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Analysis of Fast Food Brand Preferences using Eye Tracking and Human Information Processing Model

Indah Puspa Murni[1*], Tata Irfadinata[2], Titis Wijayanto[2]

[1]Industrial Technology, Gajah Tunggal Polytechnic, Kompleks Industri Gajah Tunggal, Jl. Gatot Subroto KM. 7, Pasir Jaya, Jatiuwung, Tangerang, Banten 15133 Indonesia

[2]Department of Mechanical and Industrial Engineering, Gadjah Mada University, Bulaksumur Caturtunggal Kec. Depok Kabupaten Sleman, Daerah Istimewa Yogyakarta 55281 Indonesia

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A B S T R A C T

Fast food is the most favored food among various age groups, from children to the elderly. There are several well-known fast food brands, such as McDonald's (MCD) and Kentucky Fried Chicken (KFC). Both brands compete in innovating and promoting their products to reach a wide target market and continuously strive to improve the quality of their products. Improved product quality is often achieved through interactions between businesses and consumers via digital marketing. Digital marketing is a medium that can accurately represent consumer needs. One of the methods used in digital marketing is through posters. This is necessary to understand consumers' desires through the thinking process when receiving information from the posters provided. This study involved 20 respondent with an average age of 30.45 ± 8.7 years. These respondent were asked to undergo two data collection processes: eye tracking through a gaze recorder website and questionnaire filling through a provided Google Form. The aim of this research is to determine the fast food brand preferences chosen by respondent based on the information obtained using Eye Tracking and the Human Information Processing Model. The results of this study indicate differences in the outcomes of the dwell time results for each age factor and time spent in AOI did not exhibit significant differences among respondent.

*Corresponding Author

Indah Puspa Murni
E-mail: indahpuspamurni@gmail.com

1. INTRODUCTION

Business owners are required to adapt quickly in any condition in order to survive through every economic change that occurs. (Fadly & Sutama, 2020). This can provide benefits such as increased income, additional job opportunities, the latest innovations, and improved competitiveness, especially for companies that are moving towards digitalization (Naimah et al., 2020). The transformation of the company towards digitalization is necessary due to the increasing number of consumers who choose to use the internet in their daily activities, thus digital

marketing can become one of the company's alternatives in adapting (Kumbhar & Gaud, 2023). Through digital marketing, companies can expand their consumer network in introducing the products and services they offer (Ashwini et al., 2023). The use of digital marketing is very diverse, ranging from electronic newspapers or magazines, billboards, commercial media (TV or radio), electronic posters, augmented reality games, websites, and multimedia ads (Kumar & Singh, 2019). One of the market segments that utilizes digital marketing is in fast food brands (Chen et al., 2011). In the study conducted by Suhaemi et al. (2023) it is explained that 50% of social media users make food product purchases through GrabFood, GoFood, and the McDonald's (MCD) app. This is based on consumers who are interested in seeing the offers presented on fast food posters, especially McDonald's (MCD). The posters have their own attraction, especially in the promotional offers they feature (Suhaemi et al., 2023). All of these aims to achieve the right marketing strategy. The right marketing strategy can support increasing company profits, fulfill consumer needs, and develop products and services. Furthermore, the right marketing strategy can direct business patterns towards the appropriate market share goals and sustainable consumer needs (Firmansyah & Iriani, 2024; Malau & Iriani, 2024; Azizah & & Iriani, 2024). Furthermore, the right marketing strategy can guide business patterns towards the correct market share objectives and sustainable consumer needs (Maisaroh & Waluyo, 2023).

In implementing the marketing strategy, there are several factors to consider, especially regarding the product information provided to consumers (Iridiastadi & Yassierli, 2014). One way to understand how consumers process elements within a product is through The Human Information Processing Model (HIPM) (Iridiastadi & Yassierli, 2014). The Human Information Processing Model (HIPM) is an approach that can be used to understand the mental processes of consumers when presented with a product until the decision-making process regarding whether to choose the offered product or not (Iridiastadi & Yassierli, 2014). Therefore, human information processing is crucial for analysis by companies to understand consumer mindsets. Eye tracking is a method increasingly used to study usability issues in the context of HCI (Sharma & Dubey, 2014). Eye tracking is a technique where the eye movements of individuals are measured (Sharma & Dubey, 2014). Consequently, a researcher can determine what someone is looking at and the sequence of movements from one location to another (Sharma & Dubey, 2014). These eye movements can assist researchers in understanding visual information processing and factors that can impact the usability of the interface. By employing eye tracking analysis systems, it's possible to objectively evaluate ad content (Zhang et al., 2015). This enables the determination of whether an ad with an attractive appearance (such as a model) genuinely captures someone's interest; eye tracking is useful for exploring the behaviors and interests of individuals (Zhang et al., 2015).

Therefore, this study aims to determine the fast food brand preferences chosen by the eye tracking and the human information processing model based on differences in age factors. The use of eye tracking is necessary to observe consumer preferences based on Areas Of Interest (AOI). These AOI are determined based on the information processing received by each respondent who views stimuli in the form of fast food posters. Therefore, this research provides insights into how the information received by consumers can influence their decision-making process.

2. LITERATURE REVIEW

Fast Food Preferences

The continuously evolving digital marketing transformation provides highly intensive information movement across all media used by society (Alghizzawi, 2019). Social media used as advertising targets greatly influence the changing patterns of societal behavior. This is evident in how people tend to be active and selective in receiving product and service information online before forming preferences for desired products (Gujrati, 2023). Therefore, the marketing team and advertising department work hard to create product advertisements to gain consumer preference (Ghazie & Dolah, 2018). Consumer preference is a tendency to pay attention to advertisements

or posters of a product (Sab & European., 2011). How much useful information for the customer can determine the level of consumer preference in obtaining the desired product (Smith, 2019). Customer preference is important because companies can analyze the attractiveness of consumers towards the products being sold (Wan & Toppinen, 2016). Regarding the research conducted by Chandrasekhar et al. (2019), it was found that preferences can help understand consumer mindsets in determining online food delivery services. This can also aid in analyzing consumer needs, tastes, and attractiveness. The research also found that consumers are more inclined towards unique pricing, quality, and delivery.

Eye tracking

Eye tracking is a technology used to measure the visual distribution of information in shaping human perception (Hessels et al., 2018). Moreover, eye tracking is useful for conducting analyses related to decision-making in human cognitive processes. Human cognitive processes are observed through eye movements obtained when someone receives information. Eye tracking serves as a valuable tool for predicting individual behavior and attention (Ye et al., 2020). In the study by Guazzini et al. (2015), eye tracking can be useful in observing respondents' preferences when presented with two photos that they need to evaluate. The analysis is based on respondents' eye movements and reaction times. It was found that visual information can influence human perception and decision-making (Liang et al., 2017). Eye tracking is the most famous method because companies can see in detail how consumers visually receive information before making decisions about the products being sold. This is evident in the research conducted by Merdian et al. (2021), where eye tracking was used to observe preferences for wine bottles. Significant differences were found in respondents' perceptions when looking at wine bottle designs. The study stated that striking designs can alter respondents' perceptions but not automatically. This occurs because respondents' focus is divided between the wine bottle design and the bottle's shape itself. Therefore, eye tracking becomes a crucial tool in determining product design.

Human Information Processing Model

One approach to understand and comprehend how human interaction processes information towards a stimulus is by using the Human Information Processing Model (HIPM) (Iridiastadi & Yassierli, 2014). One famous model of human information processing is the Wickens model, which represents information processing as a sequential process. These steps include sensory processing, perception, cognition and memory, response selection, execution, and finally feedback (Wickens et al., 2021). In each process, a sequence of stages in which humans process information is demonstrated. This process begins with sensory processing of stimuli detected by human senses. Detected stimuli undergo cognitive processing by humans, which includes perception and decision-making aided by working memory and long-term memory. In constructing perception, two processes are involved: top-down (perception based on experience and knowledge) and bottom-up (perception based on sensory input). Through perception, cognitive processes are facilitated in interpreting existing stimuli. The final process in HIPM is the execution process, which is derived from the decisions made by humans. The entire sequence of processes is constrained by attention resources related to the mental capacity to process the available information (Iridiastadi & Yassierli, 2014).

3. RESEARCH METHOD

Respondent

The respondent involved in this study were 20 individuals, consisting of 10 women and 10 men. The criteria set for this study were an average age of 30.45 ± 8.7 years, Indonesian citizenship, ownership of a laptop with a screen size of 11" – 15" (inch) along with a webcam, willingness to remove glasses during the experiment, and good physical and mental health. Respondent who met these criteria were provided with information about the experimental procedures, which could only be performed once, and given a link to the gaze recorder along with a Google Form to answer questions regarding the Human Information Processing Model (HIPM). The equipment and materials for the experiment included one laptop with a monitor size of 11" – 15" (inch), a link to the gaze recorder, a link to the Google

Form, and two fast food brand stimuli, namely McDonald's (MCD) and Kentucky Fried Chicken (KFC).

Stimuli

This study utilizes two fast food brand posters, namely McDonald's (MCD) and Kentucky Fried Chicken (KFC), as experimental stimuli. The selection of these posters is based on specific information displayed, ranging from prices and product names to product appearance. The poster visuals can be seen in Figure 1 and Figure 2.

The posters that serve as stimuli are then designated with areas of interest (AOI) as the focus for data processing in the study, with a total of 12 AOIs for each stimulus. Therefore, the overall total of AOIs for both posters amounts to 24 AOIs. The AOI descriptions for each poster can be found in Table 1.

Figure 1. Stimulus 1
Source:https://madura.tribunnews.com/2021/07/27/promo-mcd-berlaku-sampai-31-agustus-2021-beragam-menu-serba-rp-30000-aja-ini-daftar-pilihannya

Figure 2. Stimulus 2
Source:https://www.scanharga.com/2020/02/kfc-promo-oh-my-jago-rp10000.html

Table 1. Descriptions of AOIs on the McDonald's (MCD) and Kentucky Fried Chicken (KFC) posters

AOI Mcdonalds (MCD)		AOI Kentucky Fried Chicken (KFC)	
AOI	Poster Sections	AOI	Poster Sections
AOI 1	Tagline	AOI 1	Tagline
AOI 2	Food 1	AOI 2	Food Name 1
AOI 3	Food Name 1	AOI 3	Food 1
AOI 4	Beverage 1	AOI 4	Food Name 2
AOI 5	Food Name 2	AOI 5	Food Name 3
AOI 6	Food 2	AOI 6	Food Name 4
AOI 7	Food 3	AOI 7	Food 4
AOI 8	Food Name 3	AOI 8	Food 2
AOI 9	Food Name 4	AOI 9	Food 3
AOI 10	Food 4	AOI 10	Food 5
AOI 11	Beverage 2	AOI 11	Price
AOI 12	Price	AOI 12	Food Name 5

Application

Eye tracking in this experiment utilizes the Gaze Recorder Website application. The application is useful for observing the eye movements of respondent during the experiment with the McDonald's (MCD) and Kentucky Fried Chicken (KFC) posters. The gaze recorder application includes several features that can assist in this research, such as heatmap and analytics. In this study, parameters to be examined for data processing include dwell time, first view, and view by. Dwell time is useful for determining how long a respondent looks at a specific area of interest (AOI), first view indicates the moment when a respondent first looks at an AOI, and view by indicates how many respondent look at an AOI.

Procedure

In conducting this research, respondent were asked to participate in an experiment consisting of two sessions: the session involving eye tracking with the gaze recorder and answering questions on the Google Form link. In the first session, respondent were instructed to set up their laptops in an upright sitting position facing

the laptop monitor at a distance of 30–40 cm, and were asked to remove their glasses if wearing any. Once positioned correctly, respondent were instructed to open the gaze recorder link and perform calibration. After calibration was completed, respondent entered the data collection process, which lasted for 1 minute, with two stimuli provided in the gaze recorder. Respondent who completed the eye tracking experiment were then directed to the Google Form link to answer questions regarding the human information processing model (HIPM) related to the stimuli in the gaze recorder. The duration of completing the Google Form was 2 minutes, making the total time spent by respondent in this study 3 minutes.

4. RESULT AND DISCUSSION

Hypotheses

Below are the hypotheses and design of the experiment, which can be seen in Table 2.

a. The hypothesis of Dwell Time and Age
   - H_0 : Difference in dwell time based on the age of the respondent
   - H_1 : No difference in dwelling time based on the age of the respondent

b. The hypothesis of Dwell Time and AOI
   - H_0 : Difference in dwell time based on the longest AOI of each respondent
   - H_1 : No difference in dwell time based on the longest AOI of each respondent

c. Hypotheses of the Interaction between Age and AOI Influencing Dwell Time
   - H_0 : There is an interaction between age and AOI that influences dwell time
   - H_1 : No interaction between age and AOI that influences dwell time

Dwell Time

In Figure 3, it can be seen that on the MCD flyer, AOI 1 has the longest average total time of 1.83 seconds among all AOIs viewed by the respondents. Additionally, on the KFC flyer, AOI 9 has the longest average total time of 1.95 seconds.

First View

In Figure 4, it is revealed that the first area of interest (first view) seen by respondents on the MCD poster is AOI 1, and the last one seen is AOI 11. Meanwhile, on the KFC poster, the first view obtained is AOI 1, and the last AOI seen by respondent is AOI 4.

View By

In Figure 5, it is shown that the most viewed AOIs on the MCD poster are AOI 3 (19 of 20), AOI 4 (19 of 20), AOI 8 (19 of 20), AOI 9 (20 of 20), and AOI 10 (19 of 20), while on the KFC poster, they are AOI 9 and 10 is 20 of 20. Additionally, the least viewed AOIs by respondent on the MCD poster are AOI 11 (10 of 20), and on the KFC poster is AOI 11 (8 of 20).

Table 2. Design of experiment (DoE)

Age	AOI	
	AOI MCD	AOI KFC
18-30	Age of Respondent 18 - 30 x MCD	Age of Respondent 18 - 30 x KFC
31-50	Age of Respondent 31-50 x MCD	Age of Respondent 31-50 x KFC

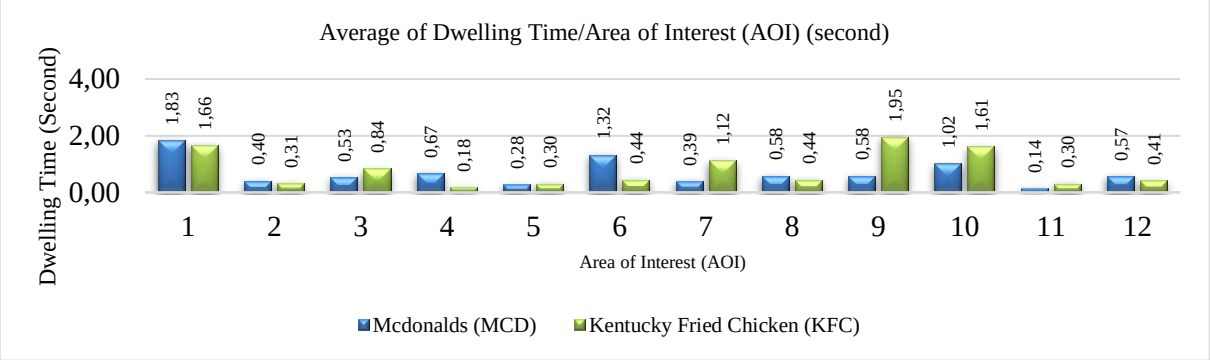

Figure 3. Dwell time for each area of interest (AOI)

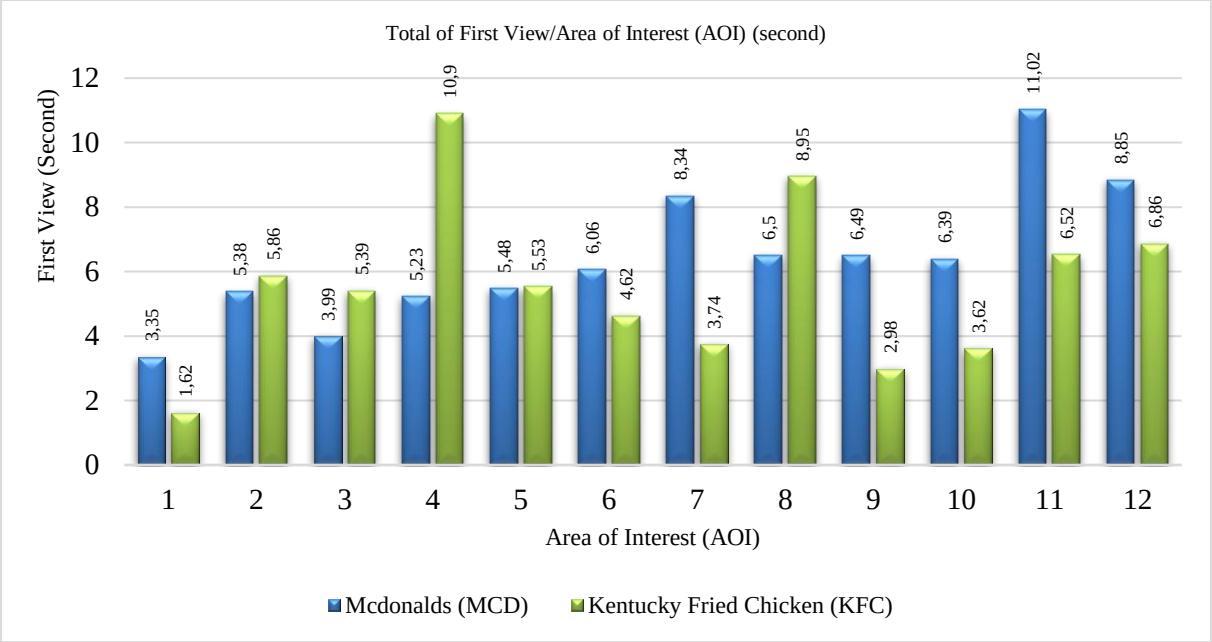

Figure 4. First view for each area of interest (AOI)

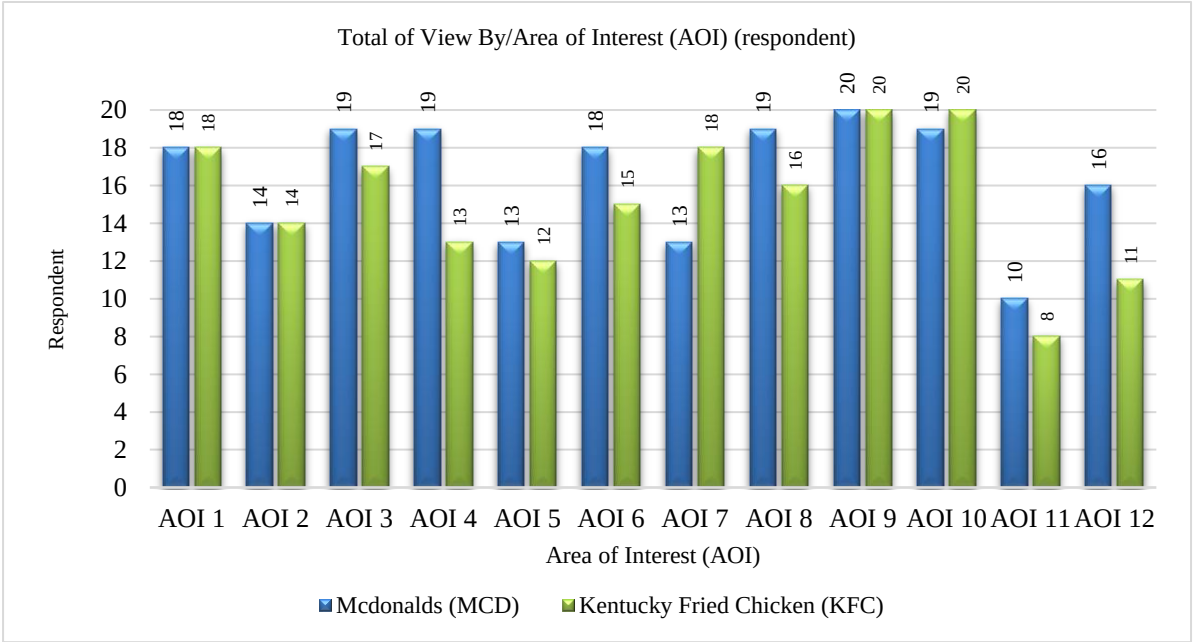

Figure 5. View by for each area of interest (AOI)

Analysis of the Human Information Processing Model (HIPM)

Perception

In Figure 6, it is shown that respondents aged 18-30 have a higher perception of snack types when viewing stimuli from MCD and KFC posters compared to their main menu, which is fried chicken. Thus, it is found that the perception built by respondents aged 18-30 when viewing MCD and KFC posters is in the snack category. Conversely, for perceptions formed by respondents aged 31-50 years, it is observed in Figure 6 that the perception formed when given stimuli in the form of MCD posters is higher for snack menus compared to KFC, while when given KFC stimuli, the perception formed is higher for fried chicken compared to MCD. Therefore, it is found that respondents

aged 18-30 and 31-50 years have the same perception when given MCD posters. Additionally, when given KFC posters, respondents aged 18-30 have a perception of snack types, while respondents aged 31-50 have perceptions related to their main menu, which is fried chicken.

Working Memory

In Figure 7, the results show that 9 out of 10 respondents correctly answered questions regarding the price on the MCD poster. This is also evidenced by the eye tracking results, which show that 8 respondents correctly looked at AOI 12, while 1 respondent only glanced at AOI 12 without paying much attention. Furthermore, when respondents were given the KFC poster, it was found that all 10 respondents answered correctly, but in the eye tracking data, only 5 respondents looked at AOI 11. This occurred because the price text on the poster is quite large, so respondents did not need to pay close attention to it.

Figure 7 also indicates that out of 10 respondents given stimuli from the KFC poster, 7 were able to answer correctly, while in the eye tracking results, it was found that 8 respondents looked towards AOI 11. This occurred because some respondents only glanced at it without paying close attention (look but not see). Therefore, it is found that the working memory of respondents aged 18 - 30 years is higher than respondents aged 31 - 50 years. This is shown by the accuracy of respondents' answers in the questionnaire and their attention in eye tracking when given stimuli in the form of MCD and KFC posters over a total time of 40 seconds.

Long-term Memory

As seen in Figure 8, respondents aged 18 - 30 years had a long-term memory > 30% totaling 7 out of 10 respondents, while respondents aged 31 - 50 years had a long-term memory > 30% only totaling 5 out of 10 respondents. This is derived from the accuracy of questionnaire responses when respondents were asked to recall their experience of buying products based on MCD and KFC posters displayed on the eye tracking website for a period of 40 seconds for all stimuli.

Response Selection

In Figure 9, it shows the conformity of response selection between eye tracking and the questionnaire results of the respondents. It was found that respondents aged 18-30 years had a 30% higher preference for MCD over KFC, while respondents aged 31-50 years had a 30% higher preference for KFC over MCD. Meanwhile, blank results for MCD (60%) and KFC (50%) indicate that respondents lacked consistency between maximum dwell time results and choices in the questionnaire.

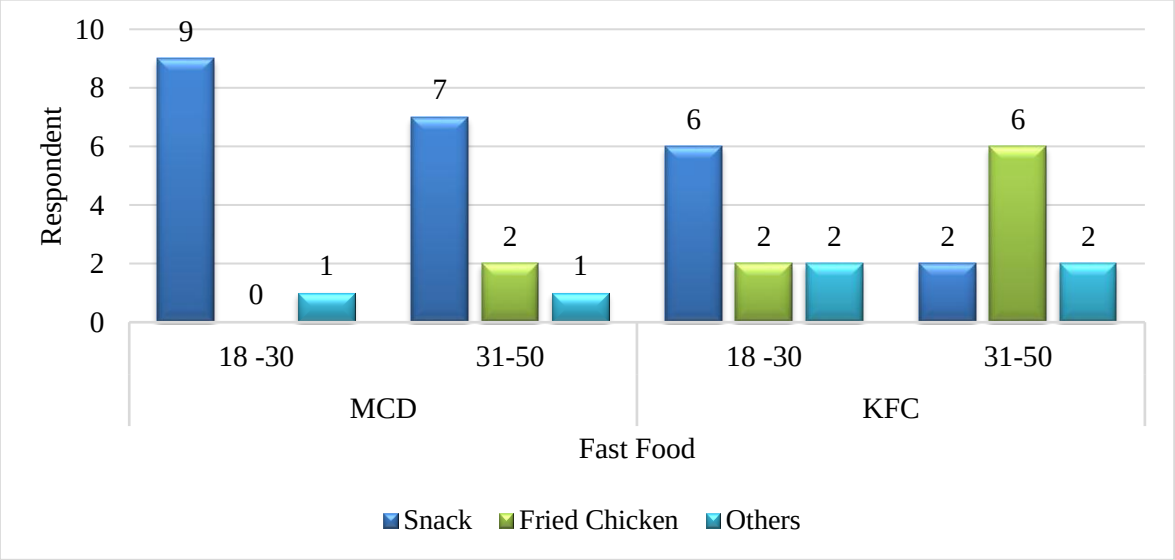

Figure 6. Perceptions based on respondents' age

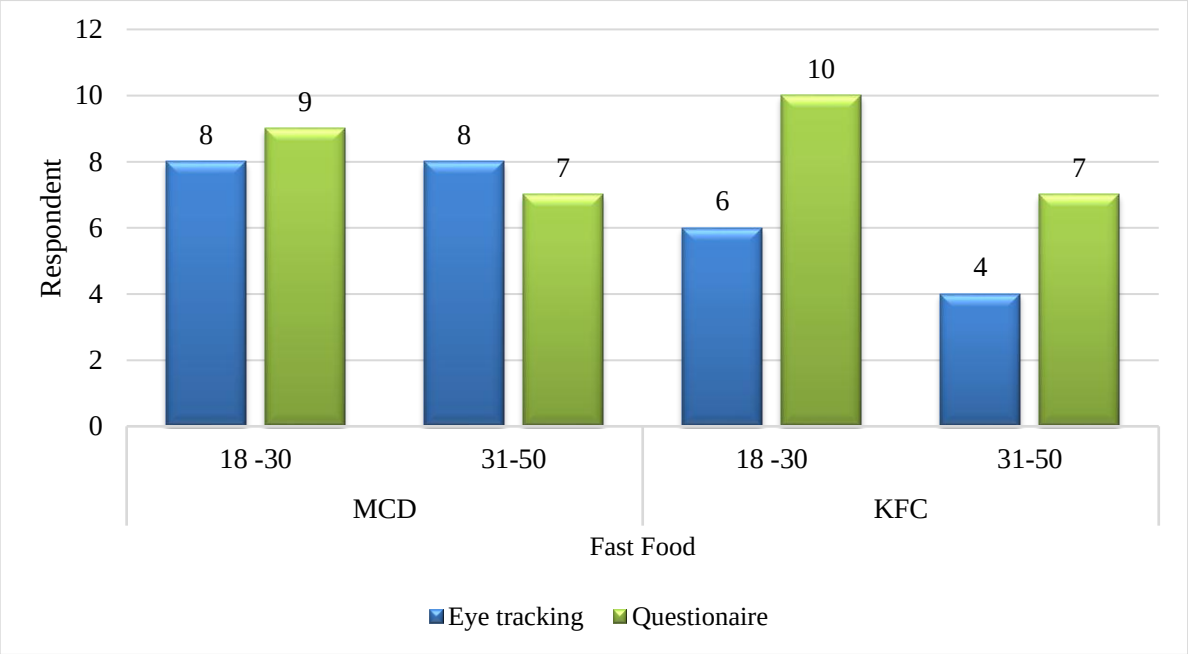

Figure 7. Working memory based on respondents' age

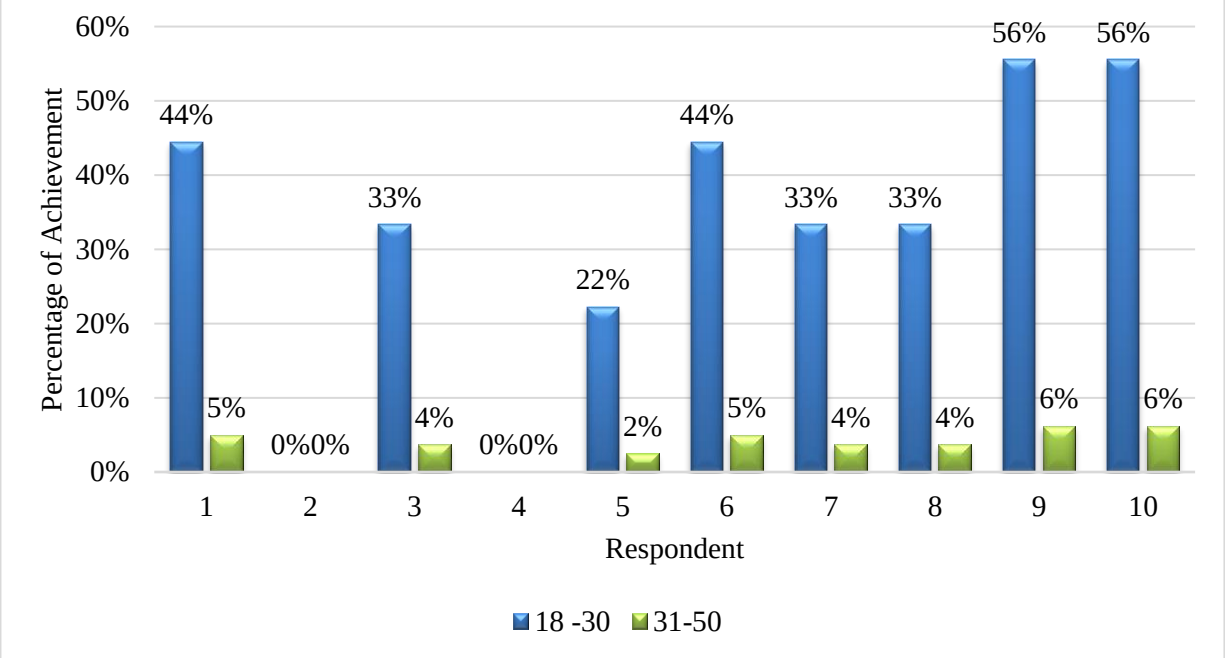

Figure 8. Long-term memory based on respondents' age

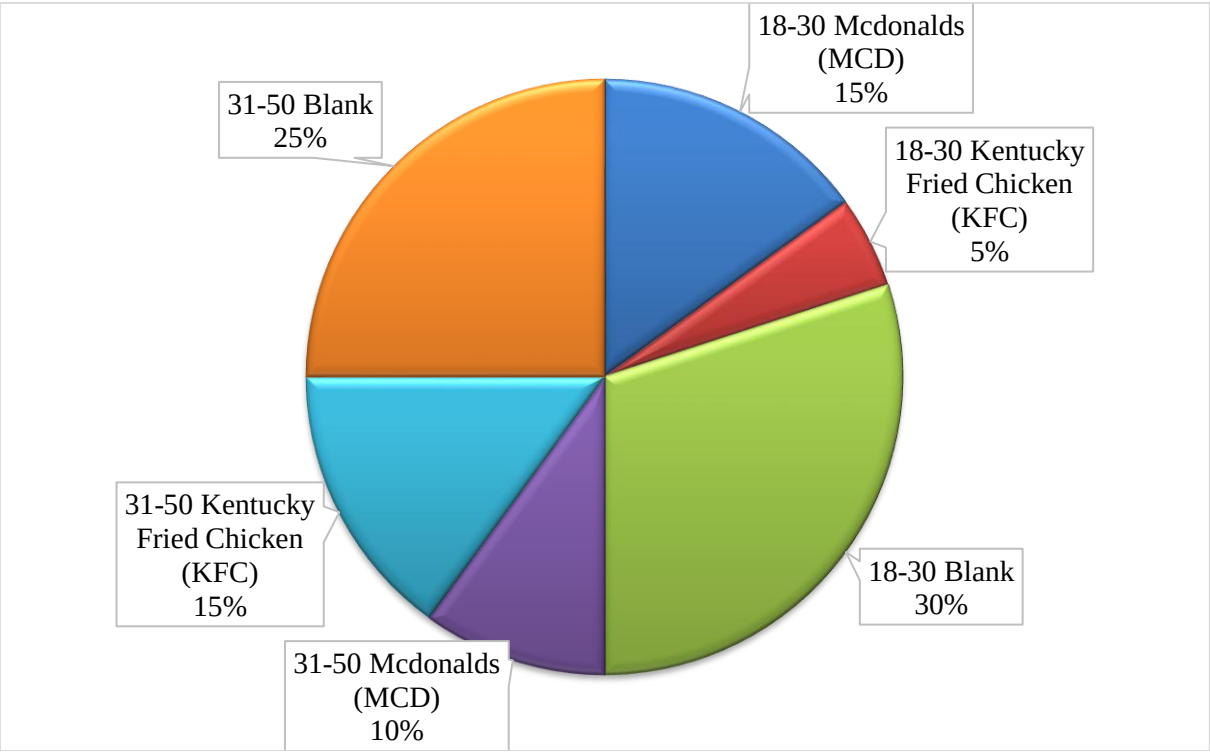

Figure 9. Response selection based on respondents' age

Two-ways ANOVA Analysis

The obtained data on response selection were then subjected to two-way ANOVA testing to determine if the preferences of each respondent were indeed derived from the longest dwell time influenced by age and AOI values. Thus, the first step was to handle outlier data. Outlier data is useful to avoid biased or non-normal results in its statistical outcomes by eliminating detected outlier data points. After removing the outlier data, normality testing was conducted to determine if the data was normally distributed. Based on the normality test conducted, the available data was found to be normally distributed. The results of the normality test after handling outliers can be seen in Table 3.

Furthermore, a normality test was conducted on the standard residual values with a standard sig. value > 0.05 (indicating normal residual standard values), whereas if the sig. value < 0.05 (indicating non-normal residual standard values) (Wijekularathna et al., 2019; Jaelani, 2019). In the normality test for residual values, a sig. value of 0.157 > 0.05 was obtained. This means that the residual standard values in this study are normally distributed. Below are the results of the normality test for residual standard values, which can be seen in Table 4. The results, which have been normally distributed, were then subjected to a homogeneity test with a standard sig. value > 0.05, indicating homogeneous data, whereas if the sig. value < 0.05, it means the data is not homogeneous (Jaelani, 2019). As seen in Table 5, the obtained sig. value is 0.335 > 0.05, indicating that the data is homogeneous and suitable for conducting Two-way ANOVA testing.

The results of the Two-way ANOVA test shown in Table 6 indicate that the AOI factor has a sig. value of 0.541 > 0.05, meaning that H0 cannot be accepted or there is no difference in dwell time based on the longest AOI for each respondent. Similarly, the age factor also has a sig. value of 0.660 > 0.05, indicating that H0 cannot be accepted or there is no difference in dwell time based on respondent age. Additionally, the significance value related to the interaction between the two factors, age and AOI, yields a sig. value of 0.451 > 0.05, meaning that H0 cannot be accepted or there is no interaction between age and AOI affecting dwell time.

Table 3. Normality test after outlier processing

Tests of Normality						
	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
AOI1	.203	7	.200*	.921	7	.476
AOI2	.229	7	.200*	.873	7	.197
AOI3	.290	7	.078	.831	7	.082
AOI4	.215	7	.200*	.892	7	.284
AOI6	.163	7	.200*	.923	7	.495
AOI7	.198	7	.200*	.890	7	.276
AOI8	.310	7	.041	.870	7	.185
AOI9	.269	7	.135	.872	7	.192
AOI12	.139	7	.200*	.949	7	.723
AOI14	.254	7	.190	.862	7	.159
AOI15	.216	7	.200*	.883	7	.240
AOI16	.170	7	.200*	.952	7	.746
AOI17	.267	7	.142	.918	7	.452
AOI18	.215	7	.200*	.877	7	.212
AOI19	.219	7	.200*	.905	7	.363
AOI20	.232	7	.200*	.865	7	.169
AOI21	.242	7	.200*	.864	7	.164
AOI22	.217	7	.200*	.926	7	.514

*. This is a lower bound of the true significance.
a. Lilliefors Significance Correction

Table 4. Results of normality test on residual standard values

Tests of Normality						
	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Standardized Residual for Result_DT	.214	14	.081	.910	14	.157
a. Lilliefors Significance Correction						

Table 5. Homogeneity Test Results

Levene's Test of Equality of Error Variances[a]			
Dependent Variable:	Dwell Time result		
F	df1	df2	Sig.
1.275	3	10	.335

Table 6. Results of two-way ANOVA test

Tests of Between-Subjects Effects					
Dependent Variable:	Dwell Time Result				
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	.044[a]	3	.015	.278	.840
Intercept	3.506	1	3.506	65.799	.000
AOI	.021	1	.021	.401	.541
Age	.011	1	.011	.206	.660
AOI * Age	.033	1	.033	.616	.451
Error	.533	10	.053		
Total	**8.318**	**14**			
Corrected Total	**.577**	**13**			
a. R Squared = .077 (Adjusted R Squared = -.200)					

5. CONCLUSION

This study aims to determine the fast-food brand preferences chosen by respondents using eye tracking and the Human Information Processing Model. This is observed through dwell time, first view, and view by results. In the dwell time results, it was found that AOI 1 on the MCD poster was looked at more than others. AOI 1 on the MCD poster, which is the Tagline (McD Package IDR. 30,000), shows that respondents tend to pay attention to the selling price of the product. In the first view results, respondents who saw the MCD poster immediately focused on AOI 1. This is also conveyed in Chandrasekhar et al. (2019) research, where respondents in his study tended to pay attention to information related to the selling price of the product. Meanwhile, on the

KFC poster, the AOI that was looked at the longest by respondents was AOI 9. AOI 9 represents food that has a different shape compared to other types of food on the poster. However, in the first view results, AOI 9 was not the first attraction when respondents received this information, but in the view by results, AOI 9 became the AOI that was looked at the longest by respondents. Apart from the analysis based on eye tracking and HIPM results, this study found that the significance value related to the interaction between the two factors, age and AOI, resulted in a sig. 0.451 > 0.05, which means H0 cannot be accepted. Thus, it can be said that there is no interaction between age and AOI affecting dwell time. Therefore, customer preferences in choosing a fast-food brand are not only based on how long customers look at posters but also on how unique information is obtained and then processed in the customer's mindset to make decisions. An analysis of the information processing with the Human Information Processing Model (HIPM) when respondents receive stimuli in the form of information on MCD and KFC posters. The perceptions formed between the MCD and KFC posters differed. In the MCD poster, both age groups had the same perception; when looking at MCD poster information, the perception formed was a snack. Whereas, in the KFC poster, the age range of 18 - 30 years tended to depict a snack and the age range of 31 - 50 years depicted KFC's main menu, which is fried chicken. The long-term memory results showed that the age range of 18 - 30 years tended to have a fairly high memory retention rate with an average correct answer rate of 32%. Meanwhile, the age range of 31 - 50 years produced correct answers with an average of 26%.

REFERENCES

Alghizzawi, M. (2019). The role of digital marketing in consumer behavior: A survey. *International Journal of Information Technology and Language Studies (IJITLS)*, 3(1), 24-31. http://journals.sfu.ca/ijitls

Azizah, R. (2024). Marketing Strategy Analysis in Increasing Participation Numbers in the Social Security Administration for Employment (BPJS Ketenagakerjaan) Tanjung Perak Branch Office Using SWOT Analysis Method. *IJIEM (Indonesian Journal of Industrial Engineering & Management)*, *5*, 209–216. https://doi.org/10.22441/ijiem.v5i1.22338

Chandrasekhar, N., Gupta, S., & Nanda, N. (2019). Food Delivery Services and Customer Preference: A Comparative Analysis. *Journal of Foodservice Business Research*, *22*(4), 375–386. https://doi.org/10.1080/15378020.2019.1626208

Chen, H., & Hsiang, K. (2011). How Different Information Types Affect Viewer's Attention on Internet Advertising. *Computers in Human Behavior*, *27*(2), 945–945. https://doi.org/10.1016/j.chb.2010.11.019

Firmansyah, D. (2024). Marketing Strategy Analysis using Strength Opportunity Aspiration Result (SOAR) Strategy and Quantitative Strategic Planning Matrix (QSPM) at PT. XYZ. *IJIEM (Indonesian Journal of Industrial Engineering & Management)*, *5*, 201–208. https://doi.org/10.22441/ijiem.v5i1.21996

Fadly, H. D., & Sutama, S. (2020). MEMBANGUN Pemasaran Online dan Digital Branding Ditengah Pandemi COVID-19. *Jurnal Ecoment Global*, *5*(2), 213–222. https://doi.org/10.35908/jeg.v5i2.1042

Ghazie, D., & Dolah, J. (2018). *How Digital Marketing Affects Consumer Behavior*.

Guazzini, A., Yoneki, E., & Gronchi, G. (2015). Cognitive dissonance and social influence effects on preference judgments: An eye tracking based system for their automatic assessment. *International Journal of Human Computer Studies*, *73*, 12–18. https://doi.org/10.1016/j.ijhcs.2014.08.003

Gujrati, R. (2023). Digital Transformation Has Changed Consumer Behvoiur from Traditional Market to Digital Market. *Academy of Marketing Studies Journal*, 27(2). https://www.researchgate.net/publication/367240492

Hessels, R. S., Niehorster, D. C., Nyström, M., Andersson, R., & Hooge, I. T. C. (2018). Is the eye-movement field confused about fixations and saccades? A survey among 124 researchers. *Royal Society Open*

Science, *5*(8). https://doi.org/10.1098/rsos.180502

Iridiastadi, H., & Yassierli. (2014). *Ergonomi: Suatu pengantar*. Remaja Rosdakarya.

Kumar, R., & Singh, A. (2019). A Study on Digital Marketing and its Impact. *IJRAR*, 6(2), 967- 972.

Liang, C., Lin, C. T., Yao, S. N., Chang, W. S., Liu, Y. C., & Chen, S. A. (2017). Visual attention and association: An electroencephalography study in expert designers. *Design Studies*, *48*, 76–95. https://doi.org/10.1016/j.destud.2016.11.002

Maisaroh, S. S., & Waluyo, M. (2023). Analysis of Marketing Strategies at Fried Chicken Restaurant Nelongso UPN Branch Using the SWOT Analysis Method. *IJIEM - Indonesian Journal of Industrial Engineering and Management*, *4*(3), 471. https://doi.org/10.22441/ijiem.v4i3.2152

Malau, G. (2024). Analysis of Marketing Strategies to Achieve Room Occupancy Targets with the SWOT Method at Grand Tamaro Parapat Hotel. *IJIEM (Indonesian Journal of Industrial Engineering & Management)*, *5*, 217–224. https://doi.org/10.22441/ijiem.v5i1.22413

Merdian, P., Piroth, P., Rueger-Muck, E., & Raab, G. (2021). Looking behind eye-catching design: an eye-tracking study on wine bottle design preference. *International Journal of Wine Business Research*, *33*(1), 134–151. https://doi.org/10.1108/IJWBR-07-2019-0044

Naimah, R. J., Wardhana, M. W., Haryanto, R., & Pebrianto, A. (2020). Penerapan Digital marketing Sebagai Strategi Pemasaran UMKM. *Jurnal IMPACT: Implementation and Action*, *2*(2), 39. https://doi.org/10.31961/impact.v2i2.844

Sab, J., & European, M. A. (n.d.). *Tourism Management, Coordinator Social Media, AIDA Cruises German Branch of Costa Crociere S*.

Sharma, C., & Dubey, S. K. (2014). Analysis of eye tracking techniques in usability and HCI perspective. *2014 International Conference on Computing for Sustainable Global Development (INDIACom)*, 607–612. https://doi.org/10.1109/IndiaCom.2014.6828034

Smith, K. T. (2019). Mobile advertising to Digital Natives: preferences on content, style, personalization, and functionality. *Journal of Strategic Marketing*, *27*(1), 67–80. https://doi.org/10.1080/0965254X.2017.1384043

Suhaemi, M., Auliya, Z. N., Darmawan, D. I., & Adiyanto, Y. (2023). The Influence of Digital Marketing, Customer Trust and Brand Image On Customer Satisfaction At Mcdonald's Fast Food Restaurant in Cilegon City. *Journal of management and informatics*, 2(3), 26-43.

Wan, M., & Toppinen, A. (2016). Effects of perceived product quality and Lifestyles of Health and Sustainability (LOHAS) on consumer price preferences for children's furniture in China. *Journal of Forest Economics*, *22*, 52–67. https://doi.org/10.1016/j.jfe.2015.12.004

Wickens, C. D., Helton, W. S., Hollands, J. G., & Banbury, S. (2021). *Engineering psychology and human performance*. Routledge.

Wijekularathna, D. K., Manage, A. B. W., & Scariano, S. M. (2019). Power analysis of several normality tests: A Monte Carlo simulation study. *Communications in Statistics - Simulation and Computation*, *0*(0), 1–17. https://doi.org/10.1080/03610918.2019.1658780

Ye, C., Xiong, Y., Li, Y., Liu, L., & Wang, M. (2020). The influences of product similarity on consumer preferences: a study based on eye-tracking analysis. *Cognition, Technology and Work*, *22*(3), 603–613. https://doi.org/10.1007/s10111-019-00584-1

Zhang, X. B., Fan, C. T., Yuan, S. M., & Peng, Z. Y. (2015). An advertisement video analysis system based on eye-tracking. *Proceedings - 2015 IEEE International Conference on Smart City, SmartCity 2015*, 494–499. https://doi.org/10.1109/SmartCity.2015.118