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The influence of music tempo on consumer behavior at grocery stores

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ABSTRACT

Music is the art of sound arranged in such a way as to produce beautiful rhythms, melodies and harmonies. Music itself has been widely used as background sound in various fields, one of which is the retail business. This research aims to see the influence of the type of music tempo on consumer purchasing behavior where there are two types of tempos used, fast music tempo and slow music tempo. The method used to see the effect of music tempo on consumer purchasing behavior is the multiple linear regression statistical test. For fast music tempo types there will be 5 questions, 5 questions for slow music tempo types, and 3 questions for consumer purchasing behavior. The population used in this research includes consumers from five grocery stores located in the Yogyakarta Province, Indonesia, who have carried out shopping activities at these stores in May 2023, with a sample size of 32 respondents. The analysis technique used is descriptive analysis and multiple linear regression analysis. The results of this regression analysis show that there is a positive influence of slow music tempo on consumer purchasing behavior, while fast tempo music has negative influence on consumer purchasing behavior.

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1. INTRODUCTION

Music is a sound art that produces beautiful rhythms, melodies, and harmonies. Music can be played with various instruments and human voices (vocals). Colour is a music can be seen as just an extreme manifestation of the concept of musical analogy in the visual arts [1]. The existence of music has grown rapidly, currently music is not only used as a medium of entertainment, but music has also been developed to achieve certain goals by a person, group, or organization. Music has been widely used as background sound in various fields, one of which is marketing (retail business). In music theory it has been recognized that tempo is one of the important characteristics that determines the psychological response to music.[2]. Music tempo, commonly measured in beats per minute (bpm), is representative of the basic dimension of music [3]. If the number of beats is greater than the music falls into the fast tempo category, but conversely if the number of beats decreases then it falls into the slow tempo category. The tool that is usually used to measure the speed of a tempo is called a metronome. The use of music as background sound has been widely considered by retailers to use in their business with the aim of improving the store image or creating a store atmosphere that makes the shopping experience more enjoyable, so that it can influence consumer purchasing behavior.

Music is a form of physical surroundings that can influence consumers, especially in the conditions of consumption and purchase of products. There are three characteristics of purchasing and consumption situations that can influence consumer behavior, namely, consumption situations where this situation occurs when consumers use products from a brand, purchasing situations are a situation that occurs when a consumer buys a product in a shop, finally a communication situation where this situation is a situation in which there is a series of information designed by the retailer to be distributed to all consumers in the shop [4].

The store environment is a programmed environment that appeals to the intended audience and encourages consumers to purchase [5], clarified that a well-designed shop's environment influences shoppers' impressions of its shop, which then, in turn, influences their purchasing behavior through positive experiences. Another study states that music as background sound can help consumers have a more enjoyable shopping experience through its influence on mood. A mindset of customers who are still modern today when it comes to purchasing is all about the store's atmosphere. As a result, it is critical to pay careful contributions to the role of an appealing outlet or shopping experience. [6]. One of the reasons for impulsive buying is motivation from either the shop location. The shop atmosphere is really a retail environment that is built to be as appealing as possible in order to persuade consumers to make purchases [7]. The phase of faking your building's concept, interior space, hallway laws, carpet or table layout, smell, color, form, and sound also that client perceives to meet these goals is called store atmosphere [8]. One of the tools used to achieve this is music. The effects of using background music to influence consumer behavior in different settings and situations have been widely recognized in contexts such as retail stores. Several studies have confirmed that music provides pleasure and arouses consumers [9,10].

Groceries store X is one of the largest local retail companies and has five branches spread across various areas in Yogyakarta, such as Simanjutak, Babarsari, Supeno, Palagan, and Godean area. This retail shop is well known among the local community and Yogyakarta students due to its location close to several campuses and schools. To maintain its existence, groceries store X carries out various appropriate business strategies, one of which is trying to create a shop atmosphere that can provide a shopping experience and environment that suits its consumers. One of the elements of the retail store used is music, which during operating hours (08.30 – 21.30 WIB) music will continue to be played in the store with the aim of creating a pleasant shopping atmosphere and manipulating consumer shopping behavior.

Based on the results of observation by researcher on 25 customers of groceries store X show that 56% of music influences their shopping activities compared to conditions without music. Apart from that, data was also obtained based on survey results that 31% of the music played in shops was in accordance with consumers' wishes. These results indicate that the consumer's perceived value of the music played is still low or does not meet consumers' wishes. Based on the results of interviews with 6 respondents, it was stated that music is very influential in shopping activities because the presence of music makes them enjoy shopping more and not get bored. Apart from that, it is also known that if the music played is well-known music among consumers or contemporary songs, it can make them feel like shopping is more fun.

Thus, this research is needed to see how much influence the type of music tempo has on consumer purchasing behavior when shopping so that retailers can carry out marketing strategies that are more accurate and in line with consumer needs or desires. The results of this research can later be used by retail store business managers to adopt various types of songs that can encourage consumers to shop more intensively. The types of music tempo used in this research are fast tempo and slow tempo. The method used in this research is statistical processing, the multiple linear regression test, where this test is used to determine the influence of the independent variable on the dependent variable and shows the direction of the relationship that occurs. Apart from the regression test, this research will also use a statistical correlation test which is used to measure the level of closeness of the relationship between the independent variable (X) and the dependent variable (Y).

2. MATERIALS AND METHODS

2.1. Participants

The population in this study included all customers at X store on all of branches, Yogyakarta. While the sample withdrawal in this study used purposive sampling technique which does not provide equal opportunities for each member of the population to become a sample because for sample selection there are research inclusion criteria. The inclusion criteria for selecting respondents are (1) having shopped at groceries

X, (2) doing shopping activities at groceries X in May 2023, (3) aged 17 - 35 years. The selection of characteristics is based on adjusting the objectives and needs of the research. The number of samples in this study totalled 32 people. Determination of the number of respondents is based on the calculation of the federer formula which is generated based on the number of treatments and the number of replications.

2.2. Design of Experiments

This research is a field experiment. The experimental method is used to observe controlled elements that are usually conducted in a laboratory but take place in a natural, real-world environment. This field experiment was chosen to answer complex hypotheses about the attitudes or behaviour of the research subjects. So this research has fewer control variables compared to experiments in the laboratory. This study describes the influence between the type of music at fast and slow tempo on consumer purchasing behaviour. There are two independent variables (X) and one dependent variable (Y). The operational definition of each variable follows:

1. Fast tempo music variable (X1)
   Fast tempo music is defined as a type of music with a tempo of 109 - 200 beats per minute (bpm). The nuances of music described in this type are those that have a high tempo and are energetic.
2. Slow tempo music variable (X2)
   Slow tempo music is defined as a type of music with a tempo of 60 - 108 beats per minute (bpm). The nuances of music described in this type are those that have a low tempo and are calm.
3. Consumer purchase behaviour variable (Y)
   Consumer behaviour, which describes the process of a customer in making a purchase decision and the way customers use and manage the purchase of goods or services including analysis of factors that influence purchasing decisions for product use. The assessment parameters in this variable are the mood felt, the time consumption spent on shopping activities, the comfort when doing shopping activities, and the amount of shopping. All of these parameters were measured under the condition of sound intervention in the form of music played at groceries X as the research location.

The experiment started with the researcher making observations and identifying what kind of music was played during data collection. Historical data on the internet was used to identify the type of bpm for each music. So it is known that at the time of data collection the respondents were exposed to fast and slow tempo music. Based on the results of observations and interviews, it is known that the average respondent is exposed to music when shopping in the range of 30 - 240 minutes which is adjusted to the length of time consumers shop at X groceries. Furthermore, the researcher collected data by distributing questionnaires to X groceries consumers who had finished shopping that day. In addition, follow-up interviews were also conducted to obtain a deeper analysis of the respondents' answer choices. Field experiments have fewer control variables than laboratory experiments. Therefore, to anticipate the control of extra variables (e.g., the condition of a person's cognitive load, the store atmosphere in the form of visuals; colours; aromas; and lighting), a constant control technique was carried out that each respondent in each research group received the same conditions, except for the independent variable. This technique refers to the similarity of the characteristics of the respondents and the implementation of the research which was also carried out at the same time, namely including the same day and hour.

2.3. Procedures

2.3.1 Problem Identification

The research began by identifying problems in the field through observation, interviews, and literature review. The results of this process are the real conditions in the field and the formulation of problems.

2.3.2 Research Instuments

The main instrument in this research is a questionnaire to identify consumer purchasing behaviour influenced by music interventions. The design of the questionnaire begins with determining the variables that are adjusted to the measurement objectives. The questionnaire that has been designed is then tested for validity and reliability with a pilot study. The pilot study (content and face validity) must be tested to the questionnaire. The content validity was shared to the expert ergonomic person, and the face validity was

shared to the candidate consumer. The goal of content validity is comparing the goal of research and the questionnaire. And the goal of face validity is knowing the questionnaire is easy to read and understand. Table 1 shows the questionnaire used in this study. So it is known that each respondent will get 2 types of questionnaires. The first questionnaire is an assessment of the type of fast tempo music and the second questionnaire is an assessment of the type of slow tempo music.

Table 1. Questionnaire fast and slow music tempo

Questions Statement	Variable
Listening to music with a fast tempo type creates a relaxed atmosphere while shopping	Fast Music Tempo
Music that plays at a fast tempo affects the mood of the shopper when shopping	
The pleasant environment created by the fast-paced type of music makes me spend more time	
Music that plays with a fast tempo type makes me comfortable while shopping	
Music that plays with a fast tempo type motivates me to buy more products	
Listening to slow-tempo music creates a relaxed atmosphere when shopping	Slow Music Tempo
Music that plays at a slow tempo affects the mood of the shopper when shopping	
The pleasant environment created by the slow-tempo music made me spend more time	
Music that plays at a slow tempo makes me feel comfortable while shopping	
Music that plays at a slow tempo motivates me to buy more products	

2.3.3 Data Collection

The data collection method in this research uses surveys, observations, interviews and historical data review. All of these techniques were used to obtain primary data. From the survey and interview process, primary data was obtained in the form of variable assessments for each intervention. Meanwhile, the observation process obtained data related to respondent behaviour, work processes, and conditions in the field. In addition, historical data review is used to obtain secondary data used to deepen data analysis.

2.4. Data Analysis

2.4.1 Validity and Reliability Testing

The validity test is used to determine the validity of the research questionnaire. The statistical criteria of validity test is if r value > r table it means that questionnaire is valid, as shown in Table 1. Then for the reability test is conducted to examine the concistency on each variables. The statistical criteria of reliability test is if the cornbach alpha value > 0,6 it means those variables are reliable (Table 2).

The results of the calculation of the validity statistical test of both variables indicate that all data are valid, because the rcount value> rtable with the alpha value used is 5%. Reliability test is used to determine the level of reliability or stability of the answers to each question in the questionnaire. The results of the reliability test (Table 3) of the fast tempo and slow tempo types of variables are 0.787 and 0.772 respectively, where the data shows that the reliability value obtained is> 0.6 so that it can be concluded that the data is reliable.

Table 2. Validity

Indicator	r-value	r-table	Validity
Fast Music Tempo			
Listening to music with a fast tempo creates a relaxed atmosphere while shopping	0.759	0.3494	Valid

Indicator	r-hitung	r-tabel	Validity
Music played with a fast tempo affects my mood while shopping	0.691	0.3494	Valid
A pleasant environment created by fast tempo music makes me spend more time	0.778	0.3494	Valid
Music played with fast tempo makes me feel comfortable while shopping	0.781	0.3494	Valid
Music played with a fast tempo motivates me to buy more products	0.696	0.3494	Valid
Slow Music Tempo			
Listening to music with a slow tempo creates a relaxed atmosphere while shopping	0.679	0.3494	Valid
Music played with a slow tempo affect my mood while shopping	0.721	0.3494	Valid
A pleasant environment created by slow tempo music makes me spend more time	0.714	0.3494	Valid
Music played with a slow tempo makes me feel comfortable while shopping	0.796	0.3494	Valid
Music played with a slow tempo motivates me to buy more products	0.724	0.3494	Valid

Table 3. Reliability

Tempo Type	Cronbach's Alpha	Reliability
Fast	0.787	Reliable
Slow	0.772	Reliable

2.4.2 Classical Assumption Testing

Classical Assumption Test is used to determine whether the regression model obtained is valid [11-13]. It also evaluates whether the model can be used as a prediction tool [14-18]. There will be 4 stages of classical assumption test, namely normality test [19, 20], multicollinearity test [21], heteroscedasticity test [22-24], and linearity test. Furthermore, after all classical assumption tests have fulfilled the requirements, multiple linear regression tests can be carried out. The normality test is used to test the type of distribution in the research data. The statistical criteria is based on the the probability value (α). If the probability value (α) > 0.05 (H0 is accepted) it means the data is normally distributed. The hypothesis for testing the normality test is as follows:

- H0 = The population is normally distributed
- H1 = The population is not normally distributed

The multicollinearity test aims to test whether the regression model found a correlation between the independent variables. In a good regression model, there should be no correlation between the independent variables, because it will cause estimation failure (perfect multicollinearity) or difficulty in inference (imperfect multicollinearity). If there is multicollinearity in the model, the model has a large standard error so that the coefficients cannot be estimated with high accuracy. The decision criteria of this test based on tolerance value and VIF value. If the tolerance value > 0.1 and VIF value < 10, it means that there is no multicollinearity issue.

The heteroscedasticity test aims to test whether in the regression model there is an inequality of variance from the residuals of one observation to another. If the variance is constant, it is called homoscedasticity and if it is different, there is a heteroscedasticity problem. A good regression model is homoskesdatisity or no heteroscedasticity. The statistical criteria is based on the the probability value (α). If the probability value (α)

> 0.05 (H0 is accepted) it means the there is no heteroscedasticity. The hypothesis for testing the heteroscedasticity is as follows:

- H0 = No heteroscedasticity occur
- H1 = Heteriscedasiticity occur

The linearity test is carried out to test the linearity between the independent and dependent variables. The statistical criteria is based on the Sig. value. If the sig.value > 0.05 (H0 is accepted) it means that each variable has a linear regression. The hypothesis for linearity test is as follows:

- H0 = Model linear regression
- H1 = Model no linear regression

2.4.3 Multiple Regression Linear Testing

Multiple linear regression test is the development of science from simple linear regression analysis where the independent variable is more than one. This test is used to see a number of independent variables on the dependent variable based on the value of the independent variables. The mathematical model for the multiple linear regression test is as follows:

$$Y = \beta 0 + \beta 1X1 + \beta 2X2 + \cdots + \beta pXp + e \quad (1)$$

Based on formula (1), Y is dependent variable (Consumer purchase behaviour); X1 is first independent variable (fast music tempo); X2 is second independent variable (slow music tempo).

2.4.4 F-Testing and T-Testing

The F test is used to test how the independent variables jointly affect the dependent variable. The statistical criteria is based on the Sig. F value. If the sig.value F < 0.05 it means all independent variables simultaneously and significantly affect the dependent variable. The T test is used to test how the influence of each independent variable on the dependent variable. The independent variable has a major effect on the dependent variable, if the significance value is <0.05 or 5%.

2.4.5 Correlation Testing

The correlation testing is to determined the correlation between variables. The decision of the hypothesis is based on the magnitude of the Sig value. (p-value). If it is known that the Sig. (p-value) < 0.05 it means that there is a correlation between the two variables at a significance α of 0.05.

3. RESULTS

3.1. Observation and data collection results

The results of testing the validity and reliability of the questionnaire show that it is valid and reliable. The validity test show that all question items have a value of r count> r table. Thus, it can be interpreted that all question items on the questionnaire are said to be valid with a significance level of 0.05. Meanwhile, the reliability test show that the Cornbach's alpha value of the fast tempo music questionnaire (0.787) and the slow tempo music variable (0.772) > 0.6. Thus, it concludes that both instruments are reliable.

The respondents were classified into two groups, 29 respondents aged 17-25 years and 3 respondents aged 26-35 years. There were 6 respondents male, and 26 respondents are female. There were 29 respondents with student status and 3 respondents as employees.

Regarding questions about music, all respondents stated that they enjoyed listening to music in everyday life. Apart from that, all respondents stated that the volume of the music had an influence when listening to music. The average length of time listening to music in a day is 120 minutes. The most popular genre is the pop music genre [14], [16], there are 22 respondents. There were 18 respondents who preferred to listen to music using loudspeakers and 14 respondents preferred to listen using headsets/airpods/earphones. The activities carried out by respondents while listening to music were 12 respondents studying, 26 respondents cleaning the house/boarding house, 13 respondents cooking, 15 respondents exercising, 18 respondents doing hobbies, 5 people working, and 1 person shopping.

When asked about their shopping activities, it was revealed that 28 respondents met at grocery store X were shopping to fulfill their daily or monthly needs, while 4 respondents were shopping for unexpected

needs, such as when something suddenly ran out and needed immediate replacement. Twenty respondents have shopped and are used to shopping at the groceries store X. This means that respondents are happy to shop again at the same store. The average number of respondents' shopping lists was 10-20 products and 31 respondents stated that there were products they had purchased but were not previously on the list, the additional number of products purchased by respondents was between 2-5 products. Meanwhile, the average amount of money that respondents carry when shopping is around IDR 100,000-500,000. Then, for the types of payment methods, researchers divided them into two groups, namely cashless/non-cash, and cash/cash payment methods. There were 20 respondents who made non-cash payments and 12 respondents made cash payments.

3.1. Influence and relationship between variables

Results of classical assumption testing shows the data obtained is normally distributed and the regression model meets the requirements of the normality test assumptions. Then, based on multicollinearity test result, the tolerance and VIF values show that all independent variables have a tolerance value greater than 0.100 and none of the independent variables has a value greater than 10. Thus, it can be concluded that there are no symptoms of multicollinearity. Furthermore, the scatter plot on heteroscedasticity test shows that the data does not display a certain pattern and the data has spread evenly above and below the number 0 on the Y axis, so it can be concluded that the data does not contain or occur heteroscedasticity assumption disorders, or it can be said that the regression model is suitable for use. As for linearity test shows that each variables are linear or has linear model regression. It is known based on the sig. value (0.008) > 0.05.

This study resulted in model linear regression through multiple linear regression test as shown on formula (2). The constant value is 6.594 indicating that if the variable type of music tempo is considered constant on consumer purchasing behavior. The regression coefficient (X1) has a value of -0.272, which means that the fast tempo type variable has a negative sign on consumer purchasing behavior, is 0.272. The regression coefficient (X2) has a value of 0.326, which means that the slow tempo type variable has a positive sign on consumer purchasing behavior is 0.326.

$$Y = 6.594 - 0.272X1 + 0.326X2 + e \quad (2)$$

There are 2 results on T-Test. The first and second tests are to test the effect of each fast tempo music variable and slow tempo music variable as independent variables on consumer purchasing as the dependent variable. Based on T-Test result, the significant value (sig.) obtained for the fast tempo music type variable is 0.034 and 0.043 for the slow tempo music. Thus, it shows that there is a significant influence between the independent variables and the dependent variable.

The calculated F value obtained is 5.179 and the The results of the F test or Anova test showed that the calculated F was 5.719 which was greater than the F table value of 3.32 and the significance value obtained was 0.008 which was smaller than 0.05. By comparing the calculated F value with the F table, the result obtained is that the calculated F is greater than the F table, which means that all independent variables have a significant influence on the dependent variable.

The coefficient of determination obtained by the test is R = 0.365, this means that the relationship or correlation between fast music tempo and slow music tempo has a weak influence on consumer purchasing behavior. Furthermore, the coefficient of determination value is R Square = 0.283 with adjusted R Square = 0.233 meaning that a percentage of 28.3 has an influence on fast music tempo and slow music tempo on consumer purchasing behavior, while 71.7% is determined by other variables.

Based on the Pearson correlation test, the significance value obtained for the fast music tempo and slow music tempo variables is 0.073 (X1) and 0.210 (X2) which is greater than 0.05, while for the Pearson Correlation value the result obtained is -0.321 (X1). and 0.228 (X2). So, it can be concluded that the independent variable has no correlation with the dependent variable and the degree of relationship is weakly correlated (0.21-0.40).

4. DISCUSSION

Based on the results of this research, it can be seen that consumers prefer the background music played in stores, namely pop songs with vocal music and a slow tempo. Based on the results of interviews conducted with several consumers of the groceries store X on five branches area, it is known that they think the music played in the store is familiar or well-known to them. Apart from that, regarding the perception of the music

that was played in the shop, 29 respondents preferred music with a slow tempo and 20 respondents preferred a fast tempo.

This research is choosing pop music genres, vocal music types, and slow tempo songs. Another thing that is considered important is related to the songs being played. Based on the results of interviews, consumers also stated that if a song is trending or a song that is familiar to them, it can influence their mood when shopping. Apart from that, the store management can also pay attention to the volume of music played in the store. Although some consumers say the volume is appropriate, there are still some consumers who feel that the volume is too low or faint.

The different area from Selviana [25] is this research using tempo music which actually can more flexible to implementation than genre. Everything genre which include slow music tempo can submitted in list songs. And the different of Harjadi et al. [5], Andersson et al. [9], Rahmah et al. [10] research is this research just focus to music tempo that can affected the customer. Because those research is more focus the ambiance such as service, quality, clean, etc.

5. CONCLUSION

The values obtained in the multiple linear regression test are -0.272X1 and 0.326X2, which means that fast music tempo types have a negative influence of 0.272 on consumer purchasing behavior, while slow tempo types have a positive influence of 0.326 on consumer behavior. Apart from that, based on the results obtained, the R Square value was 0.283, meaning that a percentage of 28.3% of fast and slow music tempos had an influence on consumer purchasing behavior, while 71.7% was influenced by other variables not used in this research. So, it can be concluded that the type of tempo that influences consumer purchasing behavior is the type of slow music tempo.

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