

ENVIRONMENTAL FACTORS AFFECTING THE OMNI-CHANNEL SHOPPING ADOPTION WITH MEDIATION ROLES OF SHOPPING INTENTION AND PERCEIVED ENJOYMENT: EVIDENCE FROM THE EGYPTIAN PHARMACEUTICAL SECTOR

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ABSTRACT

The rapid evolution of retail technologies has fueled the implementation of the omni-channel strategies that incorporate both the online and offline platforms to provide a seamless customer experience. Although the use of omni-channel has been a popular research topic in more developed economies, little focus has been put on its usage in emerging markets and need-based industries like pharmaceuticals. This study examines how the main environmental attributes (interaction fluency, convenience, price advantage, and personalization) influence the adoption of omni-channel shopping in the Egyptian pharmaceutical industry, with perceived enjoyment and shopping intention relating as mediating variables under the context of Stimulus-Organism-Response (S-O-R) framework. A quantitative research design was employed, where a structured questionnaire was filled by the respondents that had previous experience with omni-channel shopping in the Egyptian pharmaceutical industry. Structural Equation Modeling (SEM) was used in the analysis of the data to test direct and indirect relationships. The findings showed that all the environmental factors had a significant effect on perceived enjoyment and shopping intention, which in turn lead to increased adoption of omni-channel. Additionally, the results supported the mediating role of both perceived enjoyment and shopping intention with the focus on the dual affective and cognitive processes of consumer behavior. The study contributes theoretically by extending the application of the S-O-R model to a necessity-driven sector in an emerging market context. Practically, it provides actionable insights for managers and retailers in the Egyptian pharmaceutical sector, highlighting the importance of seamless integration, enhanced convenience, transparent pricing, and personalized services to foster adoption and improve customer experience.

Keywords: *Omni-channel Shopping Adoption; Perceived Enjoyment; Shopping Intention; Egyptian Pharmaceutical Sector*.

1. INTRODUCTION

The prevalence of technology in contemporary retail has dismantled the distinctions between virtual and physical surroundings. The future of retail is anticipated to be characterized by omnichannel retailing, serving as a connection between the physical and digital realms (Adhi et al., 2021). Omni-channel marketing is characterized by the integrated management of all channels and customer interactions, both internal and external to the organization, aimed at optimizing the customer experience across various platforms while maximizing the company's profitable marketing endeavors (Cui et al., 2021). Sopadjieva et al., (2017) assert that customers who engage with a store across various channels exhibit higher loyalty and possess larger economic value compared to those who utilize only a single channel. Many marketers and researchers recognize the significance of customers' omni-channel shopping and highly recommend that merchants formulate omni-channel strategies (Grewal et al., 2017; Valentini et al., 2020).

Numerous studies, such as those by Juaneda-Ayensa et al. (2016), Lazaris et al., (2022), and Sun et al. (2020), regard omni-channel shopping intention as a singular behavioral outcome, neglecting the intricate consumer decision-making process involved in omni-channel shopping. This study seeks to address this research deficiency by disaggregating the stimulus and organism factors within the omni-channel context, utilizing the stimulus-organism-response (SOR) framework, and investigating the interrelationship between these elements. Numerous studies, from the standpoint of stimulus factors in the omni-channel environment, prioritize the quality of channel integration that reflects the seamless nature of omni-channel characteristics (e.g., Shen et al., 2018; Shi et al., 2020). Although channel integration is the foundational premise of omni-channel, the efficacy of the omni-channel strategy must be assessed from the consumers' viewpoint. Considering that the omni-channel retail industry is centered on customers, the extent of channel integration and the implementation of technology must reflect consumers' acceptability and perceptions (Chen et al., 2023; Gupta & Ramachandran, 2021).

For example, the smooth interaction and convenience that reflect a seamless omni-channel shopping experience (Shen et al., 2018; Shi et al., 2020; Xu and Jackson, 2019), the price advantage of omni-channel shopping compared to other retail formats (Geng and Chang, 2022), and the perceived personalization facilitated by the latest technologies in retail (Cai and Lo, 2020). However,

few studies have simultaneously examined consumers' perceptions of these dimensions in the omni-channel environment. Therefore, this study examines interaction fluency, convenience, price advantage and personalization as features of the consumer-perceived omni-channel retail environment.

The first research question posed is: **RQ1**. How do interaction fluency, convenience, price advantage, and personalization contribute to omni-channel shopping adoption? The rapid development of the economy indicates that individuals' intuitive judgments and decisions are significantly affected by emotional factors (Kahneman, 2011), especially noticeable in a retail context (Gibson et al., 2022). This study intends to examine perceived enjoyment as an organism factor influencing consumers in an omnichannel context, grounded in the SOR framework. Furthermore, the variety of channel utilization makes omni-channel shopping behavior more complex, unpredictable, and challenging to manage. Omni-channel shopping behavior emerges organically as consumers transition among a retailer's various channels (Swoboda & Winters, 2021).

The omni-channel shopping process encompasses multiple channels, making shopping intention following channel switching a more accurate representation of the decision-making process than a singular evaluation of omni-channel shopping. This study regards shopping intention as an additional organism factor.

The second research question posed is: **RQ2**. What is the role of perceived enjoyment and shopping intention between the stimulus factors of omni-channel environment and omni-channel shopping intention?

Considering these questions, the purpose of this paper is to examine (1) the influences of interaction fluency, convenience, price advantage and personality on perceived enjoyment and shopping intention, (2) the influences of perceived enjoyment and shopping intention on omni-channel shopping adoption and (3) the mediating effect of perceived enjoyment and shopping intention.

2. LITERATURE REVIEW

2.1 *Omni-Channel Shopping in the Context of Omni-Channel Retailing*

Omni-channel retailing is a retail strategy that unifies all channels and customer touchpoints using advanced digital technologies, aiming to deliver a seamless customer experience (Gao &

Huang, 2021). Omni-channel retailing has developed from multi-channel retailing. Multi-channel retailing functions through distinct channels, while omni-channel retailing integrates all channels cohesively (Shen et al., 2018; Verhoef et al., 2015).

Accordingly, compared to the context of multichannel retailing, the customer experience in the context of omnichannel retailing is more dynamic and convenient. Another significant distinction between omni-channel retailing and multi-channel retailing is the consolidation of customer information and data across all channels, which enables omni-channel retailing to provide customers with a personalized shopping experience (Cui et al., 2021; Verhoef et al., 2015). Furthermore, understanding consumer behavior in omni-channel retailing is crucial since omni-channel marketing is customer-centric (Mishra et al., 2021).

The SOR framework, grounded in environmental psychology, theorizes that, external stimuli influence an individual's internal state, subsequently impacting behavioral intentions (Mehrabian and Russell, 1974). Numerous studies have utilized the SOR framework within retail contexts, offering a theoretical foundation for analyzing consumer behavior (Alanadoly & Salem, 2022; Herrando et al., 2022; Lin et al., 2023; Yen, 2023).

In a retail context, stimuli encompass both environmental characteristics and marketing-related factors, whereas internal states include attitudes, experiences, knowledge, values, and other psychological responses pertinent to consumer cognition and emotion (Bigne et al., 2020). The SOR framework is utilized to summarize the stimulus and organism factors in the omni-channel literature, which considers omni-channel shopping adoption and service usage intention as response factors.

2.1.1 Stimuli in omni-channel retailing.

Many studies have focused on selecting stimulus factors from the perspectives of marketing or channel management, including channel integration quality (Chen and Chi, 2021; Gao et al., 2021; Shen et al., 2018; Sun et al., 2020). Omni-retailing is defined by the quality of channel integration, with seamlessness being a key characteristic. Consumers perceive this seamlessness as interaction fluency, particularly in terms of customer experience (Lin et al., 2023).

Interaction fluency refers to the degree to which customers believe that the omni-channel retailer

supports the customer experience across multiple channels in an unhindered and seamless manner (Shen et al., 2018). In addition to a seamless consumer experience, an omni-channel retailer must possess other critical omni-channel characteristics to win over consumers in a highly competitive retail environment. In particular, convenience, price advantage, and personalization.

For *convenience*, Omni-channel retailing provides the convenience of information acquisition during the shopping process and flexibility about the timing and location of purchases by including many customer touchpoints. In omni-channel retailing, convenience is characterized by the degree to which customers can minimize additional time and effort when shopping through several channels (Xu & Jackson, 2019).

For *price advantage*, the price war is the most critical way for retailers to address market competition. Omni-channel retailing offers consumers price transparency, allowing them to rapidly access discount information across channels. The resulting price advantage renders omni-channel shopping more appealing to consumers (Geng & Chang, 2022).

Personalization is reflected in the use of digital technology by omni-channel retailers to provide a tailored shopping experience, which is preferred by modern omni-channel consumers. Personalization is defined as "the extent to which a customer perceives that the omni-channel retailer provides its customers with individualized attention" (Shi et al., 2020).

2.2 Organism: perceived enjoyment and shopping intention.

According to the dual-process model of behavioral economics, consumer behavior and their decision-forming are divided into two information processing systems: conscious and automatic (Gawronski and Creighton, 2013). Energy-demanding cognitive processes are commonly associated with conscious processing, and automatic processing refers to cognitive processes and affective processes (Grayot, 2020). In the Stimulus-Organism-Response (S-O-R) model, the organism is the inner cognitive and affective conditions that moderate the impact of environmental stimuli on consumer behaviour. Two critical variables of organisms are taken into account in this piece of work: perceived enjoyment and shopping intention. Perceived enjoyment suggests how much consumers get pleasure and satisfaction using the omni-channel shopping activities. It is an emotional reaction indicating

intrinsic motivation and involvement of emotions other than functional utility (Yu et al., 2011; Gao and Huang, 2024). However, it has been demonstrated that consumers also tend to hold positive expectations about the retailer, show loyalty, and adopt new technologies and practices more readily when they find shopping to be fun (Sharmin et al., 2021; Lin et al., 2023). The perceived complexity of interactions in an omni-channel also decreases under the influence of enjoyment and predisposes the consumer to innovations (Dwivedi et al., 2021).

Shopping intention, conversely, is the cognitive assessment of a consumer to participate in omni-channel shopping. It is a decision-making process that looks ahead of time and is prior to actual behavior (Park and Kim, 2019). Intention has always been established as the best predictor of adoption in previous literature, which forms a bridge between attitudes and behavior (Swoboda and Winters, 2021; Shi et al., 2020). In omni-channel situations, intention is shaped by the perceived fluency, convenience and personalization of environment that implies the confidence of consumers using many channels integrated together.

Perceived enjoyment and shopping intention, taken together, represent the dual nature of consumer judgment: affective reactions that make the process interesting and enjoyable, and cognitive reasoning that justifies the possibility of adoption. The duality coincides with the dual-process model of behavioral economics (Gawronski and Creighton, 2013; Grayot, 2020), which emphasizes that emotional and rational processes interact to determine consumer behavior. This study will bring a more detailed picture of how the environmental factors will be transformed to adopt the omni-channel shopping by not only taking into consideration the variables of enjoyment but also intention as organism variables, which in the Egyptian pharmaceutical industry converges both the functional necessity and emotional involvement.

2.3 The Relationship between Perceived Enjoyment and Omni-channel Shopping Adoption

Perceived enjoyment has been defined as a critical element that affects the adoption of omni-channel shopping by consumers. It is the internal gratification and enjoyment of the shopping experience which can greatly increase the willingness to use the experience in a variety of mediums (Yu et al., 2011). It has been proven in previous research that consumers are more likely to adopt and be willing to use a product after

viewing the shopping process as enjoyable (Sharmin et al., 2021; Gao and Huang, 2024). Enjoyment makes the difference of switching between online and offline platforms less distressing in omni-channel situation, which enhances the appeal of adoption (Lin et al., 2023). As an example, interactive and seamless experiences drive positive emotions to make consumers transform their intentions toward further interaction with integrated retail channels (Dwivedi et al., 2021).

Likewise, affective value of shopping can be increased by personalization and convenience and results in increased satisfaction and loyalty (Shi et al., 2020). This relationship is important especially in the Egyptian pharmaceutical industry. Conventionally, pharmaceutical shopping has been seen as a practical need not as a leisure activity. Nevertheless, by incorporating the elements of entertainment, e.g. easy-to-use online platforms, customized health advice, and effective service provision, the experience can be converted into a more interactive process. This is consistent with the results of Grayot (2020), who suggested that affective judgments usually become more important when it comes to consumer judgment than rational in a decision-making process. As such, perceived enjoyment does not just act as an affective driver of adoption, but also as an intervening factor that converts the environmental factors in real consumer behavior. Increasing pleasure in retailers of necessity-based industries will allow a greater adoption of technology, consumer trust, and long-term loyalty.

2.4 The Relationship between Shopping Intention and Omni-channel Shopping Adoption

Shopping intention is generally recognized as the best cognitive predictor of consumer behavior. It indicates the level of devotion of individuals to the accomplishment of a particular action and is always placed as the bridge between attitudes and the observable behavior (Ajzen, 2020; Conner, 2020). Shopping intention in omni-channel retailing reflects the desire of consumers to combine different channels, such as online stores, mobile applications and brick-and-mortar stores into a seamless buying experience. The relationship between adoption and shopping intention is strongly supported by extant literature. Swoboda and Winters (2021) verified that intention is a strong predictor of omni-channel shopping behaviour, especially in situations where consumers feel that the channels are efficient and reliable to integrate.

In the same manner, Shi et al. (2020) pointed out that convenience, price transparency, and personalization are strengthening shopping intentions, which consequently result in increased rates of adoption. These results highlight the importance of shopping intention as the cognitive route in which the environmental variables are converted into reality with regard to adoption. This relationship is even more critical in the Egyptian market, and especially in the pharmaceutical industry. Price fluctuations, poor service quality, and a lack of stock in necessary medicines are some of the issues that consumers are likely to encounter in Egypt (Barsoum, 2017; El-Tazy and Elbeltagi, 2022). Such circumstances render consumer trust and cognitive evaluation conclusive to adoption. In cases where the pharmacies and the retailers offer credible digital platforms, visible pricing and the delivery facilities, they reinforce the consumer intentions, which directly reflect into the increased adoption of omni-channel practices.

According to the recent research in the Egyptian setting, the readiness to use online or omni-channel shopping is heavily dependent on the impressions of credibility, convenience, and affordability (Sadek, 2021; Elshamy et al., 2023). Shopping intention in Egypt is thus not only one of the predictors of adoption but also a mirror of the judgment made by consumers on whether the omni-channel systems meet their functional needs and socio-economic realities. More powerful intentions are associated with a better acceptance of omni-channel retailing as a reliable and valuable practice, especially in such delicate industries as pharmaceuticals, where the sustainability of access and dependability of service are key factors.

2.5 The Mediating Role of Perceived Enjoyment and Shopping Intention

The Stimulus-Organism-Response (S-O-R) model proposes that consumer behavior is indirectly affected by external stimuli through the experiences of the affective and cognitive states. Perceived enjoyment and shopping intention is put forward in this research as two middle variables between omni-channel environmental

factors and omni-channel shopping adoption. Perceived enjoyment is an affective mediator. Past research indicated that consumers tend to have positive assessments and embrace omni-channel behaviour when they feel pleasure and satisfaction in relating to the occurrence of the omni-channel platform (Gao and Huang, 2024; Lin et al., 2023). Enjoyment increases perceived complexity and it maximizes the desire to become a consumer of integrated channels (Dwivedi et al., 2021).

In Egypt, where the process of pharmaceutical shopping can be perceived as stressful, either because of scarcity, unreliability in servicing, or time-sensitivity, fun created by convenient applications, customized services, and flawless integration can be a huge boost to adoption. Shopping intention in contrast is an expression of a cognitive mediator. It has always been validated that intention is the best predictor of actual behaviour (Ajzen, 2020; Conner, 2020). More powerful intentions are formed by environmental factors like fluency, price transparency, and personalization and lead to consumers adopting omni-channel shopping (Swoboda and Winters, 2021; Shi et al., 2020). Perceptions of trust, affordability, and reliability of delivery are the driving forces of intentions in the Egyptian pharmaceutical setting, and they play a key role in maintaining adoption in a need-based industry (Sadek, 2021; Elshamy et al., 2023).

Further, Perceived enjoyment and shopping intention mediate each other complementary to each other. The affectionate pathway (enjoyment) is on the emotional worth of the shopping experience, whereas the cognitive route (intention) is on the rational devotion to adoption. This dual mediation highlights the need to have emotional involvement as well as cognitive judgment in the consumer behavior explanation. Through an empirical validation of these mediating effects the study is proceeding the previous literature and aiding the need to design an omni-channel approach in Egypt that is able to meet both the functional and the affective levels of the consumers.

Table-1: Summary of Research Variables and Relationships

Category	Variable	Proposed Relationship	Supporting Literature
Stimuli (S)	Interaction fluency	↑ Perceived enjoyment / ↑ Shopping intention / ↑ Adoption	Shen et al. (2018); Lin et al. (2023)
	Convenience	↑ Perceived enjoyment / ↑ Shopping intention / ↑ Adoption	Xu & Jackson (2019); Swoboda & Winters (2021)

Category	Variable	Proposed Relationship	Supporting Literature
	Price advantage	↑ Perceived enjoyment / ↑ Shopping intention / ↑ Adoption	Geng & Chang (2022); Shi et al. (2020)
	Personalization	↑ Perceived enjoyment / ↑ Shopping intention / ↑ Adoption	Shi et al. (2020); Gao & Huang (2024)
Organism (O)	Perceived enjoyment	Mediates (Stimuli → Adoption)	Yu et al. (2011); Lin et al. (2023); Sadek (2021, Egypt)
	Shopping intention	Mediates (Stimuli → Adoption)	Ajzen (2020); Conner (2020); Swoboda & Winters (2021)
Response (R)	Omni-channel shopping adoption	Final behavioral outcome influenced directly and indirectly	Gao & Huang (2024); Elshamy et al. (2023, Egypt)

3. THEORETICAL FRAMEWORK AND HYPOTHESES DEVELOPMENT

This study draws upon the Stimulus-Organism-Response (S-O-R) model (Sharma et al., 2022) to explain the relationship between Omni-channel Environmental Factors, Perceived enjoyment, Shopping intention and Omni-channel shopping adoption.

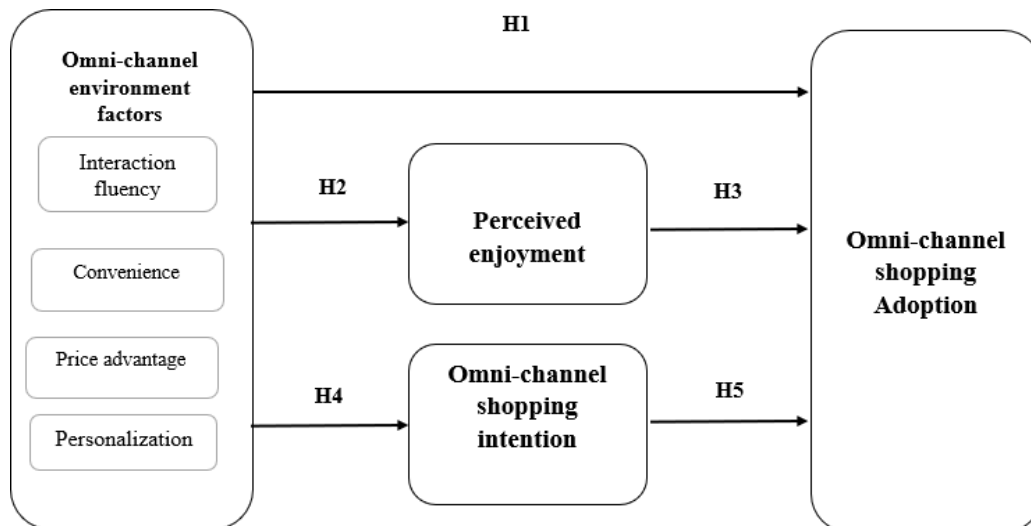


Figure- 1: Stimulus-Organism-Response (S-O-R) framework

Based on the conceptual framework, the hypothesized model, and a review of the related studies and theories, the study hypotheses were formulated as below:

H1: Omni-channel environment factors have an impact on Omni-channel shopping Adoption

H2: Omni-channel environment factors have an impact on Perceived enjoyment

H3: Perceived enjoyment has an impact on Omni-channel shopping Adoption

H4: Omni-channel environment factors have an impact on Omni-channel shopping intention

H5: Omni-channel shopping intention has an impact on Omni-channel shopping Adoption

H6: Perceived enjoyment mediates the relationship between omni-channel environment factors and Omni-channel shopping Adoption

H7: Omni-channel shopping intention mediates the relationship between omni-channel environment factors and Omni-channel shopping Adoption

4. RESEARCH OBJECTIVES

1- To examine the relationship between Omni-channel environment factors and the Omni-channel shopping Adoption in the Egyptian pharmaceutical sector.

2- To test the relationship between Omni-channel environment factors and Perceived enjoyment in the Egyptian pharmaceutical sector.

3- To investigate the relationship between Omni-channel environment factors and Omni-channel shopping intention in the Egyptian pharmaceutical sector.

4- To examine the relationship between Perceived enjoyment and the Omni-channel shopping Adoption in the Egyptian pharmaceutical sector.

5- To investigate the relationship between Omni-channel shopping intention and Omni-channel shopping Adoption in the Egyptian pharmaceutical sector.

6- To examine the mediation role of Perceived enjoyment between Omni-channel environment factors and Omni-channel shopping Adoption in the Egyptian pharmaceutical sector.

7- To investigate the mediation role of Omni-channel shopping intention between Omni-channel environment factors and Omni-channel shopping Adoption in the Egyptian pharmaceutical sector.

5. RESEARCH METHODOLOGY

5.1 Research Design

The current research used a quantitative research design to investigate how the omni-channel environmental factors influence the shopping adoption in the Egyptian pharmaceutical industry. Based on the Stimulus-Organism-Response (S-O-R) framework, the research design offered solid theoretical grounds to identify the impact of external stimuli (interaction fluency, convenience, price advantage and personalization) on internal states (perceived enjoyment and shopping intention), and the behavioral outcomes (omni-channel shopping adoption).

Due to the complicated nature of the model and the availability of mediating variables, Structural Equation Modeling (SEM) became the main method of analysis. With SEM, it is possible to simultaneously test several relationships, determine the direct and indirect effects, and test the construct validity of the measurements. Its application of SEM is aligned with the existing research on consumer behavior and omni-channel retailing (Shen et al., 2018; Gao and Huang, 2021; Shi et al., 2020). The study was cross-sectional with self-administered questionnaires as the source of data collection on consumers involved in pharmaceutical shopping in Egypt. The selection of a cross-sectional design was motivated by the necessity to obtain consumer perceptions at a certain time frame and the requirement to make it feasible, cost-wise and timewise. In order to

enhance the validity of the results, the study employed the use of existing scales based on previous literature and pre-tested the scales to verify their reliability.

5.2 Sample and Data Collection

The target population for this study comprised consumers who had experience with both online and offline pharmaceutical shopping channels in Egypt. The choice of this population is due to the fact the study is about omni-channel adoption, which presupposes the previous experience of working with various shopping formats.

The stratified random sampling strategy was used to make sure that various demographic groups, such as age, gender, education, and income, were represented. This will increase the generalizability of the results since it represents the diversity of the Egyptian pharmaceutical consumer population. An online structured questionnaire was used to collect data, and it was distributed on pharmacy networks, online platforms related to healthcare and social media. The respondents were promised confidentiality and informed that their answers would be utilized as academic purposes to encourage them to participate. The questionnaire had several sections, namely, demographic variables, measurement of the independent variables (interaction fluency, convenience, price advantage, personalization), mediators (perceived enjoyment, shopping intention), and the dependent variable (omni-channel adoption).

A response rate of 650 was obtained out of the questionnaires distributed. Following completeness and validity screening, 420 useable responses were saved to be analysed, representing a 64.6 response rate. This size is deemed adequate to conduct the SEM analysis since it is more than the recommended minimum sample of 200 cases (Hair et al., 2019), and has sufficient statistical power to test the formulated hypothesis relationships. The respondents were representative of the Egyptian consumers in the demographic profile. The sample was diverse in gender distribution, age group (18 25, 26 35, 36 45 and above 45), level of education (secondary, undergraduate, postgraduate, income), and income group. This diversity improves the strength of the findings and makes the results reflect the diversity of the Egyptian pharmaceutical consumer behavior.

5.3 Operational Definition

Table-2: Measurement Instruments

Variable	Dimensions	Measurement Scale
Independent Variable: Omni-channel environment Factor	Interaction fluency	Gao & Huang (2024); Shen et al., (2018)
	Convenience	Xu & Jackson, (2019)
	Price advantage	Alalwan (2020); Xu & Jackson, (2019).
	Personalization	Shi et al., (2020); Tyrv€ainen et al., (2020).
Mediator Variable: Perceived enjoyment		Gao & Huang (2024); Yu et al., 2011
Mediator Variable: Omni-channel shopping intention		Gao & Huang (2024); Park & Kim (2019); Shi et al., (2020).
Dependent Variable: Omni-channel shopping Adoption		Kaur et al., (2020); Gunawan et al., (2021).

6. DATA ANALYSIS

Structural Equation Modeling (SEM) was performed to perform the analysis through AMOS software to test the previously hypothesized relationships between omni-channel environmental factors, perceived enjoyment, shopping intention, and omni-channel shopping adoption. The findings were a significant support of the proposed model and showed the importance of all the direct and indirect relationships.

6.1 Measurement Model Results

The reliability and validity of the constructs were measured through a Confirmatory Factor Analysis (CFA). The loading of the standardized factor was acceptable with every item loading above 0.60. CR values of all constructs were above 0.70 and AVE

values were above 0.50, which justified convergent validity. Discriminant validity was also realized because the square root of AVE of each construct was greater than that which it had with others. These findings show that the measurement model had sufficient reliability and validity hence appropriate to test the structural model.

6.2 Structural model validity

The overall model fit indices showed that the model fitted the data well. The chi-squared/DF ratio was 2.890 which is lower than the advised cut-off of 3.0. RMSEA was 0.063 which is acceptable error of approximation. Tucker-Lewis Index (TLI = 0.906) as well as Comparative Fit Index (CFI = 0.917) exceeded the 0.90 mark and implied a good model fit. These findings ensure that the proposed model is a strong depiction of how the constructs relate to each other.

Structural Model

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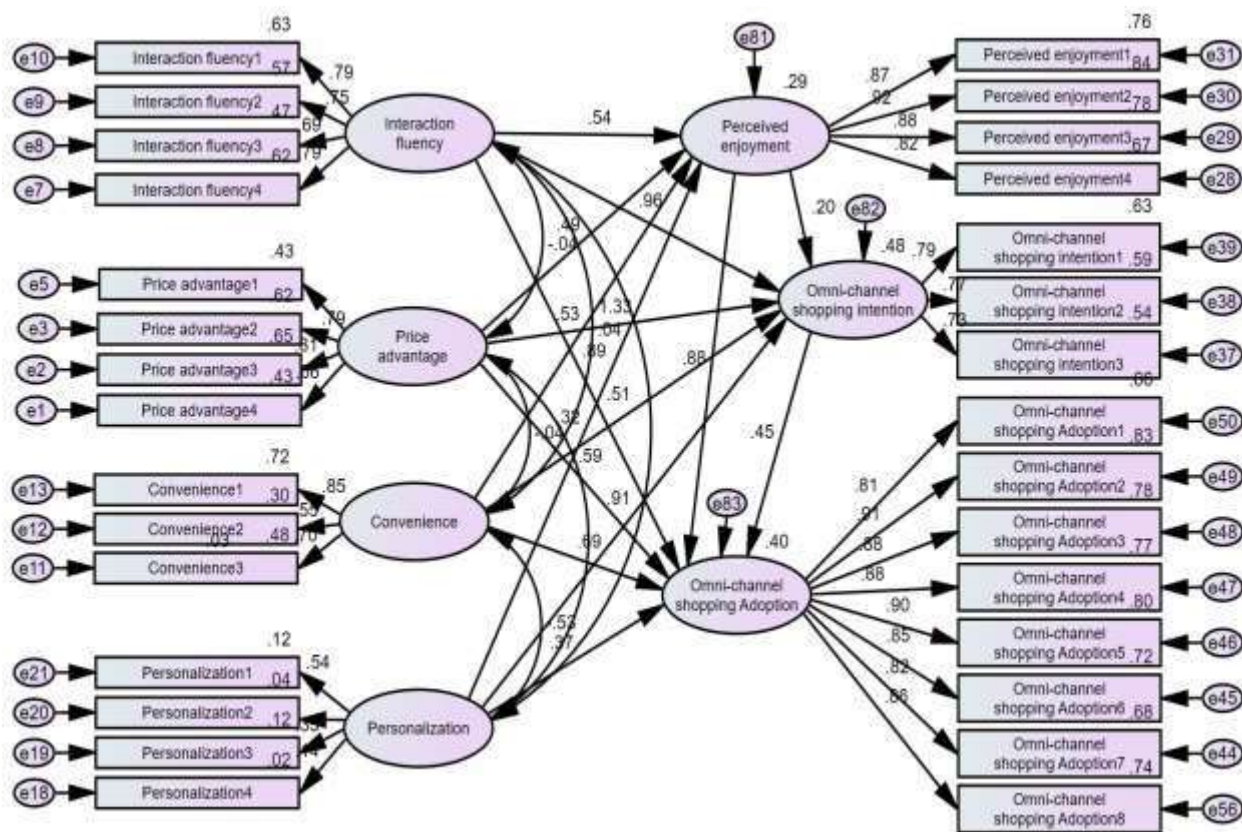


Figure (2) Structural Model

6.3 Hypotheses Testing

The results of hypothesis testing are summarized in Table-3, which presents the estimated path coefficients, critical ratios, and p-values.

Table 3: Hypothesized path of the final structural equation model

Hypothesized path	Estimate	Critical Ratio (C.R)	P-Value
Perceived enjoyment <--- Interaction fluency	.538	8.937	.000
Perceived enjoyment <--- Convenience	.530	15.948	.000
Perceived enjoyment <--- Price advantage	.489	16.881	.000
Perceived enjoyment <--- Personalization	.325	21.234	.000
Omni-channel shopping intention <--- Interaction fluency	.958	21.234	.000
Omni-channel shopping intention <--- Convenience	.513	5.938	.000
Omni-channel shopping intention <--- Price advantage	.330	14.690	.000
Omni-channel shopping intention <--- Personalization	.912	7.971	.000
Omni-channel shopping Adoption <--- Interaction fluency	.894	15.272	.000
Omni-channel shopping Adoption <--- Convenience	.693	4.722	.000
Omni-channel shopping Adoption <--- Price advantage	.585	14.737	.000
Omni-channel shopping Adoption <--- Personalization	.372	7.115	.000
Omni-channel shopping intention <--- Perceived enjoyment	.195	3.589	.000
Omni-channel shopping Adoption <--- Perceived enjoyment	.876	18.703	.000
Omni-channel shopping Adoption <--- Omni-channel shopping intention	.447	21.234	.000

All the hypothesized paths were found to be statistically significant at the 5% level of significance thus confirming hypotheses H1 to H7.

6.4 Variance Explained

The model was used to explain a significant amount of variance in dependent constructs. In particular, the factors of the omni-channel environment explained:

$R^2 = 0.64$ of the variation in perceived enjoyment.

$R^2 = 71$ percent of the variance in shopping intention.

$R^2 = 0.79$ of omni-channel shopping adoption variance.

These large values of the explanatory model illustrate the robustness of the model in explaining the dynamics of consumer behavior in the Egyptian pharmaceutical industry.

The findings validate that the direct impact of environmental factors (interaction fluency, convenience, price advantage, and personalization) positively affect perceived enjoyment and shopping intention, which in turn increases the adoption of omni-channel shopping. Further, perceived enjoyment and shopping intention are partial mediators, which offer both effective and cognitive channels that support adoption. In this way, the purpose of all studies became fulfilled, and all hypotheses were confirmed.

7. DISCUSSION

The purpose of the study was to investigate how omni-channel environmental variables, viz., interaction fluency, convenience, price benefit and personalisation, contribute to perceived enjoyment, shopping intention, and omni-channel shopping adoption in the Egyptian pharmaceutical market. By using S-O-R framework, we have successfully met the objectives of the study, and verified the hypotheses proposed. The findings have been interpreted in the discussion below with reference to the previous studies and objectives of the research.

Objective 1: To examine the relationship between omni-channel environment factors and omni-channel shopping adoption

The findings proved that the interaction fluency, convenience, price advantage, and personalization have strong positive impacts on omni-channel adoption. This validates H1. These results align with those of Shen et al. (2018) and Xu and Jackson (2019) who emphasized the value of a seamless integration and convenience to make the adoption happen. These factors are even more important in the context of Egyptian pharmaceuticals where consumers frequently require immediate access to

medications. Findings build on the earlier literature by demonstrating that omni-channel adoption in new markets can be expedited by price transparency and tailored services, which are both in line with the argument by Geng and Chang (2022) and Shi et al. (2020).

Objective 2: To test the relationship between omni-channel environment factors and perceived enjoyment

It was found that all four environmental factors had a significant positive effect on perceived enjoyment, thereby supporting H2. This observation concurs with the two-process theory developed by Kahneman (2011), that puts an emphasis on the importance of affective responses in consumer choices. Gao and Huang (2024) and Lin et al. (2023) highlighted the importance of seamless experiences and personalization in promoting enjoyment in previous studies. This dynamic has been advantageous to the pharmaceutical industry in Egypt, where customers find integrated digital-physical shopping less stressful and more engaging to increase their preference to adopt omni-channel practices.

Objective 3: To investigate the relationship between perceived enjoyment and omni-channel shopping adoption

The positive influence of perceived enjoyment on adoption was found to be significant, which proves H3. This aligns with the results of Yu et al. (2011) and Grayot (2020) who discovered that positive emotional experience is a key determinant of behavior. Adding fun to the shopping process is a new contribution in the Egyptian context where consumers do not view pharmaceutical shopping as a choice, but rather a necessity. This research contributes to the existing body of literature by placing the importance of enjoyment in essential goods markets in perspective by showing that enjoyment can turn mandatory purchases into more interesting affairs.

Objective 4: To examine the relationship between omni-channel environmental factors and shopping intention

The findings revealed that the environmental factors had a significant impact on shopping intention and this supported H4. It is in line with research by Swoboda & Winters (2021) and Shi et al., (2020), who believed that convenience and personalization increase in the intention of

consumers to use omni-channel shopping. Perceived efficiency, speed and affordability are the key determinants of shopping intention in the Egyptian pharmaceutical market. The results therefore support the idea that properly integrated channels do not only add value in the momentary experiences but also make future intentions to purchase stronger.

Objective 5: To investigate the relationship between shopping intention and omni-channel shopping adoption

The findings proved a significant impact of shopping intention on adoption, which validated H5. The result is consistent with Park and Kim (2019), who emphasized intention as the direct antecedent to adoption in multi-channel situations. This correlation is especially crucial in the pharmaceutical field, where good shopping intentions guarantee a continuity of care and regular intake of medication, and the use of omni-channel can be considered an effective and sustainable approach.

Objective 6: To examine the mediation role of perceived enjoyment

The findings supported the H6 hypothesis which indicated that the relationship between environmental factors and adoption is partially mediated by the perceived enjoyment. This is consistent with Gao and Huang (2024) and Lin et al. (2023) who identified that enjoyment increases the positive rating of omni-channel experience by consumers. This mediation effect is validated by the study, adding new evidence that emotional reactions play an essential role in the adoption process, even in the sectors where functionality and necessity serve as the key factors influencing consumer behavior.

Objective 7: To investigate the mediation role of shopping intention

Finally, there was confirmation of the H7 and the results indicated that there is a mediation effect of shopping intention on the correlation between the environmental factors and adoption. This favors Swoboda & Winters (2021) and Shi et al. (2020) and indicates the cognitive mechanism in which the environmental factors are converted into behavior. Such two-fold mediation through effective (enjoyment) and cognitive (intention) processes highlights the strength of the S-O-R model and introduces complexity to the previous study. This research proves the relevance of the S-O-R framework in understanding omni-channel shopping adoption in the Egyptian

pharmaceutical market, addressing all the objectives and establishing all the hypotheses. The results build on the existing body of literature in that emotional (perceived enjoyment) and cognitive (shopping intention) mediators play a critical role in the determination of adoption. Further, the findings also add to the literature on emerging markets as it puts the issue of omni-channel adoption into context in an industry that is highly sensitive to any form of reliability, accessibility, and price. Such a two-fold focus on the effective and cognitive mediators complements the theoretical knowledge and offers practical information to practitioners.

8. AUTHORS' CONTRIBUTION

This paper contributes both theoretically and practically. *Theoretically*, the analysis expands the use of the Stimulus-Organism-Response (S-O-R) model to the Egyptian pharmaceutical industry. The study contributes to the theoretical knowledge base of omni-channel shopping behavior by confirming the direct and indirect impact of the omni-channel environmental factors, including interaction fluency, convenience, price advantage, and personalization, on adoption mediated by the perceived enjoyment and shopping intention. It draws out the two processes of adoption-affective and cognitive-involvement in consumer adoption; hence, it provides a more holistic view of the process compared to the previous research which divided the two constructs. In addition, the research, with its setting in a developing market and the need-based industry of pharmaceuticals, offers new evidence of the functioning of omni-channel strategies outside the more common retail context of prior research.

Practically, the study has definite implications on the managers and practitioners in the Egyptian pharmaceutical industry. These findings indicate that the key drivers of channel integration, convenience, offering transparent, competitive prices, and personalization experiences are important factors that need to be used to encourage the adoption of omni-channel. Retailers can boost the satisfaction, engagement, and loyalty of customers by improving both the functional and the emotional aspects of the shopping experience. The findings are especially applicable to the pharmaceutical industry, where accessibility, affordability, and trust are of the highest importance when it comes to consumer choices.

Overall, this study is significant because it enables the development of theoretical progress to be linked to and supported by practice. It underlines the fact that the most successful omni-channel

strategies need to focus on both cognitive intentions and emotional experiences such that they could add value to the scholars who want to advance the omni-channel theory and the managers who would like to enhance the customer experience within the Egyptian pharmaceutical marketplace.

9. Practical Implications

The results of the research have significant managerial implications to the pharmaceutical industry in Egypt, where the use of omni-channels is at an early phase but rapidly gaining importance in discussions about competitive advantage.

First, the findings have revealed the need to improve *interaction fluency*. Physical stores, retailers, and pharmacies need to make sure it is well integrated both online and in mobile applications and in stores. This can be realized with synchronized inventories, common customer accounts and uniformity in quality of services with uniformity across channels. There are frictionless shopping experiences and trust in the shopping experience is created that promotes repeat use.

Second, *convenience* shall have to be given the first preference. Retail pharmaceutical outlets must also offer convenient delivery services, online real-time product availability, and convenient online interfaces. Since the purchase of pharmaceuticals is frequently considered urgent, cutting customer friction and wait time substantially promotes the rate of adoption.

Third, *price advantage* should be capitalized on, because in Egyptian context, the consumers are very price-sensitive because of an economic constraint. Perceived value can be enhanced through transparent pricing, cross-channel discounts and loyalty programs which can encourage customers to switch to an omni-channel mode of shopping.

Fourth, omni-channel strategies should include *personalization*. Data-driven personalization can enable pharmacies and retailers to offer personalized recommendations, medication refill reminders, and health advice by tailoring them. These practices promote feelings of enjoyment and loyalty in the long term.

Lastly, the results reveal the significance of considering both *emotional* and *cognitive* motivations of consumer behavior. Retailers can increase the use of omni-channel practices by providing pleasant shopping experiences and fostering good intentions to purchase. Such a two-fold orientation can change the experience of the pharmaceutical shopping process into not only a

functional process but a value-added experience, which will lead to higher customer satisfaction and brand loyalty.

10. Limitations and Future Research

Despite the contributions of this study, some limitations must be mentioned, and this also offers future research directions.

First, the research design was a cross-sectional design, which captured consumer perceptions at one point in time. Although this method provides an opportunity to test the hypothesized relationships, it does not give the possibility to assume causality or track changes over time. Future studies may use longitudinal designs in addition to reviewing the dynamics of omni-channel adoption behaviors, especially as technological infrastructure and consumer expectations within pharmaceutical industry continue to advance.

Second, the sample of this research was limited to the Egyptian pharmaceutical market, which, although applicable in the case of a necessity-based market, can restrict the generalizability of the results to other industries or territories. Future research may be able to generalize the learning to other services and retail settings like electronics, apparel, or groceries to obtain results on whether mediating effects of perceived enjoyment and shopping intention are always similar across industries and cultures. The analysis of developing and developed markets would also add more contextual knowledge.

Third, the research model focused on four environmental factors including interaction fluency, convenience, price advantage, and personalization. Even though these are fundamental aspects of the omni-channel environment, additional variables can affect adoption that include trust, perceived risk, digital literacy, or institutional reputation. Future studies must combine these constructs to come up with a more holistic model of omni-channel adoption especially in sensitive sectors such as pharmaceuticals where credibility and reliability are the most important.

Fourth, the research based on self-reported survey data was prone to biases like social desirability or common method variance. To obtain more insight into consumer perceptions and behaviors, future studies might take into consideration the use of mixed methods, the integration of quantitative surveys and qualitative methods like interviews, focus group, or ethnographic research.

Lastly, the research addressed the mediating

factors of the perceived enjoyment and shopping intention, and failed to identify the moderating factors, including age, gender, income, and frequency of online shopping. Further studies need to involve exploration of these moderators in order to find out whether demographic or behavioral variations affect the magnitude of the observed relationships. These would offer more specific advice on how the omni-channel strategies could be customized to different consumer groups.

To conclude, the consideration of these limitations, in addition to enhancing the interpretation of the current findings, points to promising directions in the further investigation. By filling these gaps, the current study can be used by future researchers to help develop theoretical knowledge and offer more practical insights into the adoption of omni-channel in different contexts.

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