pricing, which can be described as the regular change of prices depending on the market situation, demand, and consumer behaviour, has become one of the dominant strategies in the E-commerce segment (Armstrong and Vickers, 2019). With the help of developments in big data analysis and artificial intelligence, companies can maximise the profit margins and at the same time meeting the variation in demands of consumers (Mbayo Kabango and Romeo Asa, 2015).

Another kind of dynamic pricing strategy is the pricing model which is known as personalized pricing, which has recently gained considerable popularity. This strategy involves the setting of dynamic and personalized price structures that are based on each customer's web history, spending habits, and other demographics (Banerjee and Duflo, 2006). The new opportunity to set individual prices has given new premises for the generation of revenues but at the same time has created issues of fairness and openness (Scherer, 1991). As it has been established that dynamic pricing is widely practised by e-commerce firms, more research is still needed on how dynamic pricing affects consumer psychology. There is still a limited understanding of how the pricing algorithms, user experience (UX), and consumer decision-making functions (Miller, Osborne and Sheu, 2017). Additionally, the public



perception regarding this automated type of pricing and the resulting ethical issues involved are not well addressed in the transitional environment of e-commerce technologies (Martin, 2019).



Source: www.statista.com (2024)

Figure 1. Retail e-commerce sales worldwide from 2014 to 2017

The research problem can be summarized as follows: To fill the gap that was identified in the previous section, there is a need to examine the psychological factors that trigger consumers' decision-making process regarding dynamic pricing strategies within e-commerce settings by considering the moderating effect of UX and consonant with ethical issues of this practice. To address the identified research problem, this study shall pursue the following objectives as follows (1) To understand the consumer attitudes and behaviours towards the variable price structures in the context of the online retail business (2) To test the moderating role of UX in the dynamic pricing and consumers' purchasing behaviour relationship (3) To assess the moderating effect of ethical concerns like the protection of the consumers' information and fair product pricing on consumer confidence and use of e-commerce platforms (4) To pursue the research goal, a conceptual model has to be advanced and subsequently used to construct a theoretical framework that would incorporate psychological theories of decision making into the context of modern e-commerce (5) To provide recommendations to the e-commerce businesses on the best approach to employ dynamic pricing that is both ethical and effective.

This research is particularly relevant for both theoretical and applied areas in research on e-commerce and consumer psychology. From the methodological perspective, the research advances the understanding of such forms of digital marketing as dynamic pricing from an academic angle by means of examining the psychological processes of consumers' responses to it (Newman, Wachter and White, 2018). By connecting old theoretical theories, for instance, the Elaboration Likelihood Model (ELM) with the current trends in e-commerce (See Figure 2), this research advances and eliminates the existing chasm between traditional consumer psychology and modern e-commerce practices (Petty and Cacioppo, 1986). This paper shall exhaustively analyse how consumers perceive and comport themselves to dynamic pricing information, and would contribute to the creation and expansion of theoretical frameworks of pricing information to conform more to the peculiarities of online retailing marketplaces. Moreover, this study goes further than the previous ones, as it focuses on the ethical aspect of dynamic pricing, and thus can be added to the current discussions of responsible conduct in the new context of digital business (Aleksander, 2017). From a practical angle, the knowledge derived from this study will be useful particularly to e-commerce firms to enable them to select the best pricing strategies that will not compromise the trust and satisfaction of consumers. By analysing the psychological factors of consumers' reactions to dynamic pricing, firms are capable of specifying and providing clear pricing mechanisms (V. Kumar, 2018). Such knowledge has the potential to increase customer loyalty and, therefore, improve the company's profit-making capability.

Also, the findings of the research will guide the formulation of the UX design guidelines that can be used for depicting the full implementation of dynamic pricing strategies without customary dissatisfaction levels (Don Norman, 2013). It was also found that as competition in the e-commerce industry grows, getting a chance to provide simple seamless positive user experiences while at the same time integrating complex pricing methods can be a key competitive advantage for companies. Finally, this research can offer useful insights to the policymakers and regulatory authorities who are trying to address the issues originating from the dual-faced nature of dynamic pricing strategies. By unmasking the potential effects on the consumers' welfare and the fundamental structure of the digital economy, such a study can assist in designing better legislation and practices reacting to the repercussions of the new forms of disruption (Bar-Gill, 2019). Therefore, this research contributes to the development of the theoretical framework about the interrelations between technology, psychology, and ethics in e-commerce while offering the most valuable knowledge for improving the shopping future of online retail and consumer-oriented business solutions.

2. LITERATURE REVIEW

2.1. Dynamic Pricing in E-commerce

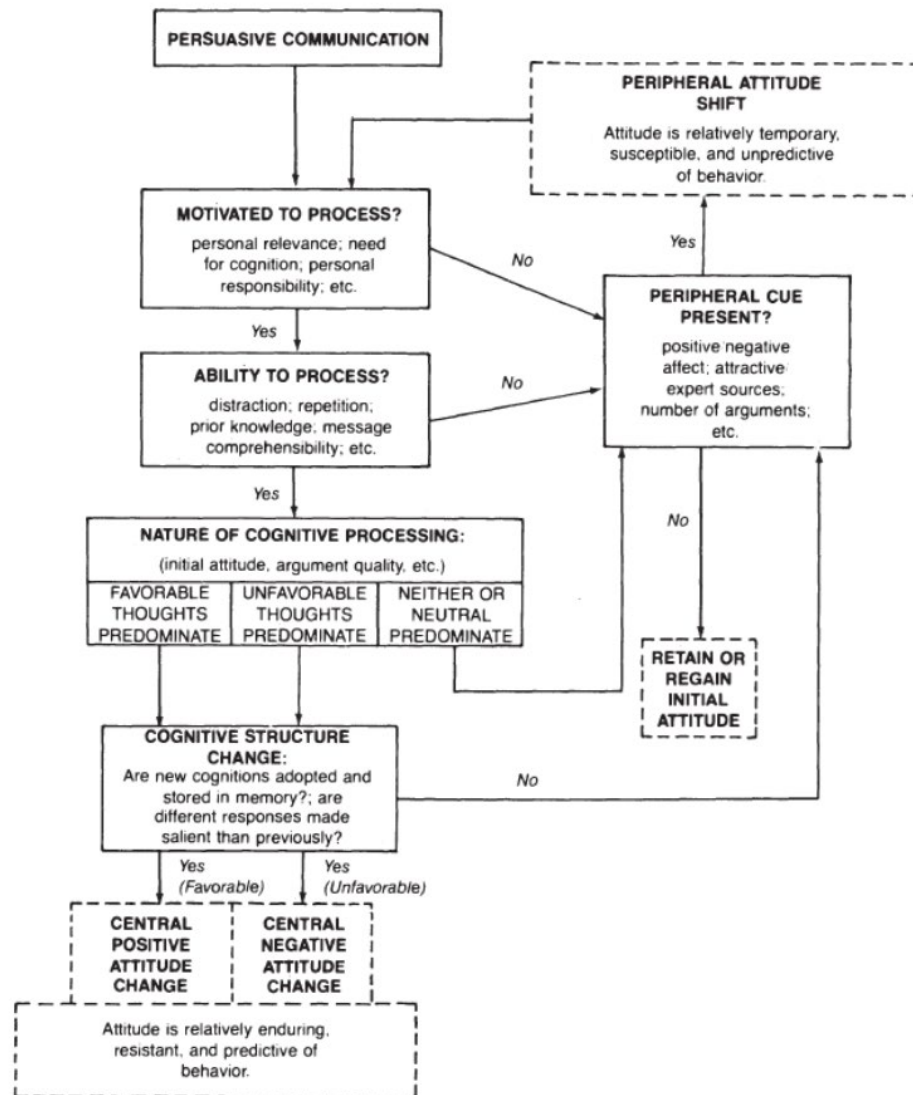
The concept of dynamic pricing takes a critical place in e-business, which means that organizations can set prices on the Internet with reference to market conditions and consumer demand, as well as the unique desire of every buyer (Heidary et al., 2022). This approach utilizes sophisticated computer programs and sophisticated data analysis for the best pricing techniques, and in most instances, provides personalized prices per customer (Garbarino and Lee, 2003); (Govoni, 2012). The key processes of dynamic pricing in digital markets include demand pricing, under which the prices are adjusted by current and forecasted demand; time pricing, where the prices are adjusted according to time factors; competitor pricing, which adapts the prices to competitors' strategies; and finally, individual pricing which sets the prices depending on the consumer behaviour and characteristics (Arvind Sahay, 2007). These mechanisms are supported by data analytics, machine learning and real-time market monitoring tools that allow fast and efficient pricing decisions on the side of business (Systems and Lines, 2014).

Dynamic pricing in e-commerce is a radical shift from the conventional fixed price setting in the selling of products and services. It enables an organisation to capture the maximum amount of consumer surplus and also to respond to changes in the external market promptly. But at the same time, the nature of these systems that include many components also poses issues in terms of customer understanding, equity, and rightfully so, efficiency (Garbarino and Lee, 2003). Even if dynamic pricing is not a product of the digital age but is in use by airlines and hotels through a practice termed yield management, e-commerce has greatly escalated its practice and its methods (Kimes, 1989). The digital revolution has also provided increased possibilities to gather consumers' data, enhanced and real-time computational power of analysis, and enhanced application of artificial intelligence and machine learning to envision more precise demand and better price consciousness (Chen and Iyer, 2002). Some of the emerging trends in the use of dynamic pricing include the usage of IoT devices for demand sensing in real-time, integration of social media sentiment analysis to price determination and the use of blockchain technology in pricing as a way of facilitating transparency and security (Grewal et al., 2011). All these are going far in defining the possibilities of the newer pricing strategies and structures with more detailed and even highly customized options. However, they also bring emerging concerns about the privacy of data, the fairness of algorithms, and the possibility of the practice of discriminating prices (Haws and Bearden, 2006).

2.2. Consumer Psychology in Online Purchasing

Since consumer decision-making about dynamic pricing occurs in a dynamic environment, that requires applying several psychological models. Reality Checking, which holds that consumers choose rationally to make optimal utility, has been criticized a lot especially when put into operation in everyday life (Simon, 1955). The more stimulating, however, is the Prospect Theory, advanced by

(Kahneman and Tversky, 1979) which gives a diagnosis of how people view and value potentials for loss and gain and is therefore more helpful in understanding decision making under risk (Kahneman and Tversky, 2013). The idea of Bounded Rationality recognizes the understanding that consumers act and make decisions in a world of incomplete information, limited abilities to process information, and constrained time, which is the case in the context of a dynamic online shopping context (Gingerenzer, 2020). In the e-commerce context, these models need to be further extended to include characteristics like information overload, reduced sensory information, and decisions resulting from web-based user interfaces (Huang, 2000). In the digital context, there are new factors that can greatly affect price attitudes: the format of price communication, the possibility of price comparison, the factor of social proof and customer ratings.



Source: Corbin & Strauss (2014)

Figure 2. Elaboration Likelihood Model

Elaboration Likelihood Model (ELM): Petty and Cacioppo have put forward the Elaboration Likelihood Model (ELM) to advance understanding of customer responses to 'Dynamic Pricing' in e-commerce (Petty and Cacioppo, 1986). The ELM posits two routes of persuasion. There is the central route which requires scrutinizing of information and persuasion arguments and the peripheral route which only focuses on superficial characteristics and the use of shortcuts. This model specifies that pricing information may be perceived and processed not the same way due to involvement level,

motivation, and ability to process information (Gu et al., 2023). Based on this reason, one can look at the application of dynamic pricing where the high-involved customers are likely to process the information about prices across time and from different sellers via the central route processing. In particular, it is reasonable to expect that less involved consumers may be preprocessing cues based on the relative reliance on some aspects of the visual stimuli, brand name, or other peripheral factors in their decision-making (Tam and Ho, 2005). Knowledge of these processes may assist e-commerce companies to enhance their pricing strategies and presentation to the consumers, and possibly the usage of effective dynamic pricing techniques.

2.3. User Experience in the context of E-commerce

Usability in Internet shop design elements to which consumers' behaviour and purchasing decisions can be very sensitive. The role of Information architecture which is the structure and organization of content in the context of the present research which deals with the navigation and information processing of pricing information cannot be over-emphasized (Kraft, 2012). Developing a specific framework of what consumer experiences visual design elements such as colour, typography, and images can affect the consumer's sensors and feelings about pricing (Tractinsky, Katz and Ikar, 2000). Interaction design deals with the responsiveness of interfaces which have an impact in orientating consumers on possible options in a given product category or the ability to compare prices (Rogers, Sharp, 2015).

The cognitive cost of use, the ability of users to achieve their goal in a given system, is very critical in dynamic pricing (Zayra Jaramillo, 2013). A good design and representation of the change in price and other factors of value addition can somehow avoid negative feelings towards the use of dynamic pricing strategies. However, the implementation of the aforementioned UX elements can considerably change the consumer's attitudes and reactions towards dynamic pricing strategies (Hassenzahl and Tractinsky, 2006). Studies have noted the impact that UX design can have on consumer behaviour patterns in the context of commodities' sales online. A successfully implemented and user-friendly interface can bring additional value associated with the credibility and reliability of a given e-commerce site eradicating apprehensions regarding dynamic pricing strategies (Gupta and Agrawal, 2021). Proper design helps to decrease cognitive/busyness and thereby promotes wiser thinking and decision making that might be a challenge for the consumers in the case of multiple price information (Sweller, 1988). Some weeds of beauty can be proven to influence the purchase decision and user satisfaction rate, including the colour of the 'Buy' button or the position of the price tag (Bloch, 2003). When it comes to dynamic price changes, UX design can be a positive mediator and, therefore, can help to minimise negative feelings about such pricing types (Hassenzahl, 2014).

2.4. Ethical issues in Dynamic Pricing

The use of the dynamic pricing system usually involves the collection and use of vast amounts of information on the consumer thereby raising strong issues of privacy. The kind and amount of information that is aggregated for use in price determination may violate consumer rights, especially where he/she has to be charged differently based on his/her circumstances (Martin, Borah and Palmatier, 2016). Some of the challenges posed by data collection include issues related to the processing of the collected data, with behaviours that compromise privacy (Culnan, 2014). Transparency emerges to be a source of concern as a majority of consumers remain ignorant of the amount of data that is being collected and how it is being used to set favourable customized prices (Krishnan, 2006). Such practices can diminish consumer confidence and create a negative attitude toward brands that use dynamic pricing (Goldfarb and Tucker, 2012). The challenge has therefore been on how to obtain enough data that is needed for dynamic pricing strategies while at the same time respecting the rights of consumers to data privacy.

Concerning dynamic pricing practices, there is an inherent problem of bias and perceived unfairness in that practice. Price discrimination, whereby different consumers are charged differently for the same product or service, has ethical implications in terms of fairness (Xia, Monroe and Monroe, 2004). Much the same as the previous issue, the format and strategies used to set consumer prices may

leave the consumers with a feeling that they are being ripped off, thus eroding brand image and customer loyalty (Campbell, 2014). There are also concerns that the process of implementing price algorithms may intensify or reproduce prejudices of society, resulting in discrimination in pricing (Lambrecht and Catherine Tucker, 2013). A study proved that perceived injustice in pricing undermines the attitude towards brands and willingness to purchase them (Bolton and Warlop, 2019). The conflicts of fairness and transparency diseases are challenges affecting the dynamic pricing strategies' sustainability in e-commerce.

Several main research gaps have however been identified despite the increasing body of knowledge available about dynamic pricing in e-commerce. Research on dynamic pricing and UX has been conducted independently, however, there is a lack of research on how broadly the UX design impacts the consumer's reaction to dynamic pricing strategies (Chao-Min Chiu, Eric T. G. Wang, Yu-Hui Fang, 2012). It cements a gap where research means connecting knowledge from psychology, design, and marketing to create better and consumer-responsive dynamic pricing solutions.

There is an even greater need for theoretical research on the psychological mechanisms of the given consumer responses in regard to the dynamics of the price update (Moe and Fader, 2004). The dynamic pricing long-term effects such as impacts on consumer trust and brand loyalty, organisational loyalty and overall market consequences are however still lacking since the current research mainly concentrates on the short-term consumer reactions (Priester, Robbert and Roth, 2020). There is a danger in employing the dynamics of pricing to offer the consumers something they need in periods of economic hardship while at the same time reaping great business benefits; hence a well-framed ethical code for dynamic pricing strategies will have to consider this (Elegido, 2011). Such a framework could help in elaborating the accountable and more sustainable approach to the application of dynamic pricing in e-commerce. Last, of all, it has been concluded that the majority of studies on dynamic pricing have been carried out in developed Western countries (Boerman, 2017). More research should be conducted on the effects of cultural factors on perception and reaction toward dynamic pricing strategy especially exercising a global synergy in e-commerce. That would be useful for academics as well as practitioners in the domain of e-commerce and dynamic pricing because the current literature lacks such specifically focused findings. This will increase the formulation of better, efficient yet ethical and consumer-friendly dynamic pricing models hence acting in the best interest of both consumers and producers in the digital market environment.

3. RESEARCH DESIGN AND METHOD

This research used both qualitative and quantitative strategies in order to investigate the psychological antecedents of consumption choices regarding tactical price fluctuations with reference to e-commerce businesses. In an effort to meet the research objectives, data collection tools used in the study were quantitative surveys, experimental design and qualitative interviews. The research design adopted in the study was sequential explanatory mixed method where the qualitative research was conducted to expound results obtained from the quantitative study (Three et al., 2017). Such an approach was useful in providing a complex view of consumers' perceptions and actions towards dynamic pricing. A 500 sample of e-commerce consumers were offered a quantitative online questionnaire that measured attitudes towards dynamic pricing, perceived user experience and ethical implications. The questionnaire was developed credibly from other validated scales in consumer psychology literature (Dillman et al., 2018). A between-subject design was used in the study to determine the effect that the various dynamic pricing strategies were likely to have on consumers. In the survey 200 participants accepted to be part of the study and were placed in various conditions in relation to pricing in an e-commerce environment (Kirk, 2009). Face-to-face interviews using semi-structured questionnaires (n=20) Interviews were administered to the selected respondents to further understand their experiences and attitudes to dynamic price mechanisms (Kvale, S., & Brinkmann, 2024).

In the quantitative phase, a stratified random sampling technique was used to have across gender, age, and frequency of online shopping (Kalahasthi et al., 2023). In the case of the qualitative phase, purposive sampling was adopted which means that the researcher chose the participants who would be in a position to offer ample and more relevant information in regard to their survey data (Sharp,

2003). Qualitative data were analysed by contents analysis and histograms, while quantitative data was by descriptive and inferential statistics, and multiple regression analysis to test hypotheses on variable relationships (Caron and Markusen, 2016). The quantitative data collected during experiments were analysed by using Analysis of variance (ANOVA) to investigate the variation of the consumers' behaviour under different pricing conditions (Ibrahim A. Kira, Linda Lewandowski, Jeffery S. Ashby, 2015). All the qualitative data were then analysed using Braun and Clarke's six-phase thematic analysis process to determine patterns and themes among participants' responses.

The research was conducted in an ethical manner, and the following principles were followed: informed consent was obtained from all participants, identity of participants and data collected were kept anonymous, and any participant had the right to withdraw from the study at any time (Kenaphoom, 2021). The collected study data was collected in compliance with the research protocol reviewed and accepted by the institutional review board. This methodology was developed to offer a detailed analysis of the research questions using the merits of both quantitative and qualitative methodologies. The quantitative parts provided statistical credibility and control of the external validity while the qualitative parts provided thickness and meaning of the study results (Rivki *et al.*, 2007). In this way, the study sought to increase the reliability and validity of the findings and fill the gap in the existing literature pertaining to consumer psychology in the context of dynamic pricing used in e-commerce.

4. RESULTS AND DISCUSSION

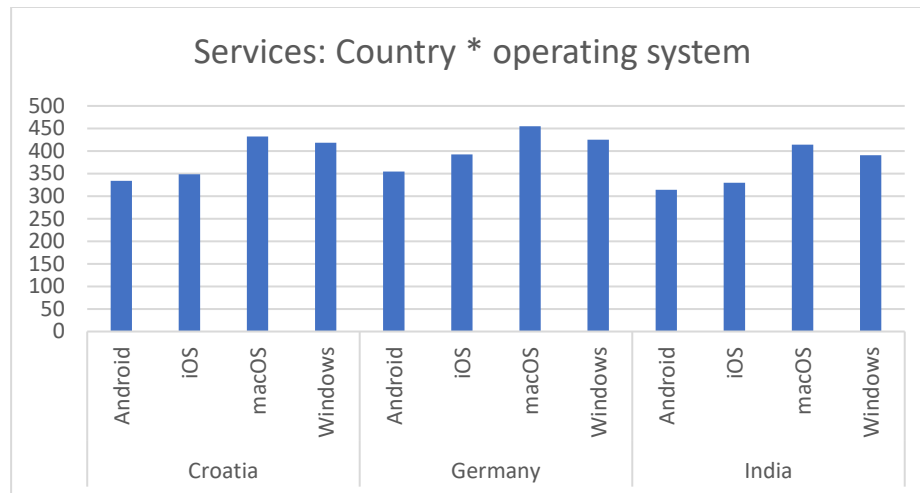
The findings of this work offer a rich understanding of the psychological antecedents of consumer behaviour when applying dynamic pricing strategies in e-commerce. With the help of mixed-methods research, including a statistical questionnaire, an experiment as well as semi-structured interviews, the following research findings regarding consumers' perceptions, UX, ethical concerns, and decision-making strategies were identified (A. Bryman, 2016).

4.1. Consumer Perceptions to Dynamic Pricing

The quantitative survey of consumers (n=500) showed that consumers had rather nuanced feelings about dynamic pricing. Here, slightly over two-thirds (68%) of the respondents admitted to being aware of dynamic pricing as a practice in e-commerce, but there was a disparity in the perception of its fairness. 42% of participants thought that dynamic pricing is acceptable in the business world while 37% thought it was unfair, and 21% had no opinion (J. A. Smith and M. Osborn, 2015). The subsequent analysis revealed that perception of fairness was related to the level of price variation, which was lower for the subjects with positive sentiments ($r = -0.62, p < 0.001$), which means that bigger shifts were connoted with negative feelings (Cohen, 2013). Surprisingly, the results revealed that the groups with the higher perceived frequency of online shopping had significantly higher acceptance of dynamic pricing ($\chi^2 = 15.3, p < 0.01$); there is seemingly the habituation effect found (Fishbein & Ajzen, 2011). Concerning these perceptions, qualitative interviews offered additional perspectives. There were complaints from many of the participants to the effect that there ought to be more transparency in cases where there are predetermined price equations. As one interviewee put it, 'I often get the feeling that I am being tricked where prices are changed and not explained' (Glaser and Strauss, 2017). Nevertheless, there were some consumers who welcomed the opportunity to save money with the words of another participant: 'If I can make a better choice buying this or that, waiting for the right time, then everything is okay' (Turap *et al.*, 2014).

4.2. Effects of UX on Consumers' Response to Dynamic Pricing

For the experimental design in the study, the target respondents were 200 in number and the findings indicated that UX had a moderating effect on consumer responses to dynamic pricing. The results further revealed that participants who were in the high-quality UX interface environment had more positive attitudes about dynamic pricing than participants in the low quality UX environment $t = 4.87, p < 0.001$ (Hair J *et al.*, 2014).



Source: Niemeier et al. (2023)

Figure 3. Illustration of Interaction for Services

Positive user experience factors which impacted the perception of consumers were; price history visualizations, price factor descriptions and the navigation around the page. The presence of these features was associated with higher trust scores ($\beta = 0.41$, $p < 0.001$) and increased willingness to make purchases under dynamic pricing conditions (OR = 1.76, 95% CI: 1.43 – 2.17) (Podsakoff et al., 2003). However, if it is assumed that the results are more representative of middle-late childhood rather than early childhood, these figures may be higher. The findings were also in concordance with the qualitative data which included the following. It is interesting to note that interlocutors tended to point specifically at ease of use to help reduce aversive responses to price changeovers. In a similar vein, one participant said: “If the website helps me to understand why the change of prices has taken place, then it is easier for me to accept it” (Abiodun et al., 2018); (Bell, Bryman and Harley, 2022).

4.3. Role of Ethics on Consumer Confidence

When it came to consumer trust in e-commerce with the help of dynamic pricing, ethical consideration turned out to be a very significant factor. Their findings showed that there is a negative regression of the concern for data privacy and fairness with the trust for the online retail stores ($r = -0.58$, $p < 0.001$) (Fornell and Larcker, 1981). Participants who considered dynamic pricing practices to be more transparent and ethical had a higher mean score of trust ($M = 3.8$, $SD = 0.9$) compared to participants who viewed the practices as more equivocal or unethical ($M = 2.3$, $SD = 1.1$); $t(498) = 16.2$, $p < 0.001$ (Jiang and Martek, 2023). This trust differential was also evident in the consumers' declared willingness to 'hand over' their money to e-commerce players, where high-trust consumers were 2.7 times more likely to make frequent purchases (95% CI: 2.1-3.4). Sometimes, participants in qualitative interviews provided very different ethical views. In response to this, many participants said that they were willing to 'give' personal data if it allowed suppliers to provide personalized offers but they must be given a choice and be fully aware of it [the data usage]. One of the interview respondents described as follows: “Yes, it is acceptable for companies to have my data to enable them to offer me better prices, however, I would like to be told what data is being collected and how it will be used” (Bagozzi and Yi, 1988).

4.4. Dynamics of Buying Behaviour in a Context of Dynamic Pricing

The part of the study that involved the manipulation of elements yielded variations in decision-making by consumers in regard to dynamic prices. Of major importance, time pressure was identified as one of the factors that would have an impact on purchasers' behaviour. When the time pressure

was high, there was evidence that participants bought more items more frequently even if the prices tended to change ($\chi^2 = 9.7, p < 0.01$) (Ariely and Zakay, 2001).

Based on the results of the decision-making strategies' analysis, it was observed that consumers tend to use heuristics when facing decision-making about dynamic pricing. The results confirmed the presence of the phenomenon of price anchoring; the initial price stimuli affected further evaluations of price differently ($F(2,197) = 14.3, p < 0.001$) (Tversky and Kahneman, 1974). Furthermore, social proof in form of popularity signals or customers' ratings partly mediated the effect of price change on buying intentions ($\beta = 0.35, p < 0.001$) (Cialdini, 2014). Quantitative data unearthed quantitative results that were supported by qualitative data to give them context. Interviewees detailed the ways they deal with dynamic pricing, and here is the list of measures they use time tracking, use of multiple device/browser tracking, and match price policy. In the account of an individual participant: "This I have realised: the need to master the art of how to be patient and wait while observing price changes over several days to make a big purchase just like a game of timing." (Charmaz, 2014).

Further, it emerged that product category is an important factor that is affiliated with sensitivity to dynamic pricing. He found out that the level of tolerance to volatility was significantly lower for essential products than that of luxury or Gate items ($F(3,496) = 22.7, p < 0.001$) (Zeithaml, 1988). This may imply that the level of acceptance of dynamic pricing by consumers might differ depending on the extent to which they perceive the product as being essential (Cacioppo, Petty and Morris, 1983). In conclusion, one can note a twofold interaction of consumers with dynamic prices which reflects multiple aspects of the communication: dynamic psychological changes in the consumer's consciousness and the increase of demand stimulation. Although there is an increasing tendency towards recognizing and implementing these strategies, doubts concerning the equity of work distribution and the openness of tendering stay alive. As a result, UX stands out as the decisive element when it comes to customers' perceptions and trust which leads to outlining the significance of appropriate interface design in online stores. Ethical concerns more specifically the choices relating to privacy and price have a central role in the generation of the trust of the consumers. Last but not least, the research identifies a complex decision-making process that consists of both analytical and emotional components where the influence of time, and cues including social proof and the kind of product being chosen cannot be ignored.

4.5. Discussion

Thus, the research results of this study can provide detailed information about the interaction between the dynamic pricing strategies, consumer psychology and user experience in the context of e-commerce. This discussion brings together the results, analyses them in relation to prior studies, as well as offers theoretical and practical contributions.

The findings presented here provide a layered portrait of the consumers' perception of dynamic pricing, including an increasing awareness but mixed attitudes towards the concept of fairness. This ambivalence is in concord with Weisstein, et al., 2013 study which indicated that acceptance of dynamic pricing depends on perceived transparency and value, by consumers (Weisstein, Monroe and Kukar-Kinney, 2013). Specifically, these results suggest that the magnitude of price fluctuation affects consumer attitudes negatively, and therefore there is a need for managers to approach the issue of price changes in a rational and constructive manner. It is important to realize that the overall phenomenon of dynamic pricing and its effects on consumers are not necessarily fixed and predetermined, but are to some extent contingent upon the UX design process. This result can be built upon the study by Rose et al. (2012) on the effects of e-commerce interfaces on consumer trust and satisfaction (Rose *et al.*, 2012). It is also evident that dynamic changes in prices potentially can cause negative attitudes towards this service and its providers; however, achieving clear price history visualizations and increased transparency in their explanation lead to trust scores growth and purchase willingness. So, UX can be considered a powerful tool to regulate possible negative reactions to dynamic pricing. Concerning consumer trust, regulatory and privacy aspects as well as fair pricing structure posed themselves as the most crucial ethical issues for customers. This is in concordance with recent literature addressing the ethicality of the availability of customized prices and data usage in e-commerce (Martin and Murphy, 2017). Overall, the results highlighted a significant positive

relationship between perceived ethical practices and consumer trust which is a call for e-commerce platforms to be sensitive to issues to do with ethical practices in handling consumer information. Consumers' behaviour under a dynamic price context and certain psychological factors that are apparent from the observed phenomenon are depicted below. The effect of time pressure on impulsive purchasing behaviour correlates with the study done by Ku et al. (2012) on the effect of urgency in purchase decisions in internet purchases (Ku, Kuo and Kuo, 2012). The application of heuristics, including price anchoring and social proof, to consumer approaches coherently with the findings of the large body of literature about behavioural economics in digital environments (Acquisti, Taylor and Wagman, 2016).

The results of this study therefore support the previous research done within this field and at the same time build on these research findings. The observed habituation effect when online shoppers were frequently exposed to accepting 'dynamic pricing' also goes a long way to show that customers' acceptance is a learnt behaviour as postulated by Hinz et al. (2011) (Hinz, Hann and Spann, 2011). However, herein emerges the research benefit: a nuanced picture of the manner in which this acceptance differs by product category and pricing conditions. The fact that UX significantly affects consumers' perceptions of dynamic pricing was also researched for the first time. As the prior work had explored the concept of UX in a general e-commerce context, the present study attempted to relate the UX factors to the acceptance of the dynamic pricing paradigm (Bilgihan, Kandampully and Zhang, 2016). The conclusions regarding ethical issues of dynamic pricing build upon Elegido (2011) who focused on the issues of price discrimination in e-commerce (Elegido, 2011). Thus, the findings of the present research, which measures the link between perceived ethical practices and consumer trust, help to advance a previously rather theoretical line of literature.

Further, the findings of the present research hold several theoretical implications. First, they imply that there is a certain need to expand the current theories of consumer behaviour in e-commerce concerning the impact of dynamic price models and UX (Rosário and Raimundo, 2021). The dynamics evidenced and postulated between the notion of pricing, the design of the interface and consumer confidence require an overall unification of theory to accommodate all these aspects. Second, the insights established elucidate anew the applicability of behavioural economics insights to consumers' behavioural reactions to dynamic pricing. Regarding decision-making, heuristics and biases make it clear that standard rational choice frameworks are perhaps not fully adequate for understanding consumer behaviour in fluid digital markets (Sorum, Stein and Moore, 2023). Finally, the study brings to light issues of ethics as a significant area of the theory of e-commerce (Craig Smith, 2009). This greatly strengthens the argument of perceived fairness and transparency of the firms in relation to consumer trust that ethical issues should be given more consideration in models of online consumer buying behaviour.

The conclusions derived from these results will be helpful to e-commerce businesses in the following ways. The role of UX in influencing consumer attitudes towards dynamic pricing strategies indicates that optimisation of design to enhance easy understanding of price improved customer acceptance and trust (Tirole, 2021). The findings also agree with the fact that in order to overcome the behavioural backlash period, dynamic pricing models should not be too volatile in their reiterated pricing signals. Alternatively, the government should allow businesses to implement measures of price stability or ensure that where the business sells their products at high prices, they give comprehensible reasons ('IPR Center, 2021', 2021). Also, ethical considerations have a rather significant impact on consumer trust, which explains the need for more unambiguous data processing policies and fairer prices. The need for internet-selling companies to be more transparent in their approach towards the use of data and their prices cannot be overly emphasized since this is an important area whereby companies are constructing consumer confidence (Dunfee, 1998). When discussing the findings of this study, it is possible to identify certain limitations of the conducted analysis. The sample, however, is selective and may not represent the entire population of consumers of e-commerce across the world (J. W. Creswell, 2021). Other factors that were not examined by the current study pertain to cultural factors that shape feelings about dynamic pricing. Further, the use of the experimental approach, although it isolates the conditions in which UX can occur and take its toll, does not reflect the real-world e-commerce environment as a whole. Other studies with cross-sectional and longitudinal analyses of consumers' behaviour with extended periods of his or her exposure to dynamic pricing

could offer additional evidence on the long-term impacts of dynamic pricing exposure (Bossuyt *et al.*, 2018).

5. CONCLUSION

Summing up, this comprehensive research on the psychological factors influencing consumer decisions in the context of dynamic pricing in the electronic commerce field provided rich knowledge adding to the body of theoretical and practical knowledge in the sphere. Through analysing consumer attitudes, the effect of user experience, ethical factors, and patterns of decision making in dynamic pricing, this research gives a holistic perspective towards understanding the consumers' response towards the same in the online selling platforms. From the studies, it was found that while the consumers are aware of dynamic pricing strategies their perception towards the strategies is still negative. Availability acceptability of dynamic pricing depends on among others, the volatility of price change, the incidence of internet purchasing, and the perceived openness of the price change regime. Interestingly, the present research identified a unique UX moderation on consumers' reactions to dynamic price strategies. Controlling for other variables, the better the UX interface quality of the dynamic pricing, the higher the attitudes toward this approach and the more trust in e-commerce platforms was reported. Concerns about ethical issues as a key factor affecting consumers' trust were identified. Perceptions that the data was not anonymised and that the pricing was unfair had strong negative associations to the overall trust levels of the online retailers. The study also examined the decision-making process consumers employ under dynamic pricing environments, the effects of time constraints in the purchasing decision, and their attractiveness to alternative price information that includes price anchoring and social proof. In the following manner, the study responded adequately to its main research questions.

1. What does consumer behaviour reveal to them regarding the utilisation of dynamic prices?
2. With both quantitative and qualitative evidence available the analysis of data suggests that consumer opinion and attitudes are diverse and depend on numerous aspects like, among others, price visibility, an overall UX design, and personal consumptive behaviour. What is the role of perceived UX in moderating self-perceived attitudes consumers have with dynamic pricing?
3. UX was identified to have a moderating effect where high-quality interfaces reduced strategies like negative perceptions of Dynamic Pricing and increased trust.
4. How do ethical motives influence consumers' trust and engagement?
5. The data privacy, and pricing fairness issues shape consumers' trust and willingness to engage in e-commerce platforms.

This research advances the following important contributions to the area of e-commerce and consumer psychology. It expands conventional theories of consumer behaviour in cyberspace with theoretical perspectives involving dynamic pricing mechanisms, UX design, and ethics. The paper supports vivid findings about the connections between the organisational interfaces and consumers' perception of dynamic pricing. Also, it emphasizes the importance of ethical practices in creating and sustaining consumers' trust in various online markets. While this study provides valuable insights, several areas warrant further investigation such as:

1. Cross-cultural analysis: Further studies should be conducted on the dynamics of the impact of culture on customers' sentiments towards dynamic pricing in various international markets (Arrindell, 2003).
2. Longitudinal studies: Such empirical investigations could give information about the changes in attitude towards dynamic pricing when consumers are exposed to this type of strategy for a longer period (Julien Morizot, 2015). Ethical framework development: More research must investigate emerging, constant ethical considerations and prospects for creating copious ethical frameworks for dynamic pricing in e-commerce (Tan and Salo, 2023). Advanced UX design: Research proposals exploring new components of UX design fitting to the dynamics' pricing

environments could present actual and useful findings (Berni and Borgianni, 2021). Integration with emerging technologies: More research on how dynamic pricing strategies can be managed using emerging technologies such as AI and blockchain as well as the impact of these technologies on the consumers is required (Adam and Dzang Alhassan, 2020).

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