ANALYSIS OF CUSTOMER COMPARISON OF DAIHATSU TERIOS TYPES (XTRA, TX, TS) USING MULTIDIMENSIONAL SCALING METHOD

ANALISIS PERBANDINGAN PELANGGAN TERHADAP JENIS DAIHATSU TERIOS (XTRA, TX, TS) MENGGUNAKAN METODE SKALA MULTIDIMENSI

by
Rezha Geovani Wahani [1]
Sifrid S. Pangemanan [2]

[12]Faculty of Economics and Business, International Business Administration, Management Program
Sam Ratulangi University

E-mail:
[1]geowahani13@gmail.com
[2]sifrid_s@unsrat.ac.id

Abstract: The current president of Indonesia, Mr. Joko Widodo have a priority to build road infrastructure in order to create good economic improvement and management. with increased development in the transportation sector, it can be ascertained that growth in the automotive sector will increase rapidly, so this research will provide the result of the comparison of customer perception on Daihatsu Terios types using multidimensional scaling method. The purpose of this research is to figure out the similar different of Daihatsu Terios car with the same type. Based on this research, all of the respondent has their own perception about the similarity comparison to each type of Daihatsu Terios car and almost the student that used this type of Daihatsu Terios just care about the performance of the car, which is exterior and feature. Recommendation from researcher to the car company is to improve the exterior of each type of Daihatsu Terios to attract more customer from the 17-22 age range for more profit.

**Keywords:** *customer comparison, daihatsu terios, scaling method*

Abstark: The current president of Indonesia, Mr. Joko Widodo have a priority to build road infrastructure in order to create good economic improvement and management. with increased development in the transportation sector, it can be ascertained that growth in the automotive sector will increase rapidly, so this research will provide the result of the comparison of customer perception on Daihatsu Terios types using multidimensional scaling method. The purpose of this research is to figure out the similar different of Daihatsu Terios car with the same type. Based on this research, all of the respondent has their own perception about the similarity comparison to each type of Daihatsu Terios car and almost the student that used this type of Daihatsu Terios just care about the performance of the car, which is exterior and feature. Recommendation from researcher to the car company is to improve the exterior of each type of Daihatsu Terios to attract more customer from the 17-22 age range for more profit.

Kata Kunci: perbandingan pelanggan, daihatsu terios, scaling method

INTRODUCTION

Research Background

The current president of Indonesia, Mr. Joko Widodo have a priority to build road infrastructure in order to create good economic improvement and management. with increased development in the transportation sector, it can be ascertained that growth in the automotive sector will increase rapidly.
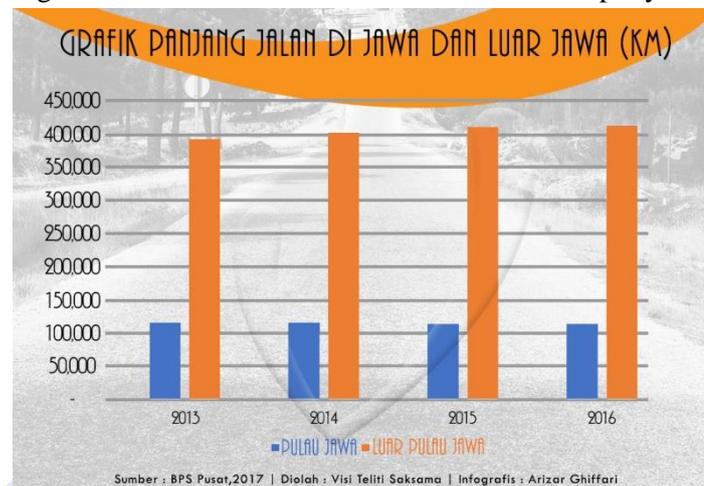
Figure 1. Road Development Chart in Indonesia
Source: Data Processed 2018

Study or research on consumer decision is important in marketing management literature. This is in accordance with the opinion of O'Brien (1982), understanding how the customer forms a purchase decision and why he ultimately decides for or against a purchase, marketers are in a better position to offer customers products relevant information and to make product changes the which. Their earnest increase of profitability of buying.

Opinions from O'Brien (1982), actually shows that the knowledge of how consumers make buying decisions and why they decide or do not specify a purchase is important. It is important not only for marketers but also for academics. Because by knowing what the consumers consideration in making the decision to buy it will know what to attribute the basis for consideration of a consumer.

This is certainly important for marketers (to create products and how effective marketing and preferred by consumer) and for academics (to know what is in the black box of a consumer).

Knowledge of the attitudes or factor that shape attitudes to things which should be studied in depth, because there are few studies conducted to determine these factors. This is in line with the opinion of the Myers and Alpert (1986), although a great amount of effort is spent in Measuring Attitudes toward the products or services, in many cases little time is devoted to determining what attitude means in terms of decision making and especially buying action.

Basically transportation is moving people or goods from one place to another by using a vehicle that is driven by human or machine. Transportation used to facilitate human performing daily activities. In developed countries, they usually use the subway and taxis. Residents there have rarely a personal vehicle because they mostly use public transit as their transportation. Transportation is divided into 3, ie, land transportation, sea, air.

The condition of the automotive world markets could be called a very dynamic world today, with trends pointing to the car SUV (sport utility vehicle). Daihatsu Terios is a family model of commercial vehicle and Daihatsu have a good market in Indonesia and for class SUV, Daihatsu Terios is the most popular vehicle in Indonesia. Daihatsu Terios started on production in 2006 and currently is one model that carried and most favorite in the country. Now this car is easily found in all corners of Indonesia.

THEORETICAL REVIEW

Marketing

Marketing is how a company promoting and selling the products or services. Marketing is divided by the term reveals one term as follows: The most important aspect in the world of business is marketing. This is

because marketing deals with identifying and meeting social needs of man and the surrounding environment (Kotler, 2009).

Customer Perception

Based on Cherry (2001), perception is our sensory experience of the world around us and involves both the recognition of environmental stimuli and actions in response to these stimuli. Through the perceptual process, we gain information about properties and elements of the environment that are critical to our survival. Perception not only creates our experience of the world around us; it allows us to act within our environment.

Product Similarity

Product development begins when the company finds and develops a new product idea. During product development, sales are zero and the company's investment costs mount. Additionally, we designed the holdout choices to have some extremely similar alternatives. Four of the five alternatives in the holdout tasks were carefully designed to have approximate utility and level balance (Huber and Zwerina, 1996).

Previous Research

Rodriguez and Page (2004), Recognizing consumer demand for better fuel economy and reduced emissions, both Toyota and Honda have introduced hybrid vehicles to the American market. Toyota introduced the Prius to the U.S. in 2000. Honda began selling the hybrid two-seater insights in the U.S. in 1999. U.S sales in the hybrid vehicle industry have increased over 570 percent since model year 2001. Today, hybrid vehicles hold a 1% market share in the U.S, 2 and there are three model of hybrid vehicles dominating the market: the Toyota Prius, Honda Insights, and the Honda Civic Hybrid.

Leelakult and Hongcharu (2012), In this study the concept of customer value was applied in order to attract potential buyers to purchase Eco-cars, which are in the infancy stage in Thailand. Adult visitors at the motor expo exhibition were interviewed. The result from the multiple regression analysis of the entire sample revealed that the value of social wellbeing and the value of self-expression were the positive motivators for buying Eco-cars. Female interest in purchasing Eco-cars concerned the value of social well-being and additionally the value of self-expression, whereas the value of social well-being was the sole motivators of Eco-car buying for males. A comparison of means by using an independent sample t-test indicated that women were more likely to buy Eco-cars for their next purchase than men, and this was due the reason that woman hold the two mentioned values instead of just the one value mentioned with regards to male.

Shende (2014), The automobile industry today is the most lucrative industry. Due to increase in disposable income in both rural and urban sector and availability of easy finance are the main drivers of high volume car segments. Further competition is heating up with host of new players coming in and global brands like Porsche, Bentley, and Ferrari all set to venture in Indian market. This research will be helpful for the existing and new entrant car manufacturing companies in India to find out the customer expectations and their market offerings. Indian Automobile car business is influenced by the presence of many national and multinational manufacturers. This paper presents analysis of research in the area of Consumer Behavior of Automobile Car Customer. Proper understanding of consumer buying behavior will help the marketer to succeed in the market. All segments in Indian Car industry were studied and found that buyer has different priority of behaviors in each segment, whereas main driver for car purchase is disposable income. Value for money, safety and driving comforts top the rank in terms of customer requirement; whereas perceived quality by customers mainly depends on brand image.

Conceptual Framework
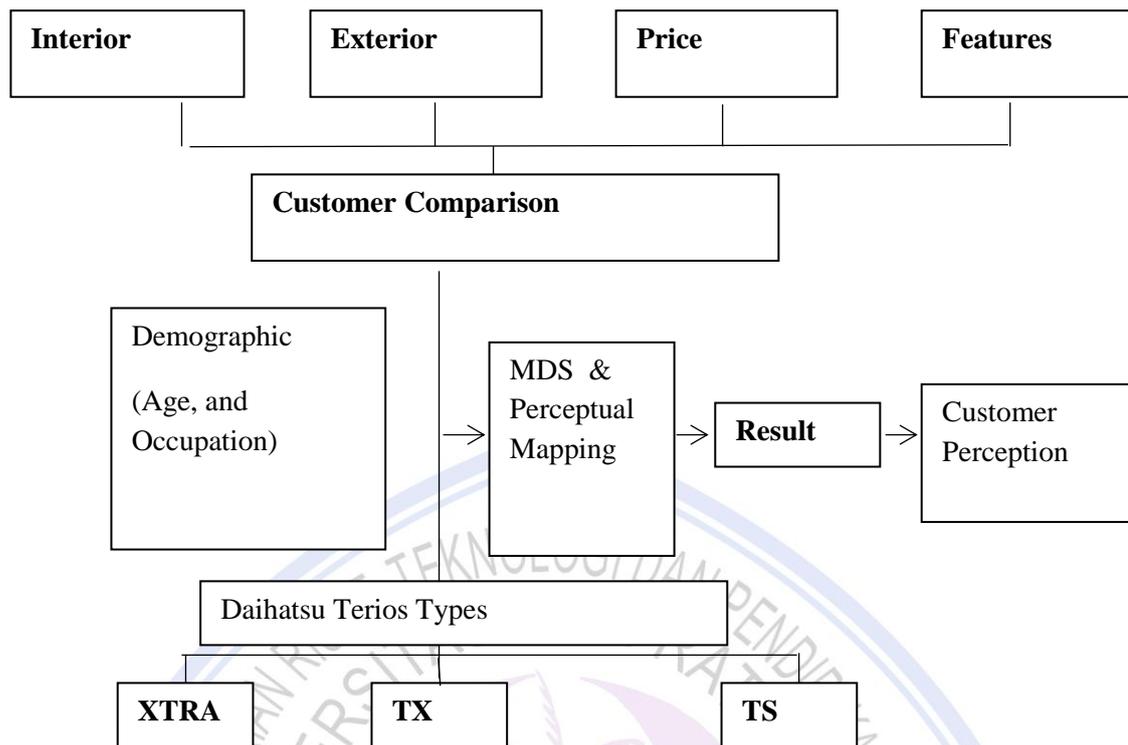
Figure 2. Conceptual Framework
Source: Data Processed, 2018

RESEARCH METHOD

Research Approach

This is a quantitative research and data are analyze with SPSS 24.0

Population and Sample

Population according to Cooper and Emery (1998) is collection of individuals or objects of research that has the quality and characteristics that have been defined. Based on the qualities and characteristics, the population is as a group of individuals or object observation that at least has a characteristic equation. The research population is the customer using Terios XTRA, TX, and TS.

The sample is a part of the population who are carefully selected to be representative of the population (Cooper and Emory, 1998). In this research, researcher choose the respondents based on their knowledge about this Daihatsu Terios Type (XTRA, TX, TS) based on their experience (own, drive, or as a passenger). The total of respondents is 100 respondents divided by the gender, occupation, and age.

Variables and Operational Definition

Product Similarity, the abstract concept of "market position" lends itself to a spatial metaphor, in which products are represented by points, with the distance between two points corresponding to the similarity between that pair of products. Thus, a two-stage process of (a) collecting data about the perceived similarities between the products, and (b) representing the data in the form of a two dimensional map or a three-dimensional spatial model, is one possible means towards the end of pinpointing "market position". This is the technique of using a 'perceptual tree' (a dendrogram) to represent the data. Both produce models which are clearer than tabulating the raw similarity information, and more likely to be useful as a basis for decision making.

Product Comparison, according to Webber, (1999). comparison is the possible way to understand what action need to be take in the future needs. Product comparison is an estimate of similarities and differences in economic output. In this research, product comparison refers to comparing the benefits offered by a product.

Technical Analysis

Multidimensional Scaling, Multidimensional Scaling is a set of related statistical techniques often used information visualization for exploring similarities or dissimilarities in data. MDS is a special case of ordination. An MDS algorithm start with a matrix of item similarities, then assigns a location to each item in N-dimensional space, where N is specified a priori. For sufficiently small N, the resulting locations may be

displayed in a graph or 3D visualization. Multidimensional Scaling (MDS) describes a family of techniques for the analysis of proximity data on a set of stimuli to reveal the hidden structure underlying the data. The proximity data can come from similarity judgments, identification confusion matrices, grouping data, same-different errors or any other measure of pairwise similarity. The main assumption in MDS is that stimuli can be described by values along a set of dimensions that places these stimuli as points in a multidimensional space and that the similarity between stimuli is inversely related to the distances of the corresponding points in the multidimensional space.

Correspondence Analysis, Correspondence Analysis (CA) is an exploratory method of data analysis that visually displays relationships between categorical variables. Multiple correspondence analysis (MCA) is an extension of correspondence analysis (CA) which allows one to analyze the pattern of relationships of several categorical dependent variables. Technically MCA is obtained by using a standard correspondence analysis on an indicator matrix (*i.e.,* a matrix whose entries are 0 or 1). The percentages of explained variance need to be corrected and the correspondences analysis interpretation of inter point distances needs to be adapted. As such, it is highly suited for showing association between elements of cross-tabulated variables as points on a map. Small distances between points indicate high association, while large distances indicate low association Abdi and Valentin, (2007).

Table 1. Cross Tabulation Table

| Consumer Perception	XTRA	TX	TS
EXTERIOR			
INTERIOR			
PRICE			
FEATURES			

Source: Data Processed 2018

Perceptual Mapping. to do this research, researcher need a tools to finish this research and perceptual mapping is the way for researcher to analyze the data. According to Ganesh and Oakenfull (2000). The visual representation of respondent's perceptions of two or more dimensions or features. Perceptual mapping is an attempt by a researcher to determine the perceived relative image of a set of objects (firms, products, ideas, or other items that are associated with commonly held perceptions). The purpose is to transform consumer judgments of similarity or preference (e.g., preference for information sources such as brand information, word-of-mouth information, customize information and include the impulse purchase) into distances represented in multidimensional space. If objects A and B are judged by respondents as being most similar compared with all other possible pairs of objects, MDS techniques will position objects A and B in smaller than the distance between any other two pairs of objects.

RESULT AND DISCUSSION

Perception and Type

Proportion of inertia is the percentage of inertia on each dimension of the total inertia. A higher inertia value indicates a greater contribution from the dimension of the analytical results. The first dimension accounted for 97,5% of total inertia. This means that the dimension I may explain the relationship of the variables (perception and type) of 97,5%. This contributes to the overall inertia of 0,076 points 0,078. The second dimension accounted for 2,5%; contributed 0,002 total inertia of 0.078 points. This means that the dimension 2 can explain the relationship of the variables (perception and type) of 2.5%.
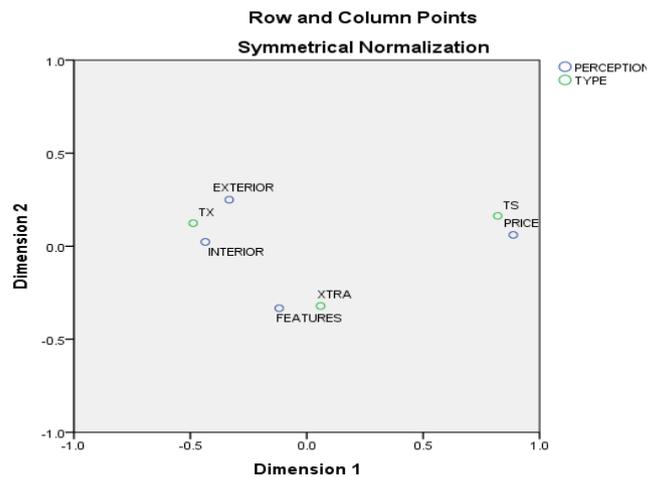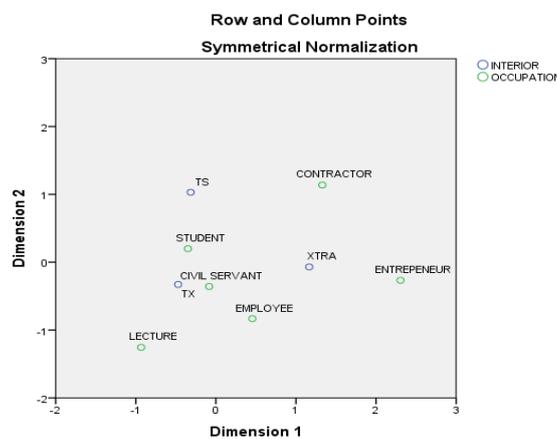
Figure 3. Perceptual Mapping of Perception and Type
Source: Data Processed, 2018

The map shows that the closer to the XTRA is Features and Interior and Exterior closer to the TX, and price closer to the TS.

Interior and Occupation

The table above shows the results dimension. The dimension are automatically set to prioritize the results of the dimension, which has the highest correlation (singular value). Single value obtained from the results generated from SPSS 24.0, using a combination of Row and Column Profiles. Proportion of inertia is the percentage of inertia on each dimension of the total inertia. A higher inertia value indicates a greater contribution from the dimension of the analytical results. The first dimension contributed 78,9%. This contributes to the overall inertia of 0.256 points 0.324. the second dimension contributed to the overall 21.1%. This means that the dimension 2 can explain the relationship of the variables (Interior and Occupation) contributed 21.1% of the overall inertia 0.068 points 0.324.

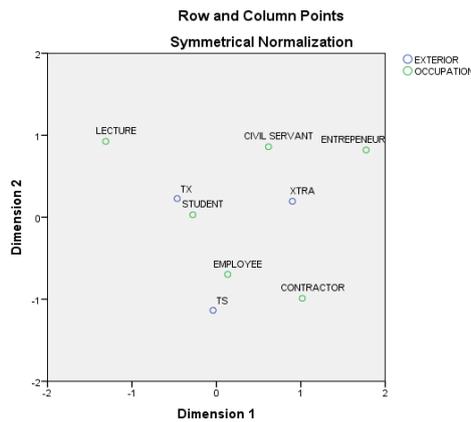**Figure 4. Perceptual Mapping of Interior and Occupation**
Source: Data Processed, 2018

The map shows that the Civil Servant prefer TX and Entrepreneur prefer XTRA, and the student would prefer TS.

Exterior and Occupation

Proportion of inertia is the percentage of inertia on each dimension of the total inertia. A higher inertia value indicates a greater contribution from the dimension of the analytical results. The first dimension accounted for 67.5% of total inertia. It means that one can explain the relationship dimension of 67.5%. this contributes to the overall inertia of 0.125 points 0.186. the second dimension contributes 32.5%. This means that

the dimension 2 can explain the relationship of the variables (Exterior and Occupation) contributed 32.5% of the overall 0.060 points 0.186 inertia.
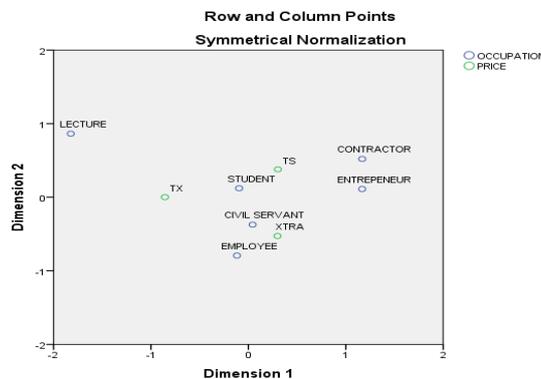

Figure 5. Perceptual Mapping of Exterior and Occupation
Source: Data Processed 2018

The map shows that civil servant are closer to the XTRA and the student closer to the TX, and employee closer to the TS.

Price and Occupation

Proportion of inertia is the percentage of inertia on each dimension of the total inertia. A higher inertia value indicates a greater contribution from the dimension of the analytical results. The first dimension accounted for 75.3% of total inertia. This means that one can explain the relationship dimension of 75.3%. this contributes to the overall inertia of 0.066 points 0.088. The second dimension contributes 24.7% . this means that the dimension 2 can explain the relationship of the variables (Price and Occupation) contributed 24.7% to the overall inertia of 0.022 points 0.088.
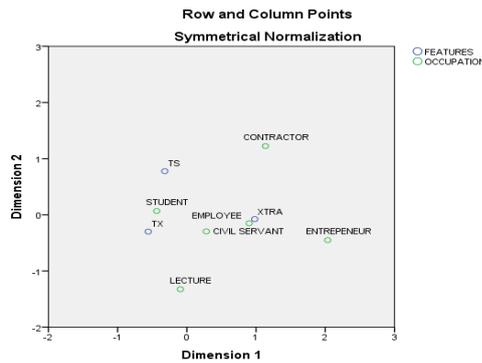

Figure 6. Perceptual Mapping of Price and Occupation
Source: Data Processed 2018

The map shows that Civil Servant are closer to the XTRA and Contractor closer to the TS, and student closer to the TX.

Feature and Occupation

Proportion of inertia is the percentage of inertia on each dimension of the total inertia. A higher inertia value indicates a greater contribution from the dimension of the analytical results. The first dimension accounted for 89.0% of total inertia. This means that one can explain the relationship dimension of 89.0%. this contributes to the overall inertia of 0.232 points 0.261. The second dimension contributes 11.0% . this means that the dimension 2 can explain the relationship of the variables (Features and Occupation) contributed 11.0% to the overall inertia of 0.029 points 0.261

Figure 7. Perceptual Mapping of Feature and Occupation
Source: Data Processed, 2018.

The map shows that Civil Servant are closer to the XTRA and student closer to the TS, and Employee closer to the TX.

Interior and Age

Proportion of inertia is the percentage of inertia on each dimension of the total inertia. A higher inertia value indicates a greater contribution from the dimension of the analytical results. The first dimension accounted for 78.9% of total inertia. This means that one can explain the relationship dimension of 78.9%. this contributes to the overall inertia of 0.162 points 0.206. The second dimension contributes 21.1% . this means that the dimension 2 can explain the relationship of the variables (Interior and Age) contributed 21.1% to the overall inertia of 0.043 points 0.206.
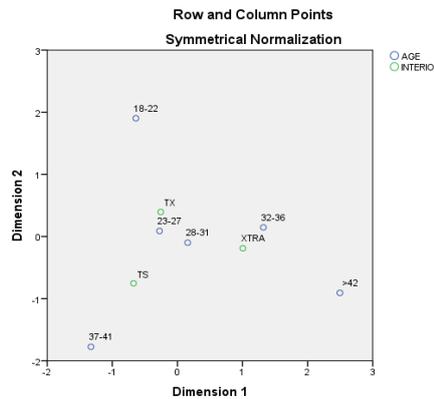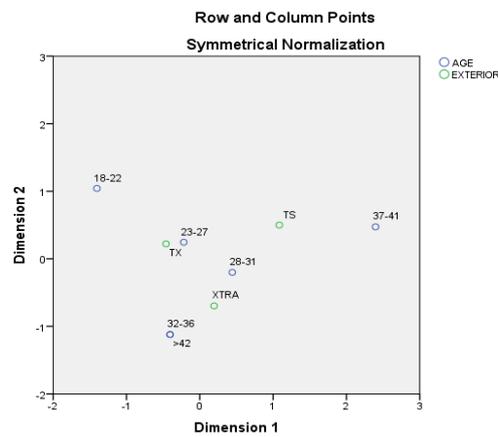

Figure 8. Perceptual Mapping of Interior and Age
Source: Data Processed, 2018

The map shows that the more you select a XTRA ages 32-36 for the ride and ages 28-31 prefer TS for the ride, and ages 23-27 prefer TX for the ride.

Exterior and Age

Proportion of inertia is the percentage of inertia on each dimension of the total inertia. A higher inertia value indicates a greater contribution from the dimension of the analytical results. The first dimension accounted for 70.5% of total inertia. This means that one can explain the relationship dimension of 70.5%. this contributes to the overall inertia of 0.108 points 0.153. The second dimension contributes 29.5% . this means that the dimension 2 can explain the relationship of the variables (Exterior and Age) contributed 29.5% to the overall inertia of 0.045 points 0.153.

Figure 9. Perceptual Mapping of Exterior and Age
Source: Data Processed, 2018.

The map shows that the more you select a XTRA ages >42 for the ride and ages 28-31 prefer TS for the ride, and ages 23-27 prefer TX for the ride.

CONCLUSION AND RECOMMENDATION

Conclusion

This research conclude that people in Manado see each Daihatsu Terios creates their own perception to customer. This research shows that each Daihatsu Terios types has their own perception from the customer. Based on perceptual mapping, demographic of age, and occupation correlate with customer perception of Daihatsu Terios (XTRA, TX, and TS) in Manado. Different person can perceive their perception about Daihatsu Terios types (XTRA, TX, and TS) on Manado. Customer with different age and occupation has relatively different perception about each Daihatsu Terios types (XTRA, TX, and TS).

Recommendation

For car dealers more especially Daihatsu so as more prefer to the civil servant as a civil servant prefer TX type for the interior, where the interior of TX type more likely to elegant. For exterior civil servant also prefer XTRA type, XTRA type where more complete exterior view of comfort. For the price, civil servant is also much prefer to XTRA type, where the civil servant has a financial ability to meet the price of XTRA type. And features a civil servant for more prefer to XTRA type, where XTRA type more fully where all features. So to dealer especially Daihatsu cars should pay more attention or increase production in the interior, exterior, price, and features. In order for future civil servant would be prefer to Daihatsu.

REFERENCES

Abdi, H. and Valentin, D. 2007. Multiple Correspondence Analysis. Encyclopedia of Measurement and Statistic. *Journal of Marketing* Vol. 45, No. 3 Available at: https://www.researchgate.net/Dominique_Valentin/_Multiple_Correspondence_Analysis.*pdf* Accessed at: August 2nd 2018

Cherry Kendra. 2001. *What is Validity: Psychology Research Method*. Otto, London. Availble at: http://psychology.about.com-2005. Accessed at: August 1st 2018.

Cooper., and Emory. 1998. *Business Research Method*. Macmillan, New York. Available at: https://scholar.google.co.id/scholar?lookup=0&q=cooper+and+emory+1998&hl=id&assdt=0,5. Accessed at: August 2nd 2018.

Ganesh, J. and Oakenfull, G. 2000. International Product Positioning: An Illustration Using Perceptual Mapping Techniques. *Journal of Global Marketing,* Volume 13, Issue 2. Available at: https://www.tandfonline.com/doi/abs/10.1300/J042v13n02_06. Accessed at: August 1st 2018

Huber, J. and Zwerina, K., 1996. The Importance of Utility Balance in Efficient Choice Design. *Journal Of Marketing Research* Vol. 33, No. 3 *(Aug., 1996), pp. 307-317.* Available at: https://www.jstor.org/stable/1249332?seq=1. Accessed at: August 1st 2018.

Kotler.   2009.   *Direction   of   Marketing.*   Pearson,   Singapore.   Available
at:
   https://books.google.co.id/books?hl=id&lr=&id=fnd&pg=PR29&dq=kotler+2009.   Accessed   at:
   August 1st 2018.

Leelakulthanit, Orose. and Hongcharu, Boonchai. 2012. Perceived Customer Value Regarding Eco-Cars.
   The   Journal   of   Global   Business   Management Volume 8, Number 1. Available at:
   https://www.researchgate.net/Orose_Leelakulthanit/228237973.pdf.   Accessed   at:
   August 1st 2018.

Myers. H. J., Alpert. M. I. 1986. Determinant Buying Attitudes: Meaning and Measurement. *Journal of*
   Marketing Vol.   32,   No.   4   *(October   1968),   pp.   13-20.*   Available   at:
   https://www.jstor.org/stable/1249332?seq=1 . Accessed at: August 1st 2018

O'Brien. 1982. *European Economic Development: The Contribution of the Periphery. The Economic*
   Review. Wiley, New York.   Available at: https://onlinelibrary.wiley.com/doi/pdf/10.1111/j.1468-
   0289.1982.tb01183.x. Accessed at: August 1st 2018.

Rodriguez, Ann. and Page, Chris. September 2004. Research in Consumer Behavior to Toyota Car. *Journal of A*
   Comparison of Toyota and Honda Hybrid Vehicle Marketing Strategies   Available
at:
   http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.472.3493&rep=rep1&type=pdf .
   Accessed at: August 2nd 2018.

Shende, Vikram. 2014. Analysis of Research in Consumer Behavior of Automobile Passenger Car
   Customer. *International Journal of Scientific and Research Publications,* Volume 4, Issue 2.
   Available at: https://www.researchgate.net/publication/281259938.pdf.   Accessed   at:
   August 1st 2018.

Weber   Max.   1999.   *Definition   of   Marketing.* Continuum, New York.
   Available at:https://www.marxists.org/reference/subject/philosophy/works/ge/weber.htm#s2.
   Accessed at: August 2nd 2018.
.