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How Do Customers React to the Integration of AI in Customer Experience

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Abstract

Artificial Intelligence is revolutionizing customer service through enhanced customization and efficiency. Processing natural language makes interactions more human-like and guarantees higher levels of customer satisfaction. With the help of AI-enabled Chatbots communication with users occurs instantaneously, answering their questions and providing immediate responses. By forecasting preferences and suggesting recommendations through the evaluation of data collected on customers, artificial intelligence improves service quality. The amalgamation of modern technology and customer service provides a smooth, personalised and linear client experience. While AI-driven chatbots and tools prove time and cost-effective, occasional delays or failures instil human hesitation. The escalating trend of integrating AI in customer service significantly enhances the overall human experience, according to various studies. However, this study aims to address a dearth of empirical research on AI-enabled customer experiences. The absence of emotional intelligence in current AI models contributes to lacklustre customer commitment and engagement. This study investigates how customers react to Artificial intelligence being integrated into the customer service industry. The study scrutinizes pivotal factors—Perceived trustworthiness, personalization, perceived ease of use, perceived usefulness, accuracy, and quality of information provided—examining their interdependence in augmenting the customer experience. This study will utilise a proposed model which utilises the stimulus, organism, and response model. Results underscore how these factors contribute to improving customer loyalty through the mediation role of customer engagement. Hence, the study reveals the interconnectedness of these factors with brand affinity and loyalty, emphasizing the importance of these factors in fostering lasting customer relationships.

Keywords: Customer Response, Artificial Intelligence, Customer Experience

1. Introduction

In recent years, the rise of artificial intelligence has become prominent in a multitude of major sectors and industries, notably prevalent in the education (eLearning) sector. It has enhanced and completely changed the way individuals learn. From Personalized learning, which adapts learning curriculum based on individual students; Intelligent tutoring, which provides feedback, customized guidance and assistance; Automated Scoring; Learning analytics, which help evaluate study patterns that can be critical in helping students realise areas to improve and Chatbot Assistants, to help aid individual inquiries **(Takyar, 2019).** All these tools accumulatively come together to transform a student's learning experience by boosting engagement. According to Statista, the global eLearning industry has been projected to increase significantly and surpass $168 billion by 2026, having exceeded the $100 billion milestone in 2019 **(Statista, 2020).** In addition, the AI market is expected to grow from its current value of 100 billion dollars

to $2 trillion by 2030 (**Thormundsson, 2023).** These remarkable forecasted surges in both the eLearning global market and Artificial intelligence may indicate a deeper integration of AI in eLearning in the forthcoming future. This can be seen in a report from MarketsandMarkets where it is anticipated that the global market for artificial intelligence in education is expected to grow at a Compound Annual Growth Rate (CAGR) of 34.2% between 2020 and 2027, from USD 1.9 billion to USD 407 billion **(MarketsandMarkets, 2018).** This demonstrates the rising demand for the use of AI in education as it offers customized and adaptable educational paths designed to increase productivity among users on online educational platforms.

Enhancing customer engagement stands out as a key reason for the wider implementation of artificial intelligence. The current top online education platforms such as Duolingo and Thinkster leverage AI to enhance their customer satisfaction **(Collaborator, 2020).** However, smaller companies are reluctant to integrate artificial intelligence into the models they develop, particularly owing to worries about high operational and maintenance costs. Despite this tendency, several start-ups, such as CoachHub and Riid, employ AI as a key component in their designs.

Despite the broad acceptance and current trend of eLearning techniques, there is a noticeable lack of empirical research on consumer responses to the use of Artificial Intelligence (AI) in eLearning systems. Customer engagement is critical to retaining existing customers, and given the scarcity of research on the issue, this study seeks to analyze the key aspects required for fostering a great customer experience. By evaluating these factors and establishing their different priorities, the study aims to contribute to a more comprehensive understanding of how to develop a pleasant customer experience. To accomplish this, the study will use a proposed stimulus organism response model, revealing an understanding of the patterns that generate positive value for businesses within the context of AI integration in eLearning services. The newly formed S-O-R (Stimulus-Organism-Response) theoretical model outlines the nuanced connection that exists between powered by artificial intelligence-driven stimuli and the overall experience of customers. The results of this investigation aim to make significant contributions to marketing and the wider field of artificial intelligence research. The current research is particularly important for the global sharing economy literature since it carefully assesses the influence of trust, convenience, information, and personalization. The research findings yield not only academic advantages but also practical benefits for eLearning companies and other interested parties. The succeeding sections thoroughly explore the current literature related to marketing activities, customer engagement, and customer loyalty, establishing the foundation for the proposed framework. This study aims to answer how customers react to the integration of AI in customer experience.

2. Literature Review

The Stimulus Organism Response Model

Mehrabian and Russell's (1974) stimulus-organism-response (S-O-R) model serves as the basis for this research study. The SOR model is composed of three essential elements: inputs (stimulus), processes (organism), and outputs (response). These components collectively dictate the behavioural outcome of an event (**Mehrabian & Russell, 1974).** This model illustrates how an individual's behavioural responses are influenced by environmental and informational signals, resulting in an extensive understanding of the link between external cues, internal processes, and behavioural results **(Bigne et al., 2020**). Various scholars have applied the S-O-R model in research papers revolving around consumer behaviour and experiences. Due to the model's ability to foresee responses to emerging innovations such as AI, adapted versions of

the SOR framework have been employed in a wide range of scholarly studies on consumer behaviour (**Ho & Chow, 2023)**. The framework has been adopted to analyse consumer behaviour in online shopping by a multitude of scholars (**Le et al., 2022; Peng & Kim, 2014)**. Additionally, the SOR model has been utilized to examine consumer impulsive purchasing habits in the cosmetics business. **(Wu & Lee, 2015).** In the setting of the current research, the SOR model has been adapted to explore the impact of these elements - trust, information, convenience, and personalisation - which serve as stimulus. The concentration is on analysing the influence of these AI-driven stimuli on consumer engagement of eLearning platforms, corresponding to the model's organism element. In addition, the study evaluates how consumer engagement contributes to the response to customer loyalty.

Trust and customer engagement

Patterson characterizes customer engagement as a higher-level construct or psychological attitude that comprises the following four elements: vigour, dedication, absorption, and interaction. **(Patterson, n.d.).** Thus, regarding the setting of eLearning platforms, we identify customer engagement as a psychological attitude which mirrors what customers think about the eLearning platform and the artificial intelligence (AI) tools that they adopt. As a result, trust is a crucial component that elevates customer engagement given that it is a sentiment felt towards a platform that influences a consumer's attitude about the company in question. Researchers have proved that customer trust has a positive impact on customer engagement behaviour in the e-commerce industry **(Fan et al., 2022).** According to a study, customer engagement and long-term purchases on a platform occur only when consumers have established a substantial amount of trust in the brand (**Hasan et al., 2020).** This reinforces the premise that trust is essential and long-lasting and that it has a positive effect on customer engagement over a period of time. Consequently, the following hypotheses were formulated***:***

H1a Trust is positively related to customer engagement in the eLearning industry

Information and customer engagement

The quality of information plays an important role in assessing customer engagement and satisfaction levels. Experts have demonstrated that high quality increases satisfaction among customers **(Uzir et al., 2020).** In addition, another study revealed a clear positive correlation between quality value and customer engagement in the particular case of organic grocery stores **(Yu et al., 2022).** Furthermore, one could argue how the quality of information offered to customers through eLearning platforms also has a favourable impact on customer engagement. Hence, the following notions were developed:

H1b Information is positively related to customer engagement in the eLearning industry

Convenience and customer engagement

Convenience includes the following two concepts: Ease of use and usefulness. Service convenience is seen as a direct driver of customer engagement behaviours (**Roy et al., 2018).** The convenience of a service enables customers to enhance their efficiency and productivity, thereby meeting the vigour criteria for fostering customer engagement. The creation of the following concept was prompted by this statement.

H1c Convenience is positively related to customer engagement in the eLearning industry

Personalization and customer engagement

Personalization is a method of adjusting experiences to match the needs and preferences of individual consumers. This attribute enables artificial intelligence (AI) to develop human-like relationships with its consumer base, giving it a distinct competitive advantage. More importantly, a separate investigation identified a positive correlation between customized sites and client satisfaction **(Zariman et al., 2022).** Likewise, a study has discovered a prominent relationship between perceived personalization in smart

service systems and customer engagement **(Henkens et al., 2020). (Ameen et al., 2021**) Various literature prompted this study to examine personalisation in terms of eLearning courses and feedback on customer engagement levels. Thus, the given statement was proposed.

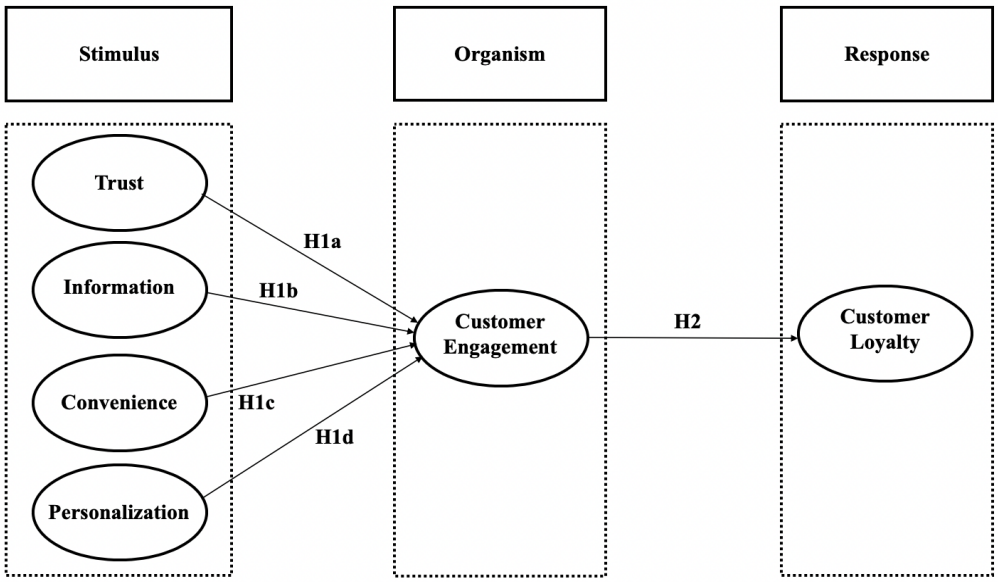
H1d Personalization is positively related to customer engagement in the eLearning industry

Customer engagement and Customer Loyalty

Customer loyalty can be defined as a consumer's continuous choice, support, and confidence for a particular brand due to pleasant interactions, perceived worth, and a sense of connection to the company. Therefore, it can be deduced that favourable engagement with a brand may result in brand loyalty. This is supported by numerous research investigations that highlight how Customer engagement influences customer loyalty **(Prentice & Nguyen, 2020; Prentice et al., 2018).** Increasing customer satisfaction with brand interactions and encounters significantly boosts the probability of additional purchases in the future. As a result, the theories that followed were proposed:

H2 Customer engagement are positively related to customer loyalty in the eLearning industry

Figure 1: The Research Framework proposed is given below



3. Methodology

Sample

An online survey was distributed to 205 people across a variety of demographics, ensuring that all participants had participated in an eLearning platform within the last three years. Building on the popularity of eLearning platforms, particularly among younger generations, I held questionnaire meetings with groups of students in schools to gather data regarding their consumer behaviour. In addition, I applied virtual snowball sampling, a method to investigate broader populations with the assistance of virtual networks **(Baltar & Brunet, 2012**). I circulated an online Google Form via social media outlets such as Email and WhatsApp. Because of its inherent advantages, the implementation of a snowball sampling approach is particularly well-suited for studies regarding artificial intelligence (AI). In particular, this method eliminates the need for an overly rigid sample frame, providing greater flexibility in acquiring data (**Nikolopoulou, 2022).** The natural process of participants sharing the survey link within their own virtual networks enables the questionnaire link to be distributed to a broader and more diversified

audience. This approach sets off a chain reaction that extends the reach and participation of a community of individuals interested in AI or eLearning platforms. The intrinsic network consequences of snowball sampling increase the likelihood of gathering information from individuals who would otherwise be difficult to contact using traditional sample approaches.

Table 1 illustrates the demographic composition based on the valid responses acquired from the survey participants. The gender distribution demonstrates a slightly higher frequency of females (53.7%) than males. The vast majority of responders (48.3% of the sample) were between the ages of 16 and 20. In addition, 25.4% were between the ages of 21 to 27, 7.8% within the ages of 28 and 34, 2.9% fell within the age category of 35 to 40, and 15.6% were aged 40 or above. When reviewing the educational backgrounds of the respondents, it was discovered that 48.3% of respondent's highest level of education is the high school level. In addition, 37.1% had completed or were currently pursuing their undergraduate degrees, with 14.6% having completed or actively participating in postgraduate or higher education studies. Regarding relationship status, the information provided indicated a wide variety of replies. Approximately 26.8% of the people reported being married, 3.4% divorced, 60% single, and 9.8% in other sorts of partnerships. This thorough demographic breakdown sheds light on the composition of the participant pool, providing a more nuanced picture of the characteristics of those who participated in the study. Moreover, this comprehensive demographic study highlights the broad spectrum of individuals in the participant pool, which can be critical in providing a wide range of perspectives.

Table 1: Demographic profile of the respondents (n=205)

Variable	Range	Frequency	Percent
Sex	Male	95	46.3
	Female	110	53.7
Age	16 - 20	99	48.3
	21 - 27	52	25.4
	28 - 34	16	7.8
	35 - 40	6	2.9
	40 and above	32	15.6
Highest Level of Education	High School (Gr 9 -12)	99	48.3
	Undergraduate	76	37.1
	Post graduate and above	30	14.6
Relationship Status	Married	55	26.8
	Divorced	7	3.4
	Single	123	60
	Other	20	9.8

Measures

The questionnaire employed in this study possesses three different sections. The first segment operated as an initial screening step, verifying that every single participant had utilized online learning platforms during the three years prior to the study. The second portion was comprised of questions regarding the variables listed in Table 2, namely trust, information, convenience, personalization, customer engagement, and customer loyalty. The aforementioned variables received ratings on a Likert scale of 1 to 7, with "1" denoting strongly agree and "7" indicating strongly disagree.

Each question regarding a variable in the questionnaire was adapted to the context of eLearning platforms. The foundation of the questions was based on the research investigation conducted by **Chen et al., 2022** and **Ho & Chow, 2023.** In addition, parameters impacting each variable were taken into account. For instance, the convenience assessment included ease of use and usefulness. Comparably while analyzing consumer engagement, each question attempted to evaluate one of the four aspects characterizing customer engagement: vigour, dedication, absorption, and interaction, outlined by **Patterson, n.d.** Table 2 displays the full set of survey questions asked to participants under examination for this research study Additionally, the table below reveals the appropriate variables associated with each of the provided questions. This additional content provides a complete summary, establishing a clear relationship between the questions addressed and the corresponding variables, which facilitates a more nuanced grasp of the study's investigative framework.

Table 2

Variable	***Questions***	***Label***
Trust	I trust eLearning apps to prioritize my well-being and interests.	Trust_1
	I am comfortable entrusting eLearning platforms with the necessary personal data they require.	Trust_2
Information	AI provides helpful recommendations on eLearning platforms	Information_1
	AI provides information that helps clarify my doubts regarding learning courses	Information_2
	AI tools deliver accurate information and feedback	Information_3
Convenience	AI tools present in eLearning apps are user-friendly and straightforward to use.	Convenience_1
	Leveraging AI tools improves my learning efficiency.	Convenience_2
Personalization	AI has the ability to address customer queries directly and promptly.	Personalization_1
	AI is able to adapt to customers' needs through personalised courses.	Personalization_2
	AI provides relevant feedback which helps me to understand my areas of improvement.	Personalization_3
Customer engagement	I enjoy utilising AI tools present in eLearning platforms.	Engagement_1
	I put in my best effort to succeed on these eLearning platforms.	Engagement_2
	I lose track of time when using these eLearning platforms.	Engagement_3

	I am curious about eLearning platforms that use AI.	Engagement_4
Customer loyalty	I would recommend such platforms to friends and family	Loyalty_1
	I am willing to use services/products from such eLearning companies in the future	Loyalty_2
	I would opt for eLearning platforms that incorporate AI over those without AI.	Loyalty_3

4. Results

Correlation matrix

The questionnaire data has been examined via RStudio, a user-friendly integrated development environment (IDE) for coding and editing. In particular, RStudio is freely accessible to all individuals. The investigation made use of a correlation matrix, a type of statistical technique that reveals correlations among multiple variables. It also evaluates the degree of significance of these correlations using Pearson's product-moment correlation **(Mukaka, 2012)**. Table 3 displays the information collected in the form of a correlation matrix.

To appropriately analyze the correlation coefficients, this research investigation follows the rule of thumb shown in Figure 2 **(Mukaka, 2012)**. This standard assists in determining the extent of the correlation coefficients and in deriving relevant findings based on the data exhibited in Table 3.

As a result, we can deduce that trust, convenience, information, and personalization all correlate positively with customer engagement. Information, convenience, and personalization have a strong positive correlation, however, trust (0.50) has a moderate positive correlation, making it the least favourable predictor variable of customer engagement among all four of them. Furthermore, convenience and personalization have the strongest association with customer engagement (0.75). This provides the study with data to support the hypothesis (H1) outlined in the suggested framework shown in Figure 1. In addition, the correlation matrix reveals a 0.89 correlation between customer engagement and loyalty. This is virtually a very high correlation, which lends validity to the H2 hypothesis.

Figure 2:

Size of Correlation	Interpretation
.90 to 1.00 (−.90 to −1.00)	Very high positive (negative) correlation
.70 to .90 (−.70 to −.90)	High positive (negative) correlation
.50 to .70 (−.50 to −.70)	Moderate positive (negative) correlation
.30 to .50 (−.30 to −.50)	Low positive (negative) correlation
.00 to .30 (.00 to −.30)	negligible correlation

Table 3

	Trust	Infor-mation	Conven-ience	Personali-zation	Customer engage-ment	Customer loyalty
Trust	**1.00**					
Infor-mation	0.48	**1.00**				
Conven-ience	0.38	0.79	**1.00**			
Personali-zation	0.45	0.71	0.77	**1.00**		
Customer engage-ment	0.50	0.73	0.75	0.75	**1.00**	
Customer loyalty	0.50	0.73	0.75	0.73	0.89	**1.00**

Linear regression model

The given tables (Tables 5, 6, and 7) illustrate the findings of a linear regression model used on the collected data. Linear regression is a method of statistical analysis that describes a continuous variable (dependent) through a group of continuous predictor variables (independent). The outcome of the model measures the strength of the associations between the dependent variable and each of the chosen independent variables, for example revealing information such as the predicted change in health per unit change in hygiene conditions **(Bergh et al., 2021).**

Table 5 deals with using the independent variables (trust, information, convenience, and customisation) to predict the dependent variable (customer engagement). Meanwhile, Table 6 employs the same set of independent variables to forecast a different dependent variable: customer loyalty. Table 7 also investigates the influence of the variable customer engagement on customer loyalty through the use of predictive analysis.

In the linear regression model outcome, the "estimate" figures indicate the independent (predictor) variables' coefficients in the model's regression equation. The coefficients in question represent the estimated change in the dependent variable for the change of one unit in the corresponding predictor variable, while the other variables remain constant. The standard error (Std. error) measures the estimate's variability or accuracy. Smaller standard errors suggest more accurate predictions. In the case of linear regression, the t-value is the total amount of standard deviations a coefficient is from zero. It assists in determining if a certain variable has a statistically significant effect on the outcome. The p-value (Pr (> | t |)) in the linear regression model reveals whether there is evidence to support the hypothesis that a particular variable has a significant influence on the result (**Dahiru, 2008).** A low p-value (e.g., < 0.05) indicates a substantial influence of the predictive variable on the response variable, supporting the hypothesis as valid. A high p-value (e.g., > 0.05) suggests that there is insufficient evidence, so the hypothesis is rejected since the predictor variable is unlikely to have a significant influence on the response variable. The significance

codes (***, **, *, etc.) provide swift information about the degree of statistical significance for each predictor variable. Table 4 depicts the standard parameters and significance of each of the values of P.
Hence, we can determine if the proposed hypothesis framework in Figure 1 is supported. TABLE 5's p-value indicates that all variables have substantial evidence to support their hypothesis. Personalization has the strongest evidence to back up its claims. Furthermore, using the estimate value demonstrates that the factors alone have minimal influence on customer engagement, but when all the variables are involved and used effectively, customer engagement is substantially shifted. Trust (0.12), information (0.22), convenience (0.27), and personalization (0.37) are responsible for 98% of customer engagement. The standard error figures are all low in all Tables, suggesting that the study has a high probability of being accurate. Therefore, researchers can observe how all these variables interact to influence customer engagement.
Applying the same procedure to table 6. We can observe if the predictor variables influence the ultimate outcome factor of customer loyalty. According to the p-values, each of the components provides evidence for the suggested framework. However, convenience (***) has the largest indirect impact, and evidence supports the relationship between one of the predictor factors and customer loyalty. The aforementioned elements perform better as a team, as seen by the individual estimate values (<40) which was weak in comparison to the factors effectively working together. 95% of consumer loyalty is driven by trust, convenience, information, and personalization. This proves how these characteristics influence consumer loyalty. Furthermore, it supports the portion of the proposed framework in which these factors indirectly influence customer loyalty via the mediating function of customer engagement.
Table 7 exhibits the linear regression model between customer loyalty and customer engagement. Customer engagement as a single component provides a substantial estimate value (0.84), confirming the H2 link in the case of Figure 1 and the significant connection between customer engagement and loyalty. Overall, these tables helped verify the hypothesis claims and clarify the accuracy of the suggested model (figure 1).

Table 4

Pr (> | t |)	Significance	Represented by
< 0.001	Very highly significant	***
0.001 - 0.01	Highly significant	**
0.01 – 0.05	Significant	**
0.05 - 0.1	Marginally significant	.
> 0. 1	Not significant	

Table 5

Customer engagement ~ trust + information + convenience + personalization Coefficients:					
	Estimate	**Std. Error**	**t value**	**Pr (> | t |)**	
Trust	0.12091	0.03929	3.078	0.00238	**
Information	0.22572	0.07880	2.864	0.00462	**
Convenience	0.27403	0.08244	3.324	0.00105	**
Personalization	0.37112	0.07222	5.139	6.52e-07	***

Table 6

Customer loyalty ~ trust + information + convenience + personalization Coefficients:					
	Estimate	**Std. Error**	**t value**	**Pr (> | t |)**	
Trust	0.11689	0.04409	2.651	0.008654	**
Information	0.29293	0.08843	3.312	0.001097	**
Convenience	0.31196	0.09251	3.372	0.000894	***
Personalization	0.24138	0.08104	2.979	0.003252	**

Table 7

Customer loyalty ~ Customer engagement Coefficients:					
	Estimate	**Std. Error**	**t value**	**Pr (> | t |)**	
Customer Engagement	0.84030	0.04102	20.486	< 2e-16	***

5. Discussions

The findings indicate that the SOR model proposed at the beginning of the research investigation is appropriate. It demonstrates that trust, convenience, information, and personalization improve engagement among customers, which in turn promotes customer loyalty. It corroborated earlier research findings that information and customization influenced experience **(Ho & Chow, 2023b).** Furthermore, this study supports another study by **Chen et al. (2022b),** which demonstrates the positive intrinsic connection that exists between trust, simplicity of use, usefulness, engagement, and loyalty. However, this study was centred around the customer AI experience through eLearning systems.

Customers like receiving customized instruction and feedback tailored to their specific faults and areas for advancement. This draws clients to various eLearning platforms since it makes their experience more unique and intimate **(Capgemini and Efma 2022).** Customers are able to use chatbots to ask questions and get appropriate information as a response. Since AI tools are always accessible throughout the day, the customer experience has been streamlined and artificial intelligence (AI) tools are straightforward to use, enabling them to enhance customer engagement. Trust is important when it comes to brand choice as well as readiness to connect with the brand. A high degree of trust in platforms for privacy and safety has a favourable impact on the organization. Trust is based on the reputation of the company and user reviews. Because it is essential for humans to be aware of which individuals can trust with their personal information, selecting a trustworthy platform is critical.

Customer engagement serves as an intermediary between the predictor factors (trust, convenience, information, and personalization) and customer loyalty. A mediating role depicts the development of a customer's attitude towards a brand. If clients received inaccurate data from chatbots and received inadequate customized education packages, there would be no commitment or preference to return to the firm repeatedly. This is because a lack of engagement and interaction shows a dissatisfied attitude, which reflects in the customer's commitment to the brand.

Limitations

There were a couple of limitations to the research investigation. The most notable drawback was the relatively small number of participants (205), which might not provide an extensive spectrum of

perspectives. Prospective studies should employ bigger sample sizes to remove as much bias as achievable. Second, because the study was tailored to the eLearning industry in particular, which is popular among youngsters, the findings were more skewed toward a high schooler's perspective. Therefore, in future studies, ensure demographic information is proportional and balanced. Another issue I encountered was the limited availability of free information. It made the research process more time-consuming and difficult. Researchers intrigued by exploring this matter further should guarantee that there is sufficient free material to use for their research study.

6. Conclusion

The research paper investigates how customers react to the integration of AI into the customer experience of eLearning platforms. The research study proposes a Stimulus-Organism-Response (SOR) model, with trust, information, convenience, and personalization as predictor variables that have a positive impact on customer engagement. The study found a significant positive correlation between customer engagement and loyalty. The SOR model has been proven through evidence, comprising of the findings from the correlation matrix and a linear regression model.

While supporting the fundamental concepts, the study expands its contribution by offering additional details. Notably, it identifies the importance of each component with respect to the claimed response variable. Personalization was the most significant factor directly impacting client engagement, while convenience has the greatest indirect influence on customer loyalty. Trust is less significant than the other variables, but nevertheless maintains a positive correlation with customer engagement and loyalty. Researchers in the future might examine this concept through additional theoretical frameworks to establish a more comprehensive and well-rounded theoretical hypothesis.

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8. References

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