



DOI: 10.26820/reciamuc/6.(3).julio.2022.775-785

URL: <https://reciamuc.com/index.php/RECIAMUC/article/view/959>

EDITORIAL: Saberes del Conocimiento

REVISTA: RECIAMUC

ISSN: 2588-0748

TIPO DE INVESTIGACIÓN: Artículo de Investigación

CÓDIGO UNESCO: 5909.01 Gestión Administrativa

PAGINAS: 775-785







Market feasibility and demand for public transportation in Pedro Carbo county

Factibilidad de mercado y demanda del transporte público del cantón Pedro Carbo

Viabilidade do mercado e procura de transportes públicos no cantão de Pedro Carbo

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RECIBIDO: 20/06/2022 **ACEPTADO:** 10/07/2022 **PUBLICADO:** 01/08/2022

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ABSTRACT

The socio-economic development of a country is public transport, since this reduces the time and distance between one place and another, allowing the mobility of its inhabitants to be easier. In the province of Guayas, in the case of more populated cantons, there are several transportation alternatives such as bus services, taxis, home calls and light cargo or mototaxi services. The Municipality of the Pedro Carbo canton, through a municipal ordinance, declares that, creating friendly initiatives with the environment, it resolves the creation of 6 mototaxi cooperatives, and through requests from the inhabitants, the acceptance of annexing one more cooperative for the community is given. It is proposed to carry out a study that shows the feasibility of the market and demand for public transport in the canton, with the aim of launching a new motorcycle taxi public transport service. Deductive, inductive and statistical methods were used. The population was the 22,000 inhabitants of the urban population of the Pedro Carbo canton, selecting the population between 15 and 65 years of average age, who are the ones who would opt for the motorcycle taxi transport service. for a total of 15,205 inhabitants. A population sample was calculated, resulting in a total of 375 study objects. It is considered that it is a viable project that would help the development of other activities, recognizing the desire of the people to have a new means of demand in the city, due to an acceptance of 58% of the inhabitants according to the applied survey, promoting the offer and the demand according to the benefits that a motorcycle taxi would offer in the canton, taking into account that the target audience is people between the ages of 25 and 35.

Keywords: Means of Transport, Public Transport, Mobility, Motorcycle Taxi, Service, Market Study.

RESUMEN

El desarrollo socio - económico de un país es el transporte público, puesto que con ello se reduce el tiempo y la distancia entre un lugar y otro, permite que la movilidad de sus habitantes sea más fácil. En la provincia del Guayas, en el caso de cantones más poblados existen varias alternativas de transporte como son servicio de buses, taxis, llamadas domiciliarias y los servicios de carga liviana o mototaxi. El Municipio del cantón Pedro Carbo mediante una ordenanza municipal declara que, creando iniciativas amigables con el ambiente resuelve la creación de 6 cooperativas mototaxi, y mediante pedidos de los habitantes se da la aceptación de anexas una cooperativa más para la comunidad. Se propone realizar un estudio que muestre la factibilidad de mercado y demanda del transporte público del cantón, con el objetivo de poner en marcha un nuevo servicio de transporte público de moto taxi. Se utilizaron los métodos deductivo, inductivo y estadístico, La población fueron los 22.000 habitantes de la población urbana del cantón Pedro Carbo seleccionando la población entre los 15 a 65 años de edad promedio, que son los que optarían por el servicio de transporte de moto taxi para un total de 15.205 habitantes. Se calculó una muestra de la población resultando un total de 375 objetos de estudio. Se considera que es un proyecto viable que ayudaría al desarrollo de otras actividades, reconociendo el deseo de las personas de contar con un nuevo medio de demanda en la ciudad, por una aceptación del 58% de los habitantes según la encuesta aplicada, fomentando la oferta y la demanda de acuerdo con los beneficios que ofrecería una moto taxi en el cantón, tomando en cuenta que el público objetivo son personas comprendidas entre las edades de 25 a 35 años.

Palabras clave: Medio de Transporte, Transporte Público, Movilidad, Moto Taxi, Servicio, Estudio de Mercado.

RESUMO

O desenvolvimento socioeconômico de um país é o transporte público, uma vez que este reduz o tempo e a distância entre um lugar e outro, permitindo que a mobilidade dos seus habitantes seja mais fácil. Na província de Guayas, no caso de cantões mais povoados, existem várias alternativas de transporte, tais como serviços de autocarros, táxis, chamadas ao domicílio e serviços de carga ligeira ou mototáxi. O Município do cantão de Pedro Carbo, através de uma portaria municipal, declara que, criando iniciativas amigáveis com o ambiente, resolve a criação de 6 cooperativas de mototáxi, e através de pedidos dos habitantes, é dada a aceitação de anexar mais uma cooperativa para a comunidade. Propõe-se a realização de um estudo que demonstre a viabilidade do mercado e da procura de transportes públicos no cantão, com o objectivo de lançar um novo serviço de transporte público de mototáxi. Foram utilizados métodos dedutivos, indutivos e estatísticos. A população era de 22.000 habitantes da população urbana do cantão Pedro Carbo, seleccionando a população entre os 15 e os 65 anos de idade média, que seriam os que optariam pelo serviço de transporte de moto táxi. para um total de 15.205 habitantes. Foi calculada uma amostra da população, o que resultou num total de 375 objectos de estudo. Considera-se que se trata de um projecto viável que ajudaria ao desenvolvimento de outras actividades, reconhecendo o desejo da população de ter um novo meio de procura na cidade, devido a uma aceitação de 58% dos habitantes de acordo com o inquérito aplicado, promovendo a oferta e a procura de acordo com os benefícios que um mototáxi ofereceria no cantão, tendo em conta que o público-alvo são pessoas com idades compreendidas entre os 25 e os 35 anos.

Palavras-chave: Meios de Transporte, Transporte Público, Mobilidade, Moto táxi, Serviço, Estudo de Mercado

Introduction

Crouse & Anglin (2017) contribute that “the existence of a means of transport is of paramount importance to the inhabitants, since it is one of the most widely used means and helps to move quickly from one place to another” (p.32).

The socio-economic development of a country is public transport, since this reduces the time and distance between one place and another, making it easier for its population to mobilize. (Buitrago, 2017, pág. 43).

Public transportation is transcendental for all human beings in a general way, since it is the way to mobilize in an agile way in the province of Guayas, in the case of more populated cantons there are several alternatives of public transport like buses, the Taxi service, for the comfort when moving and for avoiding crowds of passengers in the vehicles, the service of home calls due to the ease of acquiring the vehicles for their transfer, And the services of light cargo or bike taxi because in this area referred to it is difficult to obtain a means of transport that go according to the needs of the user since they are always full, much more in times of pandemic which everyone is going through, it is necessary to implement a transport service that helps to facilitate the mobility of the inhabitants (Dirección de Tránsito Ecuador, 2017).

The complication and high costs of carrying out a feasibility study, as well as the fulfillment of a large number of requirements for the creation of public transport companies, have led people to provide such services illegally.

The Municipal Autonomous Decentralized Government of the Canton of Pedro Carbo, through a municipal ordinance, declared that, creating environmentally friendly initiatives, resolves the creation of 6 bike taxi cooperatives, and through requests of the inhabitants it is given the acceptance to annex one more cooperative so that it gives

service to its inhabitants being the Mototaxi Cooperative “Fr5M CIA LTDA.B.C.”

It is proposed to carry out a study that shows the feasibility of market and demand for public transport in the Pedro Carbo canton, with the aim of launching a new public transport service in bike taxi mode.

Research methodology

This research is based on a quantitative approach since it provides theoretical foundations. It will be supported by deductive, inductive and statistical methods and it is quantitative because statistical results will be obtained based on the survey conducted for data collection and analysis.

The population selected for this research was the 22,000 inhabitants of the urban population of the canton Pedro Carbo where only the population between the ages of 15 and 65 years was selected as they would be the ones who would opt for the Bike taxi service, being a total of 15,205 of the entire population. A sample of the population was calculated resulting in a total of 375 objects of study.

Research results

The study detected the market feasibility in the demand for public transport, taking into account that the target are male individuals between the ages of 25 to 35 years and with at least high school level education.

It is the process of understanding the consumer's demand for a product or service in a target market, the results obtained according to surveys that helped to obtain the opinion of the users.

93% of the population of the Pedro Carbo canton is willing to use the transport service.

Table 1. Description of demand in people.

	Value	Meaning
Year	2022	Established projection year
Target market	15.205	Target market projected to 2022.
% service acceptance	93%	Percentage of acceptance of the survey.
Demand in people	14141	This value is obtained by multiplying the projected target market (15,205) by the acceptance percentage (93%).

Source: Survey results.

Prepared by: Solis, Tavares, Gutiérrez & Mejía (2022).

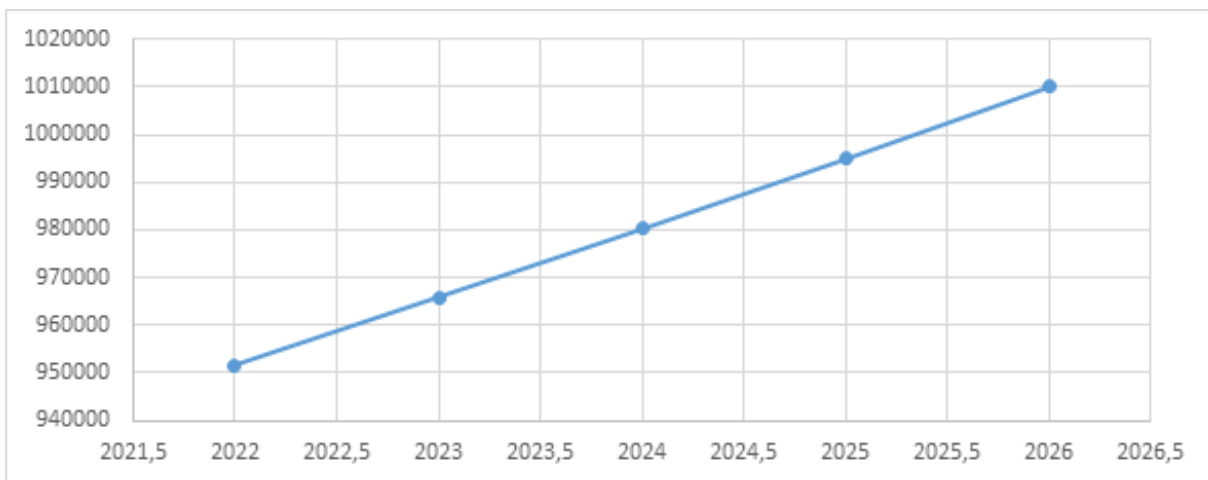


Figure 1. Demand in persons.

Source: Survey results.

Prepared by: Solis, Tavares, Gutiérrez & Mejía (2022).

It is shown that by the year 2022, it can be defined as potential market 14141 people who are willing to acquire the service, by means of the projection according to the population rate of 1.5% until the year 2026 will have a market of 15,009 people. The majority of respondents would use the bike taxi service at least 10 and more times per week and 14,141 people is the target market.

Table 2. Study of the demand for services.

Demand	Quantity	Percentage	Population	Average quantity	Weekly	Demand for services
14141	1-3 semanal	1%	141,4	2	93	26226
	4-6 semanal	3%	424,2	5	93	197160
	7-8 semanal	3%	424,2	8	93	197160
	10 y más	93%	13151,1	10	93	12.230430
TOTAL		100%	14141			12.650976

Source: Survey results.

Prepared by: Solis, Tavares, Gutiérrez & Mejía (2022).

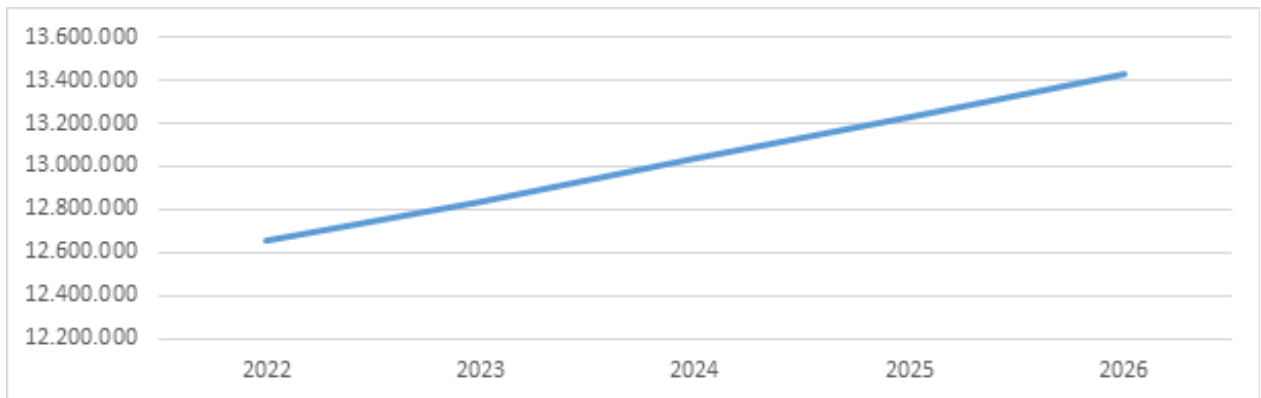


Figure 2. Demand for services.

Source: Solis, Tavares, Gutiérrez & Mejía (2022).

Based on the corresponding calculations of those who said they agreed with the new transport service unit and how often they would use them, a demand was obtained for 12,650,976 units of demanded services in 2022. while after having projected for the year 2026, there is a demand for 13,427,285 services.

Offer Study

In order to calculate the offer in person, the results of the people who indicated that they do not agree to implement the bike taxi transport service are taken into account.

Sample calculation

7% of the population of Pedro Carbo canton is not willing to use transportation.

Table 3. Explanation of demand in people.

	Value	Meaning
Year	2022	Established projection year
Target market	15.205	Target market projected to 2022.
% service acceptance	7%	Percentage of acceptance of the survey.
Demand in people	1064	This value is obtained by multiplying the projected target market (15,205) by the acceptance percentage (7%).

Source: Survey results.

Prepared by: Solis, Tavares, Gutiérrez & Mejía (2022).



Table 4. Calculation of supply in persons.

Year	Offer in persons	P.C.R. (Population growth rate)
2022	1064	1,5%
2023	1079	16
2024	1095	16,2
2025	1111	16,4
2026	1128	17

Source: Survey results.

Prepared by: Solis, Tavares, Gutiérrez & Mejía (2022).

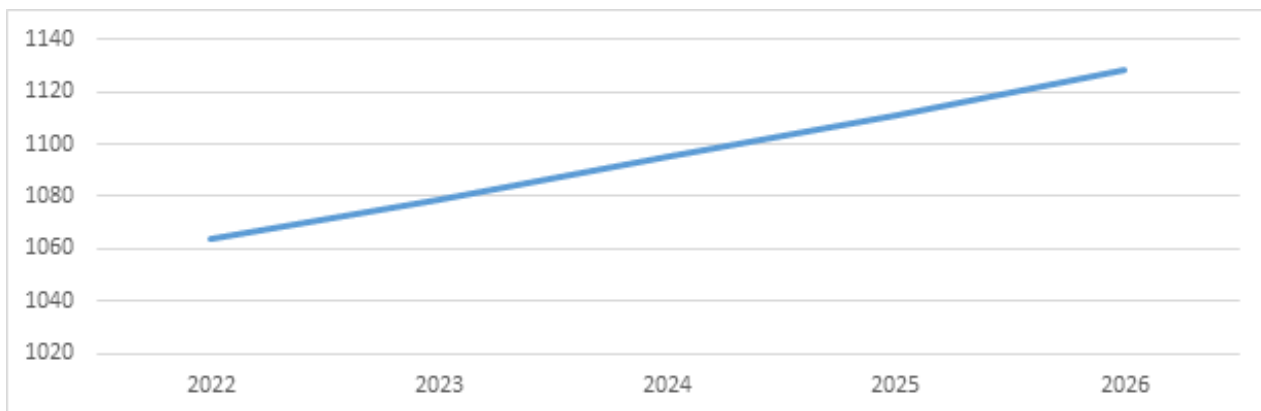


Figure 3. Supply in persons.

Source: Survey results.

Prepared by: Solis, Tavares, Gutiérrez & Mejía (2022).

The projection of the supply in people increases steadily in the years 2022 to 2026. The projection is calculated with the Population Growth Rate of 1.5%, giving as a final result for the year 2026 a total supply of 1,128 people.

Analysis of the results of the service supply research

The calculation of service demand is based on the survey applied, 7% of respondents said they do not agree to the implementation of the light transport service. of which according to the frequency of service use, the service offering could be calculated as follows.

Table 5. Study of the supply of services.

Demand	Quantity	Percentage	Population	Average quantity	Weekly	Demand for services
1064	1-3 semanal	1%	11	2	93	2046
	4-6 semanal	3%	32	5	93	14880
	7-8 semanal	3%	32	8	93	14880
	10 y más	93%	989	10	93	919770
TOTAL		100%	1064			951576

Source: Survey results.

Prepared by: Solis, Tavares, Gutiérrez & Mejía (2022).

Table 6. Supply of services.

Year	Offer in service	P.C.R
2022	951.576	1,5%
2023	965.849	14274
2024	980.337	14488
2025	995.042	14705
2026	1009.968	14926

Source: Survey results.

Prepared by: Solis, Tavares, Gutiérrez & Mejía (2022).

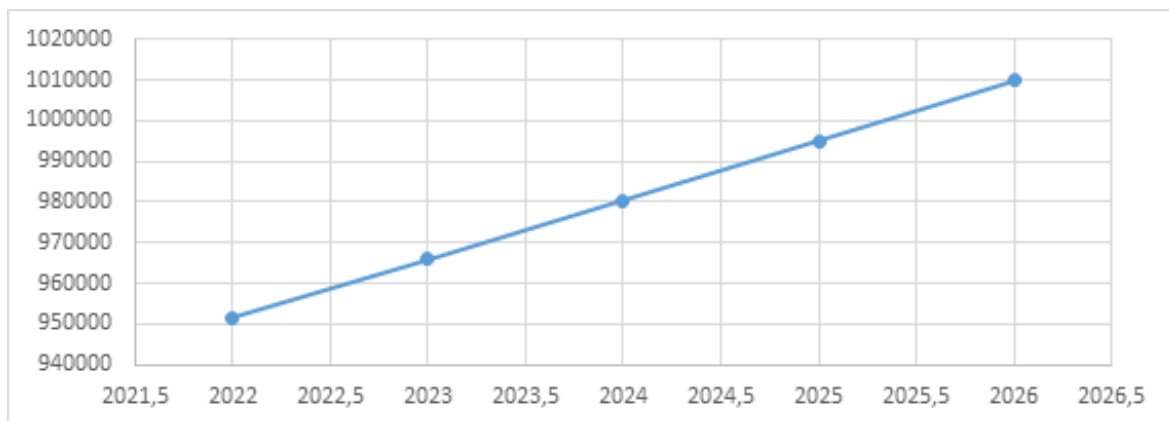


Figure 4. Supply of services.

Source: Survey results.

Prepared by: Solis, Tavares, Gutiérrez & Mejía (2022).

According to the corresponding calculations of the persons who would use the bike taxi transport service and according to the frequency with which they would carry them, a value of 951,576 was obtained with respect to the offer in service in the year 2022. while after having made the projection for the year 2026 a value of 1,009,968 offer in services was obtained.

Potential market for the project

Unmet potential demand

According to the studies carried out, the potential market to offer the transport service will be to the whole population between the ages of 15 to 65 of the canton Pedro Carbo. The project's unfulfilled potential demand is calculated by subtracting product demand from the supply in services obtained.

DPI= Demand for Products/Services - Supply of Products/Services.



Table 7. Potential Unmet Demand.

Years	Demand in service	Offer in services	D.P. I
2022	12.650976	951576	11.699.400
2023	12.840741	965849	11.874.892
2024	13.033352	980337	12.053.015
2025	13.228852	995042	12.233.810
2026	13.427285	1009968	12.417.317

Source: Survey results.

Prepared by: Solis, Tavares, Gutiérrez & Mejía (2022).

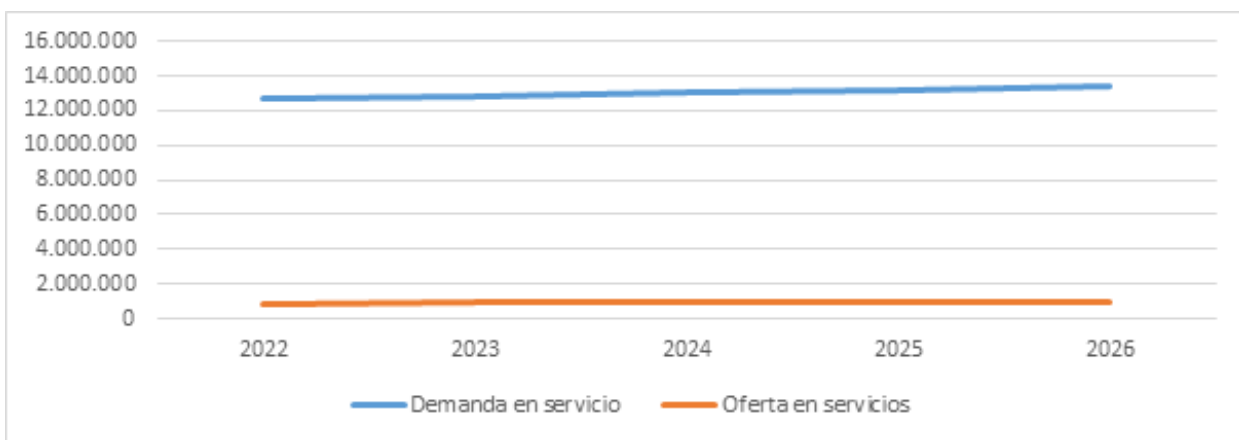


Figure 5. Potential Unmet Demand.

Source: Survey results.

Prepared by: Solis, Tavares, Gutiérrez & Mejía (2022).

It was estimated that the unmet potential demand for the service projected until 2026 is 12,417,317 units of transport service in bike taxis.

Price analysis

Calculation of the price

The price calculation was made by applying the method “survey data” taking into account the response of respondents within the target market has responded that they would be willing to pay for the motor taxi service rate of 0.50 cents, it will be projected from 2022 to 2026, this value has an upward trend due to external factors such as the annual inflation that each country possesses, being 2.56% corresponding to the year 2022 according to the INEC.

Table 8. Price projection.

Year	Price	Inflation
2022	0,5	2,56%
2023	0,51	0,013
2024	0,52	0,013
2025	0,53	0,013
2026	0,54	0,014

Source: Survey results.

Prepared by: Solis, Tavares, Gutiérrez & Mejía (2022).

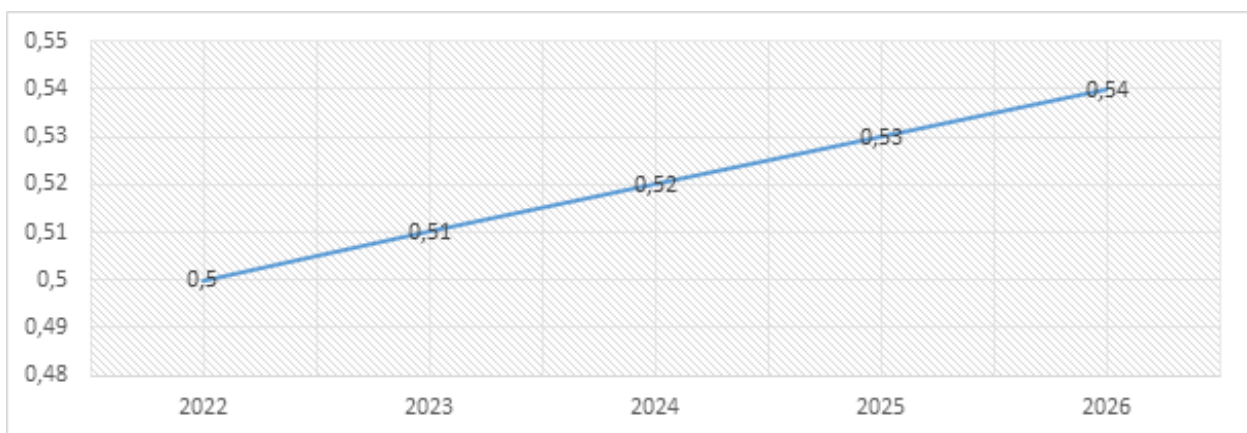


Figure 6. Projected Price.

Source: Survey results.

Prepared by: Solis, Tavares, Gutiérrez & Mejía (2022).

The data estimate that for 2026 the rate of the service rendered will be 0.54 with a continuous progression because it is the projected five-year price, the same one that will increase according to the inflation percentage of the current year.

Conclusions

It was perceived that users wishing to move around the canton often had different problems when moving from one site to another in existing conventional transport. According to the service provided on approved vehicles that comply with the environmental and safety requirements according to the technical regulations in force in the canton of Pedro Carbo.

It is considered to be a viable project that would help the development of other activities, recognizing the desire of the people to have a new medium of demand in the city, by an acceptance of 58% of the inhabitants according to the applied survey, encouraging supply and demand according to the benefits that would offer a motorcycle taxi in the canton.

Through the market study the feasibility of offering the transport service is detected, taking into account that the target public are persons between the ages of 25 to 35 years, enhancing the investment of public transport in this economic sector, the Cooperative will have the opportunity to enter with force and transform the transportation sector by providing a service that ensures



the integrity of the people, with trained personnel, that will help a better control, quality and appropriate treatment to each of the passengers, Establishing that the feasibility will allow the enhancement of investment in public transport in the Pedro Carbo canton.

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CITAR ESTE ARTICULO:

Solis Barreto, Y. L., Tavares Vargas, A. L., Gutiérrez Soledispa, S. M., & Mejía Yoza, C. M. (2022). Market feasibility and demand for public transportation in Pedro Carbo county. RECIAMUC, 6(3), 775-785. [https://doi.org/10.26820/reciamuc/6.\(3\).julio.2022.775-785](https://doi.org/10.26820/reciamuc/6.(3).julio.2022.775-785)

