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**ANALYTICAL HIERARCHY PROCESS METHOD IN SELECTING ONLINE TRANSPORTATION  
IN MANADO  
(CASE STUDY: GOJEK, GRAB, AND UBER)**

*PROSES ANALISA HIRARKI DALAM MEMILIH TRANSPORTASI ONLINE DI MANADO  
(STUDI KASUS: GOJEK, GRAB, DAN UBER)*

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**Abstract:** The online transportation is cheaper than a regular taxi fare in the city. Not only has the citizen, the online transportation also made the tourist easier to travel. The application also provides a several languages. The application also provides maps, which makes the consumer easier to find the place that they want to go to. This research aims to know which criteria is the most important for customer in selecting an online transportation in Manado and the most preferred online transportation for the customer. This research used analytical hierarchy process with the sample of 50 respondents that were obtained from citizen in Manado. The result from this research shown that price is the most important criteria for the consumer to choose an online transportation. The consumer wants an affordable price of the online transportation. Grab is the most preferred online transportation. Gojek and Uber as the competitors of Grab, should have to improve their performance, adding more promotions and make some different thing which is unique or something that the competitors does not have

**Keywords:** *consumer purchase decision, analytical hierarchy process*

**Abstrak:** *Transportasi online lebih murah daripada ongkos taksi reguler di kota. Tidak hanya warga, transportasi online juga membuat turis lebih mudah melakukan perjalanan. Aplikasi ini juga menyediakan beberapa bahasa. Aplikasi ini juga menyediakan peta, yang membuat konsumen lebih mudah menemukan tempat yang mereka inginkan. Penelitian ini bertujuan untuk mengetahui kriteria mana yang paling penting bagi pelanggan dalam memilih transportasi online di Manado dan transportasi online yang paling disukai untuk pelanggan. Penelitian ini menggunakan analytical hierarchy process dengan sampel 50 responden yang diperoleh dari warga di Manado. Hasil dari penelitian ini menunjukkan bahwa harga adalah kriteria paling penting bagi konsumen untuk memilih transportasi online. Konsumen menginginkan harga terjangkau dari transportasi online. Grab adalah transportasi online yang paling disukai. Gojek dan Uber sebagai pesaing Grab, harus meningkatkan kinerja mereka, menambahkan lebih banyak promosi dan membuat beberapa hal berbeda yang unik atau sesuatu yang tidak dimiliki pesaing.*

**Kata Kunci:** *keputusan pembelian konsumen, proses analitik hierarki*

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## INTRODUCTION

### Research Background

Transportation is one of the most essential services in life, and people are fulfilled currently because it has become simpler and more helpful. Transportation is referred to as the movement of animals, peoples, and goods from one location to another. There are several modes of transport, which include air, rail, water, road, cable, pipeline, and space. In this millennial, the electronic device become one of the important things in people's life. It became one of the reasons for some people to run an online transportation business.

In Indonesia, online transportation or motor sharing also it was booming evidenced by the emergence of various companies engaged in transportation-based smartphone application such as Grabbike, Bangjek, Transjek, Uber, Wheel Line, Blue-Jek, Ojeks Syar'I, and GO-JEK. The GO-JEK is a largest pioneer of motor sharing in Indonesia. The growing phenomenon of online in-city transportation pick-up services has been widely welcomed and embraced by Indonesians who have long awaited affordable, high quality, and accessible transportation.

The online transportation businesses in Manado City that are operating right now are Gojek, Grab, and Uber. As the traffic jam at this city is increasing day by day, it's helps people so much. Rides are readily available and come right to the people doorstep. People can choose to hop on the back of a motorcycle to beat traffic or get into a comfortable car. It also has an affordable price. The online transportation is cheaper than a regular taxi fare in the city. Not only has the citizen, the online transportation also made the tourist easier to travel. The application also provides a several languages. The application also provides maps, which makes the consumer easier to find the place that they want to go to. Certainly, the presence the online transportation or motor sharing in the midst society will influenced of lifestyle the peoples who live in urban areas to avoid the traffic. So, there much perception of user towards experienced in used the service.

There are some factors that can influence the consumer preference in choosing an online transportation such as price, performance, safety, comfortable, environment, and reputation of the company.

### Research Objective

Based on the research problem, the objectives of this research are to know:

1. The most important criteria for customer in choosing an online transportation in Manado City.
2. The most preferred online transportation for the customer in Manado City.

## THEORETICAL REVIEW

### Marketing

According to Kotler and Armstrong (2010), marketing is the process by which companies create value for customers and build strong customer relationships in order to capture value from customer in return. Marketing means managing markets to bring about profitable exchange relationship by creating value and satisfying needs and wants.

### Consumer Behavior

Schiffman and Kanuk (2004:8) defined that consumer behavior as the behavior that consumers display in searching for purchasing, using, and disputing of products and services that they expect will satisfy their needs. In other words, consumer behavior involves the feelings and thoughts of people experiences. It attempts to understand the decision-making processes of buyers, both individually and in groups such as how emotions affect buying behavior. It studies characteristics of individual consumers such as demographics and behavioral variables in an attempt to understand people's wants.

### Consumer Purchase Decision

Solomon (2011:362) said that consumer decision making is a central part of consumer behavior, but the way we evaluate and choose products (and the amount of thought they put into these choices) varies widely, depending on such dimensions as the degree of novelty or risk related to the decision.

### Previous Research

Apak, Gogus, and Karakadilar (2012). An Analytic Hierarchy Process Approach with A Novel Framework for Luxury Car Selection. The goal of this research is the Comparative Analysis of affecting factors

on purchasing domestic luxury cars by using Analytic Hierarch Process (AHP) technique, in Turkish market. The results have carried that flexibility and then brand image are the customers' most important criteria for car selection.

Attaran and Celik (2013). Analytic Hierarchy Process: An Application in Green Building Market Research. The aim of this research is to identifying consumer ranking and weights of a major green building rating system's categories. The result is most rating systems utilize the environmental impact of each aspect of a building or interview a panel of experts to determine importance levels for those aspects.

Anjaly and Sharma (2016). Offline Vs Online Buying: An Assessment through Analytic Hierarchy Process Approach. This paper aims to contribute to the academia by providing the unexplored area of decision making and for practitioners it a spires to provide an insight about consumer preferences. The results show that though people select products from the perspective of basic criteria of product & service but they take decision of purchase on the basis of risk involved and easiness of its mitigation.

Bruno, Esposito, Genovese, and Passaro (2009). The Analytical Hierarchy Process in The Supplier Selection Problem. The aim is to provide a view of the current proposals and to discuss crucial aspects which arise when the methodology is actually applied in real cases. This results in an improved reliability of the supplier selection system. The hierarchical structure of AHP and its way of collecting collective judgments also allows the involvement of different departments in the selection process (involvement) and pushes them towards virtuous behaviors.

Ku and Fan (2009). The Decision Making in Selecting Online Travel Agencies: An Application of Analytic Hierarchy Process. This study focused on exploring the relative weights of the nine-proposed fundamental travel products from an Internet perspective. The result shows that privacy, safety, and product quality were the three most important factors influencing customer purchases of room products on the Internet.

Atalik and Ozdemir (2015). A Hybrid Method Using Factor Analysis and AHP on Passenger Purchase Decision: The Case of Domestic Airlines in Turkey. This paper investigates factors affecting purchase decisions of domestic airline passengers and their preference priorities new services according to the priorities of passengers. Customer value and their perspective are always labile. In the airline business, market dynamics are continuously changing as well. In such a business environment, forecasting carries an extreme importance. This kind of studies can give airlines an edge over their competitors.

Owusu (2013). Influences of Price and Quality on Consumer Purchase of Mobile Phone in The Kumasi Metropolis in Ghana a Comparative Study. This study is descriptive research which tries to describe how consumers are been influence by Price and Quality when buying mobile phone. The study uses both primary data and secondary data. The outcome of the study was that Price and quality has influence on the consumer buying decision and that consumers consider both price and quality in their buying situation.

Agajie (2017). Application of Analytic Hierarchy Processing the Case of Purchasing. In this research paper, it's implemented AHP method to select the best computer based on the given criterion. Steps of AHP, pair-wise comparison matrices and eigen vector method helps us to determine the highest composite weight which is the best preferred alternative for the decision maker. Numerical example is carried out as application of AHP to solve purchasing problem.

Gawlik, Głuszak, and Małkowska (2016). The measurement of housing preferences in the Analytic Hierarchy Process. The paper focuses on adaptation of the AHP method to elicit housing preferences on the rent market. The study results have proven a few interesting properties of the considered objects of lease, as well as the group of experts evaluating the significance - students, in this case.

Tabar (2013). Analysis of decisions made using the analytic hierarchy process. This research purpose; the first part will be analysis of the decision, the decision hierarchy, the alternative's hierarchy, and the results, in order to extract what capabilities and thought processes can be gleaned from the decision. The second part of the examination will be an analysis of the ways the decision can be exploited. The analysis shows what information can be gained about a military decision-maker who uses the AHP, and how this information can be utilized, permitting U.S. and allied forces to execute efficient and effective military operations.

Syah (2013). *Perbedaan Pengaruh Citra Merek Dan Reputasi Perusahaan Terhadap Kualitas Produk, Nilai Pelanggan Dan Loyalitas Pelanggan Di Pasar Bisnis*. This paper investigates these differences by testing hypotheses about the influence of brand's image and company reputation on customer's perceptions of product and service quality, customer value and customer loyalty in lubricant business market. Based on the result, the appropriate marketing strategic for lubricant's producer is to be focus on the establishment of company reputation.

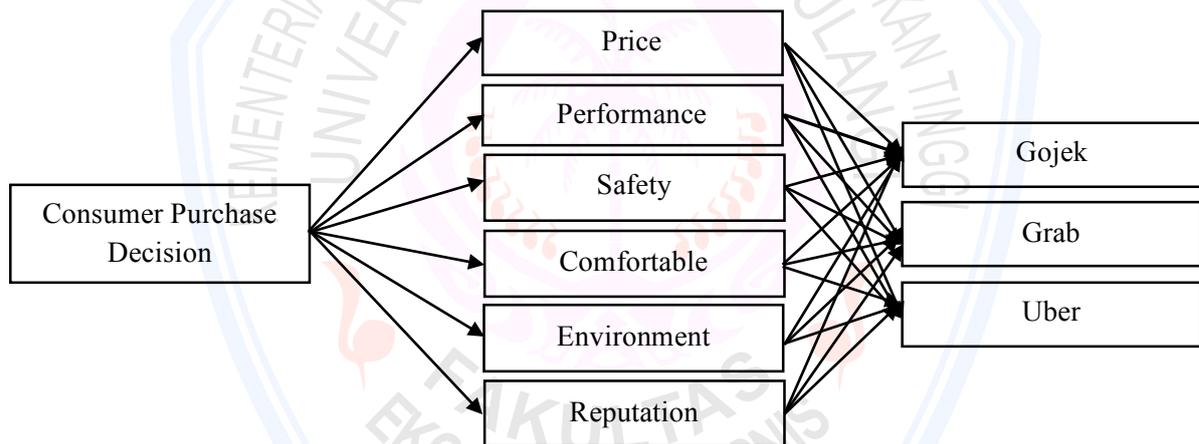
Wahyuni and Hartati (2012). *Sistem Pendukung Keputusan Model Fuzzy AHP Dalam Pemilihan Kualitas Perdagangan Batu Mulia*. The purpose of this research is to make decision support system of Quality Selection of BatuMulia Trade that can assist in choosing quality selection of precious stones to be traded. The result that is based on Fuzzy AHP method show that density, color, hardness, cutting and clarity criteria are the criteria in selecting precious stone trade quality.

Hamdhani and Imbar (2015). *Sistem Informasi Pemilihan Mobil Bekas Menggunakan Decision Support System Analytical Hierarchy Process pada Showroom Yokima Motor Bandung*. The purpose of this application is to maximize the time efficiency for showroom Yokima Motor and the customer. AHP DSS system is appropriate with the design of the analysis that has been made.

Leksono and Herwin (2017). *Pengaruh Harga Dan Promosi Grab Terhadap Brand Image Yang Mempengaruhi Keputusan Pembelian Konsumen Pengguna Transportasi Berbasis Online*. This research aims to understand the influence of the price setand promotional activities of Grab towards consumer purchase decision of through brand image as intervening variables. The results of hypothesis analysis show that price influence significantly to brand image; promotion influence significantly to brand image; price influence significantly to purchase decision; promotion influence significantly to purchase decision, and brand image influence significantly to purchase decision.

Syahputra and Oktafani (2014). *Pengaruh Brand Image Terhadap Proses Keputusan Pembelian Konsumen*. The purpose of this research is to know how big the influence of brand image on customer decision making process. The result shows that AirAsia’s brand image has significant impacton consumer decision making process.

**Conceptual Framework**



**Figure 1. Conceptual Framework**  
 Source: Empirical Review (2018)

**RESEARCH METHOD**

**Type of Research**

This research used quantitative method. The method that used in this research is Analytical Hierarchy Process (AHP).

**Place and Time of Research**

This research is conducted in Manado city. This research was conducted from January until February 2018.

**Population and Sample**

Population refers to the entire group of people, events, or things of interest that the researcher wishes to investigate. It is the group of people, events, or things of interest for which the researcher wants to make

inferences based on sample statistics (Sekaran and Bougie, 2009:262). Population in this research is the citizen of Manado City who has been used the three-online transportations, which are Gojek, Grab, and Uber.

### Data Collection Method

The sampling design is purposive sampling. The sample of this research is all people that have experience in riding the three online transportation alternatives (Gojek, Grab, and Uber)

### Data Analysis Method

#### Multi-Criteria Decision Making

Most decision-making involves complicated procedures in which decision makers rank the alternatives of a choice according to multiple criteria (Saaty, 2008). There have been many studies that have provided solutions for complicated decision-making including multiple criteria. Multiple criteria decision-making (MCDM) refers to making decisions in the presence of multiple, usually conflicting, criteria. MCDM problems are common in everyday life.

#### Analytical Hierarchy Process

The Analytic Hierarchy Process (AHP) is due to Saaty (1980:55) and is often referred to, eponymously, as the Saaty method. It allows users to assess the relative weight of multiple criteria or multiple options against given criteria in an intuitive manner. In case quantitative ratings are not available, policy makers or assessors can still recognize whether one criterion is more important than another.

## RESULT AND DISCUSSION

### Result

The result of this research was obtained by using Analytical Hierarchy Process (AHP) by comparing three online transportation which are Gojek, Grab, and Uber based on several criterions (price, performance, safety, comfortable, environment, and reputation).

#### Analytical Hierarchy Process (AHP) Results

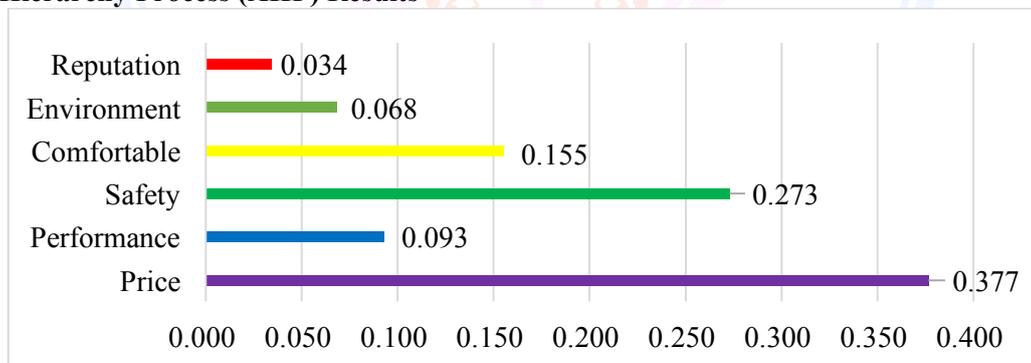
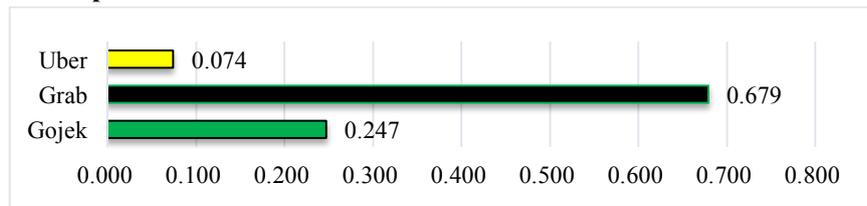


Figure 1. Result of Overall Criteria

Source: Microsoft Excel (2018)

Figure 1 show the highest score is price (0.377), it means price is the factor that have influence the most people to choose an online transportation among the others criteria. The second is safety (0.273), comfortable is in third position with score 0,155, followed by performance (0.093). The rest filled by environment (0.068), and reputation as the lowest score (0,034). As the overall inconsistency = 0.0825, it means the data comparison in this result is valid and consistent. Grab is the most preferred online transportation based on price and safety, Gojek is the most preferred online transportation based on reputation, environment, comfortable, and performance. Grab become the most preferred online transportation because it is the most preferred online transportation based on the criteria that influence the consumer the most in selecting an online transportation in Manado City.

**Result of Pair Wise Comparison of Price**

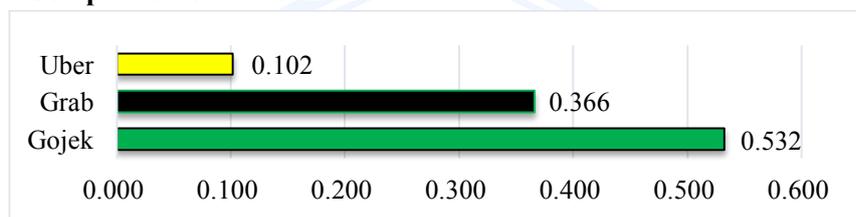


**Figure 2. Result of Pair Wise Comparison of Price**

Source: Microsoft Excel (2018)

In Figure 2 about price shows that Grab is the most preferred by respondents (0.679), second is Gojek (0.247), followed by Uber with the lowest score by respondents (0.074) and the overall inconsistency for result of price is (0.0278), it means the data comparison by respondents is valid and consistent.

**Result of Pair Wise Comparison of Performance**

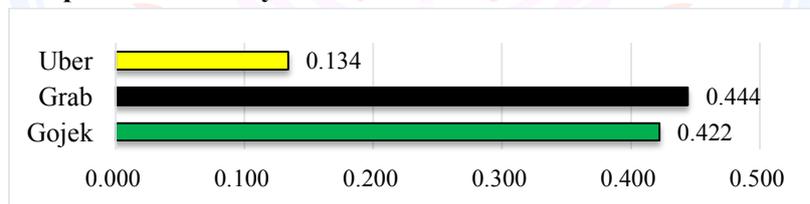


**Figure 3. Result of Pair Wise Comparison of Performance**

Source: Microsoft Excel (2018)

In Figure 3 about performance shows that Gojek is the most preferred by respondents (0.532), followed by Grab (0.366) and Uber with score 0.102, and the overall inconsistency for result of performance is 0.0817, it means the data comparison by respondents is valid and consistent.

**Result of Pair Wise Comparison of Safety**

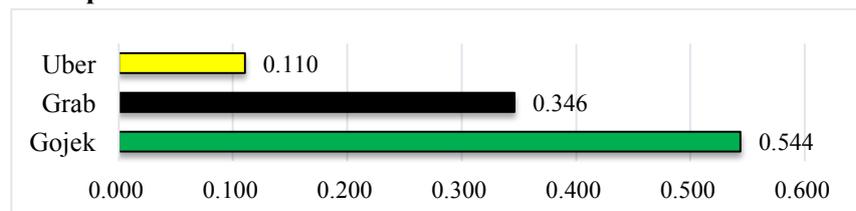


**Figure 4. Result of Pair Wise Comparison of Safety**

Source: Microsoft Excel (2018)

In Figure 4 about safety shows that Grab is the most preferred by respondents (0.444), followed by Gojek (0.422) and Uber with score 0.134, and the overall inconsistency for result of safety is 0.00228, it means the data comparison by respondents is valid and consistent.

**Result of Pair Wise Comparison of Comfortable**

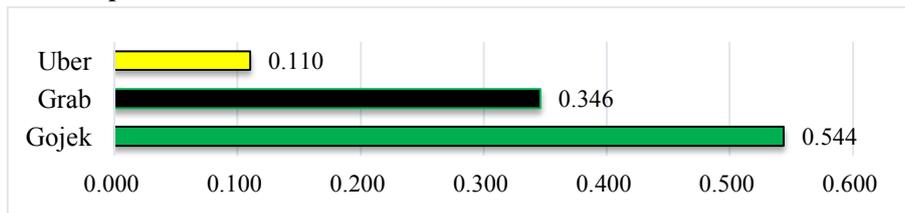


**Figure 5. Result of Pair Wise Comparison of Comfortable**

Source: Microsoft Excel (2018)

In Figure 5 about comfortable shows that Gojek is the most preferred by respondents (0.544), followed by Grab (0.346) and Uber with score 0.110, and the overall inconsistency for result of comfortable is 0.04644, it means the data comparison by respondents is valid and consistent.

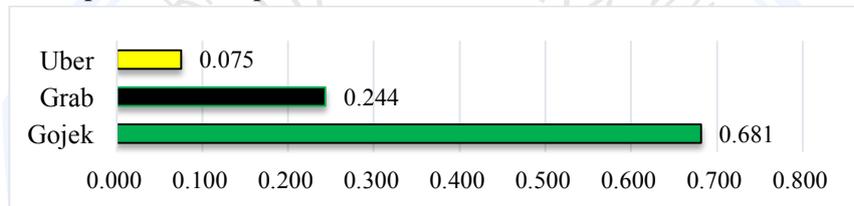
**Result of Pair Wise Comparison of Environment**



**Figure 6. Result of Pair Wise Comparison of Environment**  
 Source: Microsoft Excel (2018)

In Figure 6 about environment shows that Gojek is the most preferred by respondents (0.544), followed by Grab (0.346) and Uber with score 0.110, and the overall inconsistency for result of environment is 0.04644, it means the data comparison by respondents is valid and consistent.

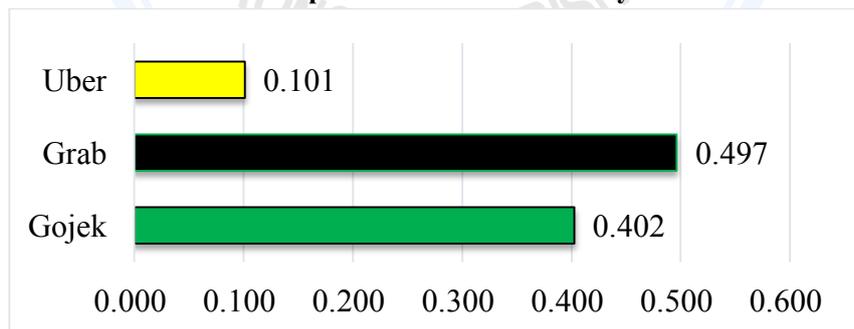
**Result of Pair Wise Comparison of Reputation**



**Figure 7. Result of Pair Wise Comparison of Reputation**  
 Source: Microsoft Excel (2018)

In Figure 7 about reputation shows that Gojek is the most preferred by respondents (0.681), followed by Grab (0.244) and Uber with score 0.075, and the overall inconsistency for result of reputation is 0.08765, it means the data comparison by respondents is valid and consistent.

**Result of the Most Preferred Online Transportation in Manado City**



**Figure 8. Result of the Most Preferred Online Transportation in Manado City**  
 Source: Microsoft Excel (2018)

Based on the observation, this research shows that people choose Grab as the most preferred Online Transportation for them to choose to order among the other alternatives. Grab have the highest score with 0.497, in the second position is Gojek with score 0.402, and followed by Uber in the last position with score 0.101. In

this result the overall inconsistency indicated = 0.066, it shows that the comparison of data in this research is valid and consistent.

## Discussion

### Pair Wise Comparison for the Main Criteria Analysis

First, for the overall of main criteria (price, performance, safety, comfortable, environment, and reputation), based on result, the most important criteria that influence consumers is price. Price becomes the highest influence criteria when they want to choose online transportation. Price becomes the most important thing to consider which online transportation they want to choose. When consumers want to choose online transportation, they choose the most affordable price. Most consumers of online transportation are students who still get money from their parents. So, the online transportation should not give the unaffordable price for the consumers. Price has highest score criteria compare to the other five criteria, being the most preferred criteria by respondents and the most crucial criteria that influence customer in selecting online transportation. The respondents are those who have experienced on each alternative provided which are the three online transportations based on the requirement of using AHP method. So, in this research, according to the respondents, price becomes the most preferred factor for the customer in selecting online transportation in Manado.

Second is safety. When choose to order an online transportation, consumers must give an attention about the safety, because it concern with the people life. Consumers need to choose the online transportation that has complete safety tools such as helmet or s belt.

Third position is comfortable. When consumers want to choose online transportation, they will consider the ss or how comfortable the sing is used while they are on the car or bike. How comfortable the transportation is that will influence people to choose which online transportation they prefer. The comfort of transportation can be seen by the SS and the air conditioner.

Next position is performance. The performance of the driver is also being consider by consumer when choose an online transportation. Consumers can see how well the drivers are driving a car or bike. Consumers also can see how well the service and behavior of the drivers.

Fifth position is the environment. When choose an online transportation, consumers must give an attention about the environment. The impression that the consumer will seek is the environment of the online transportation. The environment of transportation can be seen by the aromatic of car or the driver perfumed. Consumers also considered the thing such as how clean the inside or outside of car or bike.

Last position is reputation. The drivers should keep their good reputation; because it is something that also influences the consumers when choose online transportation. Once they had bad reputation, the consumers will afraid to make a repurchase or will not give you any orders anymore.

According to Atalik and Ozdemir on the research "A Hybrid Using Factor Analysis and AHP on Passenger Purchase Decision: The Case of Domestic Airlines in Turkey", price is already known to be important for customer pleasure. But it is not enough alone. Also the quality level should be as high as possible. If managements want to use this situation as an advantage, they should make their budget plans carefully. The price and quality have to be proportional to create an opportunity. The price factor is one of the most important factors in air transportation. Because of the irregularity in the sector, price is an important variable for competitive advantage. In such an industry with lesser rivals, which continuously monitor one another, price is extremely important (Gurses, 2006).

### Result of Selecting an Online Transportation in Manado City

Based on the overall data, customer will choose Grab as the preferred online transportation in Manado compares to the rest of alternatives. This result already shown in Figure 8, it shows that when people want to order an online transportation, they prefer to choose Grab as the most preferred online transportation among the other alternatives, Gojek and Uber. For an affordable price, Grab has the highest score because they offered many promotions for the consumers. Grab also has the highest score for safety criteria which also important for consumers when they choose an online transportation. Therefore, Grab is the most preferred than Gojek and Uber. Grab got the first place, followed in the second place by Gojek and in the last place is Uber. The overall inconsistency indicated 0.066, it shows that the comparison of data in this research is valid and consistent.

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**CONCLUSION AND RECOMMENDATION**
**Conclusion**

Based on the result of analyzing and discussing, then two conclusions can be purposed.

1. Based on six criteria (price, performance, safety, comfortable, environment, and reputation), there are top three criteria that has the most influence for consumer to choose Online Transportation in Manado city. In the first place and got the highest total score goes to price. According to the data comparison that developed in pairwise comparison of Analytical Hierarchy Process (AHP), price become the most preferred criteria for consumer when choose online transportation in Manado city. Second position of the highest score goes to safety. Third position is for comfortable criteria. The data shows that price, safety and comfortable are the most important thing that influence consumer to choose an online transportation. The rest criteria that are performance, environment and reputation are not the main things that influence the consumers.
2. Based on the overall result that developed using Analytical Hierarchy Process (AHP), shows that Grab become the most preferred Online Transportation in Manado City by the consumers, followed by Gojek and Uber in the last place.

**Recommendation**

There are several recommendations that can be concluded from the overall result in this research, which are listed as follow:

1. Price, safety and comfortable are the most important things that influence consumer in selecting an online transportation particularly in Manado. Therefore, online transportation in Manado needs to pay attention seriously toward those factors. Consumer will seek an affordable price with safety and comfortable transportation. From the data, Grab is the most preferred because it has an affordable price and they provide many promotions. That is why Grab more preferred than Gojek and Uber in this research.
2. Gojek and Uber as the competitors of Grab, have to improve their performance, adding more promotions and make some different thing, which is unique or something that the competitors does not have. It can attract more consumers, especially to get attention for some criteria that make consumers tend to choose Grab, such as affordable price.

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