CHARACTERIZING INFORMAL TRANPORT MODES: THE CASE OF THE "KULIGLIG" IN REGION 2, PHILIPPINES

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Abstract: The study was brought about by the existence of informal transport modes in Region 2 such as that of the "*kuliglig*", a vehicle comprising of a two-wheeled trailer pulled by a hand-tractor. It is intended to help the farmer carry his produce from his field to the market. However, it is also used as public transport in certain areas. In the latter case, government authorities appear to condone their illegal use as evidenced by their proliferation. The study hopes to provide a baseline data on the estimated number of "*kuliglig*". Safety features of these modes would be assessed to see if they conform to existing laws and regulations. It would also look into other characteristics such as vehicle operating speeds, vehicle ages and weights, dimensions and configurations. It aims to recommend policies that would govern the operation of informal transport modes considering their vital role in the livelihood of users and drivers and the development of rural areas.

Key Words: barangay, informal transport modes, kuliglig, municipality

1. BACKGROUND OF THE STUDY

Remoteness, isolation and inaccessibility are the key characteristics of many of the world's rural areas and the economic and social deprivation, which these areas suffer, is often due, in large measure, to inadequate transportation services.

The two issues concerning rural transport are strongly linked to the dispersed nature of the population and the trend for vital services to be concentrated into larger settlements particularly in urbanized areas. These created disparity among urban centers and rural areas vis a vis transport investment allocation as the focus for further investments was concentrated on addressing urban transport problems. This prevents rural communities from improving their living conditions.

Consequently, many transport planners now accept what has been termed 'intermediate technology', as an effective technology to satisfying immediate needs for better accessibility, matching the limited financial means of isolated farming communities with the demands for more efficient but affordable means of transport. (Transport Systems Policy and Planning: A Geographical Approach: 231). It states that agricultural production and consumption within rural areas rarely involve motor vehicles and rely heavily on household labor, and create a need for time-and-energy consuming movements of small loads over relatively short distances.

This recognizes the need for intermediate means of transport that has a higher load capacities than head loading, and the potential for higher travel speeds than walking, and thus significantly reduce the amounts of time and energy spent on walking and head loading. The introduction of low-cost Intermediate Means of Transport, in conjunction with simple, usually community-based, infrastructure improvements, can provide a level of improvement in rural transport that will affect travel for social, educational, health, administrative and recreational, as well as directly economic purposes, that is rarely achieved through road improvements alone.

Intermediate Means of Transport are widely used in developing countries, both to improve the efficiency of indirectly productive tasks, and to serve as a bridge between rural fields and villages and nearby road networks or market towns.

Transport has an indispensable role in the poverty alleviation for rural areas specifically in promoting access and mobility to the rural settlers. However, conventional public transport modes are insufficient in meeting the actual needs of the people. This explains the growth of informal transport modes servicing remote areas wherein the public transport modes cannot cater. Informal transport modes as defined, are vehicles not suited to ply along national roads since they are not equipped with the vehicle accessories prescribed by Republic Act 4136 otherwise known as the Land Transportation and Traffic Code. These vehicles have no headlights, signal lights, taillights, brake lights and other safety devices.

Local government units have ignored the prevalence of these informal transport modes, such that there has been no recorded statistics to verify their existence. Moreover, their use has caused contentions regarding safety, which has to be subjected to empirical studies.

2. OBJECTIVES

The focus of the study is characterizing and defining the role of the "kuliglig" prevalent in agricultural areas. Specific objectives are as follows:

1. To provide a baseline data on the estimated number of "kuliglig" that exists in the locality of the target areas.
2. To determine the vehicle operating characteristics of the "kuliglig".
3. To determine the features and accessories of the "kuliglig" as prescribed by the laws governing land transportation and traffic code in the country.
4. To provide policy recommendations regarding the existence the "kuliglig".

3. GEOGRAPHIC & PHYSICAL FEATURES OF THE STUDY AREA

The Cagayan Valley Region is located in the northeastern tip of the Philippines with a land area of 2,683,758 square kilometers making it the 4th largest region in the country. It consists of five provinces occupying the northern-most portion of Luzon – Batanes, Cagayan, Isabela, Nueva Viscaya and Quirino. The region's topography is generally sloping. Its lowlands, with slopes from 0 to 8% cover only 8,293 square kilometer or 31% of the total land area (Refer to Table 1 for the profile of Cagayan Valley and Figure 1 for the Map).

Table 1. Physical Profile of the Cagayan Valley Region

Land Area (hectares) Population (1995)	2,683,758 2,536.055
Provinces	Cagayan, Isabela, Nueva Viscaya, Quirino, Batanes
City	Santiago, Ilagan & Tuguegarao City
Number of Municipalities/Cities	92/3
Number of Barangay	2,311
Number of Persons employed in Agriculture (1998)	762,000

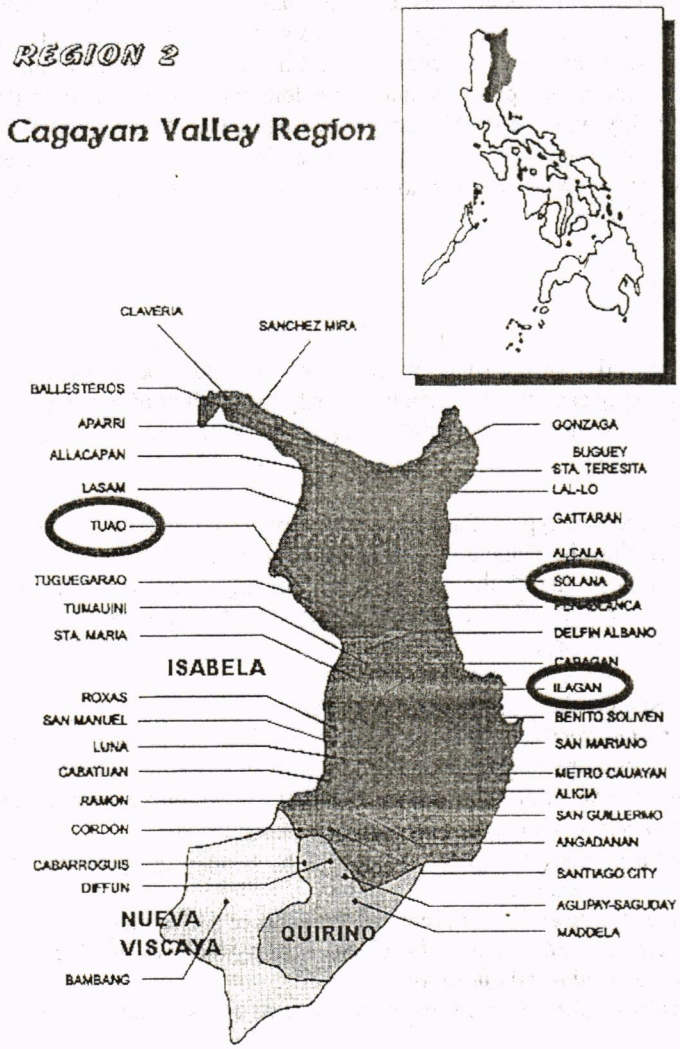

Figure 1. Map of Region 2

The actual survey was conducted only in the province of Cagayan and Isabela, where rice produce is dominant, as well as the phenomenal existence the "kuliglig". These modes were

used to aid agricultural production. The other three provinces were not considered since they are upland areas, and the existence of the "kuliglig" is insignificant.

There are three selected target municipalities considered in the study areas, one belonging to the province of Isabela, which is Ilagan, comprising of about 91 barangays. On the other hand, the two municipalities in the province of Cagayan are composed of Tuao East having 18 barangays and Solana comprising of 38 barangays. The total number of barangays considered for the inventory of the "kuliglig" is 147 (See Figure 1).

The classification of municipality was identified based on their socio-economic status. The municipalities were selected primarily on the basis of the rural-urban ratio of its population and its revenues such that they are primarily rural in character and representative of different revenue classes. One municipality, which is predominantly urban, one predominantly rural and one municipality within 10% of the median. Ilagan, Isabela is a municipality close to the urbanized center or poblacion; Solana, Cagayan is a municipality adjacent or near the provincial capital, which is Tuguegarao while Tuao, Cagayan is a municipality located far from the provincial capital.

4. METHODOLOGY

As part of the objective of the study, actual count was undertaken through a key informant interview of barangay captains or officials to verify the number of existing "kuliglig" in each municipality. The inventory is essential to determine the extent of the mode's proliferation and usage.

The study employed two types of survey on the drivers and operators of the "kuliglig", both intended to determine the vehicle operating characteristics of the vehicles and the income-generating potential of the "kuliglig" used for passenger transport. First is the household survey and the other is the field interview survey. On the field interview survey, however, the household information was not captured.

The following were the data gathered:

- ***Trip Information:*** Origin-destination of previous trips; time-started operation; trip purpose; travel time; distance traveled number of passengers; types & weight of load
- ***Household information*** (for home interview survey only): income-level; location of residence and the number of years in the said residence
- ***Personal information***: age, sex, civil status, occupation; personal monthly income; existence of drivers license
- ***Transport Practices*** (owned, rented): total cost of the vehicle
- ***Road accident profile***: cause of accident, kind of damages involved
- ***Over-all perception on operation***
- ***Accessories of the vehicle***: tires; brake system; horns or signaling device; headlights; taillights

Interviews were also undertaken on local government units to determine the policies and regulations that govern the existence of these vehicles and other general observations.

5. FINDINGS

5.1 The History of the "Kuliglig" and Its Features

One predominant mode of intermediate transport used by farmers is the "kuliglig", possibly named after the sound it emits. The "*kuliglig*" is a motorized vehicle comprising of a two-wheeled trailer pulled by a hand-tractor loaded with passengers and their cargo. Its engine is the kind that runs motorized bancas, which allows it to lug around a fairly good amount of weight, but at a very slow speed. It was originally intended to help the farmer carry his produce from his field to the market very much like an animal drawn wooden cart (See Figure 2).

The early versions of this hybrid vehicle did not include brakes. Stopping consisted of cutting off the power of the tractor, and the male passengers jumping off as it slowed down and concertedly pulling back the trailer. The later editions are now equipped with brake pedals attached by cables to brake drums in the trailer wheels. As the operator steps on the brakes he switches a level, which disengages the belt connecting the trailer's axle from the tractor motor (Garcia: 1995).

Later, the kuliglig started to be used to ferry people from the sitios to town or the other barrios. Its usage plays an important role in transport services, rather than being exclusively used for personal travel. It can be good help in bringing the farmer, members of his family, and their neighbors to the main road where they can get rides to town.

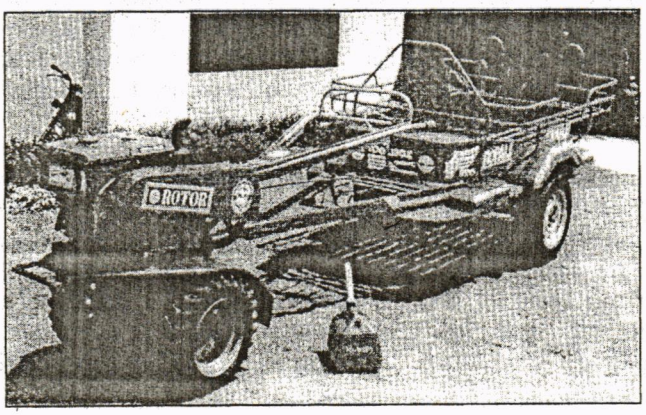

Figure 2. The Typical "Kuliglig"

5.2 Legal Basis and Assessment of Vehicle Accessories

By law, every motorized vehicle has to be equipped with safety devices in order to be mixed with traffic along major roadways. The provisions of the Philippine Legislature Act No. 2159, an act to legislate motor vehicle traffic in the Philippine Islands clearly states that all vehicles passing through national roads should be registered, the drivers must secure a license to operate and that all vehicles on highways must carry appropriate safety devices to make their presence prominent in the road, especially during nighttime.

Republic Act 4136 otherwise known as the Land Transportation and Traffic Code explicitly shows safety requirement for motorized vehicle plying the national roads such as:

- ***Tires of Motor vehicles***. No motor vehicle with metallic tires shall be operated upon any public highway, and solid tires whenever used shall be of sufficient thickness to prevent the metal rims thereof from coming in direct contact with the road.
- ***Horn***. Every motor vehicle shall be provided with a horn or signaling device in good working order.
- ***Headlights***. Every motor vehicle of more than one meter of projected width, while in use on any public highway shall bear two headlights, one on each side, with white or yellowish light visible from the front.
- ***Taillights***. Every motor vehicle and trailer shall also bear on each side in the rear a lamp showing a red light visible at least one hundred meters from the rear of the vehicle and a lamp throwing a white light upon the number plate issued for each vehicle.
- ***Stop Lights***. Every motor vehicle shall be equipped at the rear with at least one lamp, which shall throw a sustained bright red light visible under all conditions, even under bright sunlight, when the brakes are applied.
- ***Lights when parked or disabled***. Appropriate parking lights or flares visible one hundred meters shall be displayed at a corner of the vehicle whenever such vehicle is parked on highways or in places that are not well-lighted or is placed in such manner as to endanger passing traffic.
- ***Mufflers.*** Every motor vehicle propelled by an internal combustion engine shall be equipped with a muffler, it shall not be cut out or operated in such a manner as to cause it to emit or make any unnecessary or disagreeable odor, smoke or noise.

The "kuliglig" apparently does not comply with the provisions of the law since they do not possess the appropriate accessories prescribed as such. From the survey, most of the "kuliglig" in operation had damaged headlights, ineffective hydraulic brake system, lacking taillights and horns. With lacking vehicle accessories alone, the "kuliglig" cannot be mixed with the traffic along major roads.

However, improvement of the "kuliglig" features would be necessary to increase its terrain performance given the constraints relating to poor infrastructure. The most common repairs of the vehicle were due would be breakage of tires and the brake system. The farmers attributed these frequent repairs to the conditions of the roads, and only reluctantly admitted to overloading their vehicle. With an improved design, it might be easier to transport domestic loads. Thus, with more versatile carrying aids and safety devices, the potential usage of "kuliglig" could be extended in remote municipalities. The following improvements are suggested.

- Strengthen the rear wheels to reduce the frequency of breakage. Since the "kuliglig" are employed in rugged terrain, it usually carries heavy loads; damage to rims and punctures of tires are common occurrences.
- The 2-wheeled trailer should be strengthened for bulkier and heavier loads. The condition of the road over which the "kuliglig" is ridden influences the size of the load that can be carried. Riders are frequently seen pushing the "kuliglig" over stretches of poor road.
- The "kuliglig" should maintain a hydraulic brake system; for vehicles not equipped with such, the vehicle should be upgraded. On the average, due to overloading, the hydraulic brake system of the "kuliglig" would only last for about 6 months. The driver/operator would result to conventional brake to stop the vehicle.

- Improvised horns or signaling device should be installed. The "kuliglig" at present do not maintain horns because the noise it emits already signifies it presence.
- At least 1 working headlight should be carried so that it shall be visible forward or ahead of the vehicle. The headlight of the majority of the "kuliglig" is damaged, and farmers do not dare replace it for the reason that they only use it only during the day.
- The trailer should be provided with reflectors displayed at the back so that at least it will be visible from the rear of the vehicle. Based form the vehicle inspection, no taillight or even reflectors is installed at the back of the trailer.

Another issue concerning the operation of "kuliglig" is whether or not they are allowed to operate along public roads particularly on national roads. According to the law, unregistered vehicles should not be intended to operate or used upon any public highway operated by the government. In Figures 3 and 4 shows the operation of the "kuliglig", the thick line represents national roads where it has been seen plying. Local government units appear to condone its operations as there are no policies or ordinances governing its operation. It has also reportedly caused a number of accidents on the road killing passengers and pedestrians. More often, these farmers were unlicensed drivers if not outright minors.

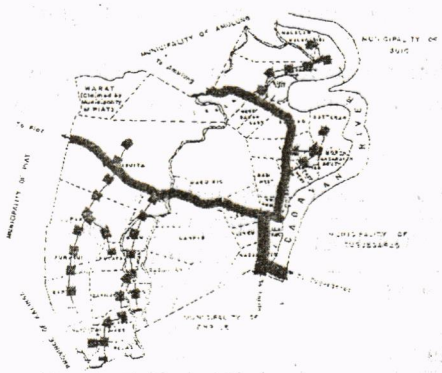

Figure 3. Map of Solana, Cagayan

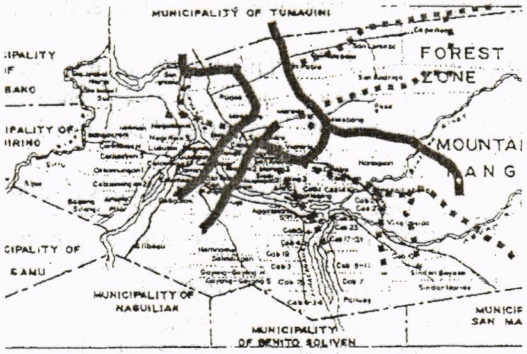

Figure 4. Map of Ilagan, Isabela

The operation of "kuliglig" along national roadways should be a no-no. Mixing it with other public passenger service and private vehicles could create traffic due to its configuration, dimension and low operating speed. As such, they should only be allowed as localized form of transport servicing only minor roads such as the barangay roads and would serve as a link to access motorized vehicles to adjacent municipalities. Again in Figures 3 & 4, the dotted lines representing barangay roads should only be the allowed roads where the "kuliglig" can operate to serve as a link to the major road.

5.3 The Inventory of the "Kuliglig"

The rural transport situation in the Philippines is of far greater complexity than is shown in most traffic surveys. Most surveys are conducted along roadways, and usually records only motorize traffic. They ignore the large number of informal means of transport such as pedestrians, bicycles, pack animals and animal-drawn carts. Motorable roads comprise only a small portion of the rural transport and travel network. There exists vast but unmeasured networks of tracks, paths, and trails linking scattered villages with each other and the fields in which women, children, and men and the bulk of their work.

A part of the gap in data is caused by the fact that even on motorable roads, non-motorized transport and travel are not recorded or counted. The impact of this would be evident when one examines traffic statistics on rural roads for which all movements are recorded.

Traffic counts serve as an indicator of the extent to which people travel by motor vehicles in rural areas. The Department of Public Works & Highways is the agency tasked to perform annual volume counts of all vehicles passing along national highways in central or coverage stations. From the secondary data, the 1996 ANNUAL AVERAGE DAILY TRAFFIC (AADT) computed out on some representative roads in Region 2 included the daily count for car, jeepney, mini bus, big, rigid truck, articulated truck and others for the period of one week. However, other classification of vehicles not included above was grouped as "OTHERS", which led to the assumption that these vehicles included motorized (e.g. motorcycle), non-motorized (e.g. kalesa, pedicabs & bicycle) and other informal transport modes such as that of the "kuliglig".

There were about a total of 82,698-recorded vehicles in the 1996 AADT belonging to car, jeepney, mini bus, big, rigid truck, and articulated truck. For the classification of "OTHERS", 19,374 vehicles were recorded. This goes to show how extensive is the use of non-motorized transport modes and other informal transport in rural areas such as Region 2.

An inventory of the "kuliglig" through a key informant survey per target municipality is essential in order to capture the difference in terms of number of existing kuliglig per barangay level in the study areas (See Table 2).

Table 2. Inventory of "Kuliglig" based from the Key Informant Survey

MUNICIPALITY	LAND AREA	POPULATION (1995)	INVENTORY of the KULIGLIG
Ilagan, Isabela	16,404,485	109,785	622
Solana, Cagayan	54038333	64,526	165
Tuao East, Cagayan	7135428.763	20,745	242

In Table 3, note that the barangays were classified according to their relative accessibility. That is, 1) *most "accessible"* barangay served by all-weather feeder roads whether dirt or gravel road; 2) *relatively "accessible"* barangay serviced with a feeder road but which are usable only during the dry season, or become impassable during heavy rains or wet season; and 3) *least "accessible"* barangays are those that can be reached only on foot, by ways of trails and footpaths.

Table 3. Classification of Barangays Per Municipality

MUNICIPALITY	Total Number of Barangays	Number of "most accessible" Barangay	Number of "relatively accessible" Barangay	Number of "least accessible" Barangay
Ilagan, Isabela	91	14	47	27
Solana, Cagayan	38	14	12	12
Tuao East, Cagayan	18	2	6	10

The significant growth of "kuliglig" identified per barangay level could be seen on *relatively "accessible"* barangays, these barangays could become impassable during heavy downpour. The accessibility problems of these barangays would include poor road condition, bad or

poorly maintained roads, inefficiency and the unreliability of public motorized transport. Public passenger services are reluctant to penetrate least accessible barangays most in need of accessibility. Jeepney operators and tricycles are reluctant to run their services over indifferent surfaces since the increased running costs cannot be recouped from revenue. Moreover, public transport services are operated in a small-scale undertaking – that is why "kuliglig" can be seen to service transport activities aside from being used for agricultural purposes. Being low-cost in nature and a very versatile carrying-aid, the vehicle was adapted to rugged terrain where a number of rural settlements are located.

It is apparent that barangays near the town center have the least number of "kuliglig" as evident in the inventory. These barangays are accessible to public transport modes such as tricycles, jeepneys and other non-motorized modes in their respective municipalities.

5.4 Operating Characteristics & Other Trip Information

The conduct of survey was undertaken in the months of November and December 2000 where it was the start of the planting and the harvesting season for farmers. The kuliglig are classified into 'private' and 'public' in discussing the vehicle operating characteristics (See table 4). There are 39 samples classified under the private use. Vehicles in this category are used solely for farm purposes and other transport activities of the household.

On the other hand, "kuliglig", used for public passenger service are vehicles used to ferry passengers in the local market and ferrying students also to local school. There are about 27 samples out of 66 samples (See Table 4). The survey found that the operations of the "kuliglig" used as a public mode can be seen only in the municipality of Tuao. The rest of the target municipalities such as Ilagan, Isabela and Solana, Cagayan use the "kuliglig" for private use such as trips to the farm and other private use of the household.

Table 4. Type of Vehicle Usage

TYPE OF USE	SAMPLE
private	39
public	27
total	66

There are two types of survey employed: the household interview and the field survey. The origin and destinations links of all previous trips were recorded during the conduct of the interview survey. It aimed to look at the pattern of trips of the "kuliglig". As a result, almost all "public" vehicles use the vehicle daily, as they are to ferry passengers. In Figure 5, private vehicles are used mostly in the farm especially during the planting and harvesting season, lasting for about 4 months. This goes to show that the "kuliglig" usage is dependent most primarily on farm activities. Otherwise, the vehicle is used for other domestic errands of the farmers.

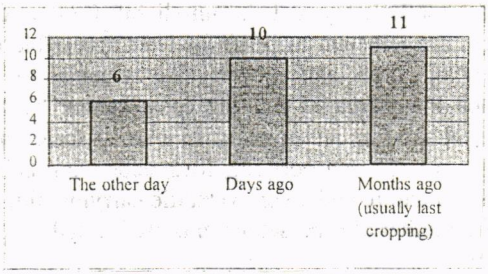

Figure 5. Vehicle Last Used for Private

The number of previous trips per day was considered to determine the extent of usage of the "kuliglig" per origin to destination. In Figures 6, the number of trips for private vehicles was recorded during its last day of operation, there are about 15 samples that have 2 trips per day and the other 8 samples have 4 trips per day. Usually, farmers start going to the farm early in the morning and go home in the afternoon since their farmland is far from their home. Other farmers where their farms are adjacent to their homes go home at lunchtime and go back to the farm at noontime to tend to their farm activities.

In Figure 7, for public vehicles, there are 29 samples having 2 trips, these are usually "to market" trips taking place in the morning. While the nine samples have 4 trips per day catering for school-bound trips ferrying students in the local school early in the morning and fetching them late in the afternoon.

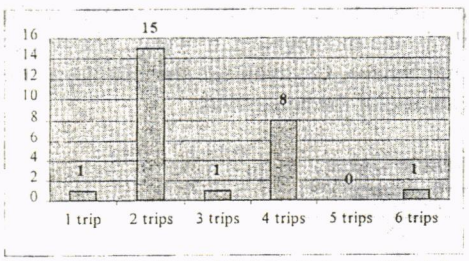

Figure 6. Number of Trips: Private Vehicles

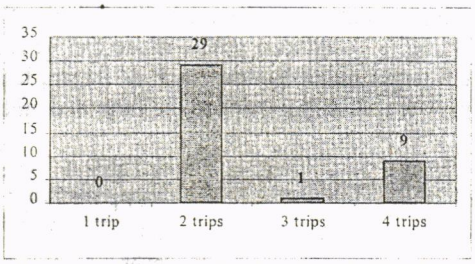

Figure 7. Number of Trips: Public Vehicles

In Table 5, almost all trips were undertaken within the bounds of their own municipality, except that of 2 operators/drivers captured in the field survey coming from adjacent municipality where the purpose of trip was to procure goods in the market. This is when they were seen plying the national or provincial roads coming from different municipalities.

The start of operation is usually between 6AM to 7AM for private vehicles going to the farm. Public vehicles on the other hand, start their operation at 5AM to 6AM, a little earlier compared to private vehicles as they are used to ferry students to the local school. (See also Table 5 for the classification of trips for public and private vehicles).

Table 5. Trip Information

TYPE OF USE	ORIGIN	TIME STARTED OPERATION
PRIVATE	2 samples came from different municipalities	59% bet 6:00-7:00 AM
PUBLIC	All samples coming from different barangays	40% bet 5:00-6:00 AM

Originally, the "kuliglig" is primarily used in the farm as shown in the Table 6 for private vehicles. Other transport tasks of the household would include trips to market and other domestic activities. For public vehicles, as they have used as a public passenger service, majority of the trips would be to trips to local market and trips to the local school. The vehicle is also used on for-hire basis as they are rented to load inputs from the farm.

Table 6. Purpose of Trip

TYPE OF USE	TRIP PURPOSE
PRIVATE VEHICLES	74% to farm; 11% to market; 15% others household activities
PUBLIC VEHICLES	54% to ferry passengers in the market; 28% to ferry students; 18% others

Figures 8 to 11 would include photos taken during the ocular inspection and the actual household interview and field survey.

- In Figure 8, the "Kuliglig" terminal is located in Tuao East Public Market. The vehicle is used as a public transport coming from different barangays of the locality servicing market trips.
- Figure 9 shows the actual operation of the "kuliglig" carrying passengers in its trailer. As they are rampant in least accessible barangays, they ply along rugged terrain.
- Figures 10 and 11 would show the primary purpose of the vehicle as they are used for agricultural production. As shown in Figure 10, the "kuliglig" is carrying sacks of rice going to the grinding mill. In Figure 11, the vehicle carries farm equipments used for tilling the land during the planting season.

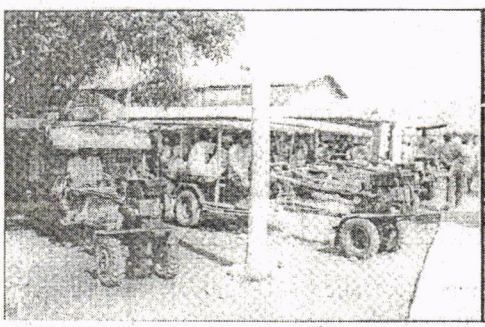

Figure 8. The "Kuliglig" Terminal

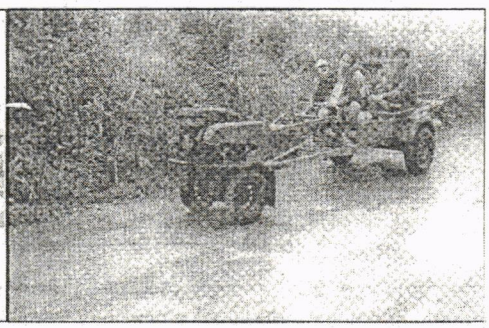

Figure 9. The "Kuliglig" Ferrying Passengers

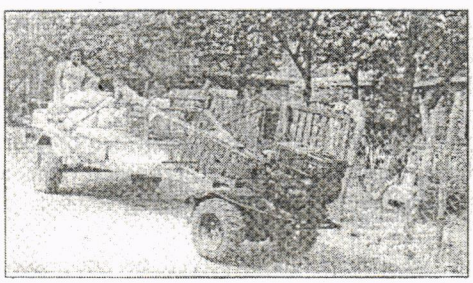

Figure 10. The "Kuliglig" Carrying Farm Produce

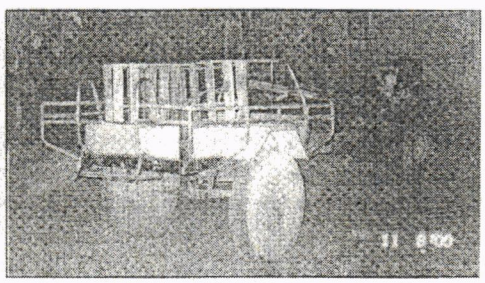

Figure 11. The "Kuliglig" carrying Farm Equipments

Other trip information would include the actual travel time per one trip, number of passengers and goods/loads carried. In Table 7, the total travel time per one-way trip is 30 minutes from origin to destination of both private and public vehicles. This is because the majority of trips undertaken require only short distances serving either home to market trips or home to farm trips.

For the number of passengers, private vehicles carry about 1 to 3 passengers, usually are household members. On the other hand, public vehicles carry about 8 to 15 passengers either students or adults. On the loads or goods carried, private vehicles use the "kuliglig" to carry their farm implements, and other loads would water, firewood and goods purchased in the market. On the other hand, public vehicles usually carry goods purchased by passenger from their market-trips.

Table 7. Trip Characteristics

TYPE OF USE	TRAVEL TIME PER TRIP	NUMBER OF PASSENGER	OTHER LOADS/GOODS
PRIVATE VEHICLES	73% 1-30 min	majority carrying 1-3 people	37% farm equipment
PUBLIC VEHICLES	54% 1-30 min	majority between 8-15 passengers	none

5.5 The Profile of Driver/Operators

In Table 8, for the personal information of operators/drivers, the age bracket of most drivers/operators belongs to the age group of 35 to 39 years old and that majority of them are married. In terms of occupation, almost all operators/drivers are farmers with no other source of income.

Table 8. Personal Profile of Drivers/Operators

TYPE OF USE	AGE	CIVIL STATUS	OCCUPATION
PRIVATE VEHICLES	35-39 yrs old	89% married	93% are farmers
PUBLIC VEHICLES	35-39 yrs old	72% married	all are farmers

Unlike vehicle used for private use, the income generating potential of used as public vehicles has been developed when they are used as public passenger service. This has been an important venue for farmers to earn a living with an average earning of PhP 2,000 to 3,000 a month. The fare of passengers would depend on the distance of the barangay where the "kuliglig" operate tending to market or school trips. Normally, the passengers would pay a fare of PhP10 for distances ranging from 6 to 8 kilometers. Operators/drivers give consideration to students where they pay only half of the fare.

In other cases, the kuliglig operators/drivers operate in "for hire" basis, such that they are being rented by other farmers most especially during harvest time to transport their crops to the grinding mill or to load farm inputs, the service is often based on a mutual agreement.

In Table 9, the operators/drivers of the "kuliglig" whether public or private do not possess the license to operate on major roads prescribed by the laws governing land transportation. Originally, they are not required to secure license to operate so long as they would not be plying on roads maintained by the government and should be used only for farm to market trips.

Table 9. Other Information of Drivers/Operators

TYPE OF USE	PERSONAL INCOME	LICENSE TO DRIVE
PRIVATE VEHICLES	majority have no other source of income	20% professional
PUBLIC VEHICLES	between 2,000 to 3,000 per month	5% professional

Household size for private vehicles ranges between 4 to 7 household members. However, the household size for public vehicles could not be ascertained from the field survey. Regarding household income, as majority of the respondents are farmers, their income is highly dependent on cropping season. This usually takes place within a 4-month period of planting & harvesting. From the data on Table 10, the household income of both private and public vehicles goes as high as PhP 26,000 only per cropping season. The monthly earning of the farmer who is the breadwinner of the household would only be as high as PhP6, 500 if converted per month based on the earning from the cropping. Considering the average household member of 4 to 7, the earnings of majority of farmers

Table 10. Household Information

TYPE OF USE	TOTAL HOUSEHOLD MEMBERS	HOUSEHOLD INCOME per cropping
PRIVATE VEHICLES	majority between 4-7 members	up to 26,000 only (51%)
PUBLIC VEHICLES	not applicable	up to 26,000 only (53%)

For private vehicles, the number of years in residence ranges up to 8 years. On other vehicles owned, 52% have no other type of vehicle besides the "kuliglig". Some farmers however have non-motorized such as bicycles. Again, no data were available for public vehicles, as they were not covered in the household survey.

Table 11. Other Household Information

TYPE OF USE	NO OF YEARS IN RESIDENCE	OTHER VEHICLES OWNED
PRIVATE VEHICLES	majority between 0-8 years	52% none
PUBLIC VEHICLES	not applicable	not applicable

In terms of transport practices, almost all vehicles are owned by the operators/drivers. However, there are instances where the vehicle is communal or belonging to the household. Extended families are a common practice in the rural areas where in some case two families or even more stay in the same household. Thus, the whole family would use the "kuliglig".

The purchase of "kuliglig" would be materialized when farmers receive a lump sum of money out of the harvest of cash crops since there are limited credit schemes available for farmers to procure the "kuliglig". This is especially true for private vehicles because they bought the "kuliglig" on their expense. However, only 33% among public operators/drivers bought the vehicle out of their personal expense. The remaining percent would be those that were acquired on loan-basis from credit institutions such as banks, agencies of the government such as the Department of Agriculture and machineries or suppliers of "kuliglig" itself.

Table 12. Vehicle Practices

TYPE OF USE	VEHICLE OWNERSHIP	CREDIT INSTITUTIONS
PRIVATE VEHICLES	55% owned by driver/operator	82% personal expense
PUBLIC VEHICLES	74% owned by driver/operator	33% personal expense

5.6 Road Accident Profile & Perception on Regulation

No accident occurrences were gathered from the records of the local police in the study areas. However, vehicular accident involvements were asked from the operators/drivers of the "kuliglig" for the last year. In Table 13, the road accident profile is seen as quite insignificant since the data shows no fatal accidents brought about by these modes. The most common cause of minor vehicular accident is due to mechanical breakdown of the machine

Table 13. Road Accident Profile

TYPE OF USE	VEHICULAR ACCIDENT INVOLVEMENT
PRIVATE VEHICLES	2 respondents have minor accident
PUBLIC VEHICLES	1 respondent have minor injury

The issue on legitimization of the "kuliglig" was asked from the operators/drivers themselves. Such concern would be on the willingness of operators/drivers to secure their license to operate given the chance that they may be allowed to ply along major roads of the country. Based from their perception on regulation, 70% among private operators/drivers are not in favor of securing license to operate. According to them, the vehicle is only used for farm purposes and so there must be no need for regulation. Securing of license to operate is a financial burden for them given their meager income.

On the other hand, the local government of Tuao, Cagayan have been issuing operating permits for drivers/operations since 1996. The "kuliglig" have been the major transport mode servicing remote barangays of the municipality. Operators/drivers pay an annual fee of PhP 498 for the mayor's permit fee, municipal license and registration fee so that they maybe able to ferry passengers. However, it has caused contentions regarding operators/drivers who already have municipal permits to operate to that of other drivers/operators who keeps on ferrying passengers without securing permit to operate. From Table 14, 51% are in favor of regulation so that all "kuliglig" used as passenger public service should be obligated to secure permit to operate on the municipal level.

Table 14. Perception on Regulation

TYPE OF USE	YES/NO
PRIVATE VEHICLES	70% not in favor of regulation
PUBLIC VEHICLES	51% not in favor of regulation

As shown in Table 15, the cost of vehicle inclusive of the machine, transmission and trailer, fall between PhP 30,000 to PhP 40,000. On age of the engine, majority of private vehicles' engines has ages of five years and below in operation. On the other hand, the engine of public vehicles is relatively new, ranging up to 2.5 years of age.

Table 15. Total Vehicle Cost & Age of Engine

TYPE OF USE	TOTAL VEHICLE COST	AGE OF THE ENGINE
PRIVATE VEHICLES	majority bet 30,000 to 40,000	majority up to 5 years
PUBLIC VEHICLES	majority bet 30,000 to 40,000	majority from 2.5 to years

In terms of vehicle accessories (See Table 16), majority of the tires are up to 1.5 years of age. For the brake system of private vehicles, majority has brake pedals attached by cables to brake drums in the trailer wheels (67%), while 22% are hydraulic. The braking system of 41% of public vehicles is conventional, relying on friction like wood to stop the vehicle. The other 44% have brake drums. Majority of the vehicles either or have damaged headlights. Also, these vehicles do not have taillights.

Table 16. Vehicle Accessories

TYPE OF USE	AGE OF TIRES	BRAKE SYSTEM	HEADLIGHT
PRIVATE VEHICLES	majority up to 1.5 years	67% brake drum, 22% hydraulic	74% damaged
PUBLIC VEHICLES	majority up to 1.5 years	44% brake drum, 41% conventional	54% damaged

6. CONCLUSIONS

As shown in the inventory, the major factor that affected the proliferation and the increasing number of "kuliglig" in the study areas would be accessibility. Relatively accessible and least accessible barangays serviced with a feeder road but which are usable only during the dry season, or become impassable during heavy rains or wet season and areas that can be reached only on foot, by ways of trails and footpaths have the most number of "kuliglig". Consequently, these could be attributed to poor road condition, infrastructure and poor public transportation services, which has triggered the growth of the "kuliglig".

The "kuliglig" can be classified as those that are being used for public and private use. Originally, it has been intended only to cater for to-farm trips and other domestic tasks of the household. However, it was later used as public passenger service for barangays that are least accessible. Its operations would include trips servicing to-market and to-school trips, where it became a venue for operators/drivers to generate income for ferrying passengers. This vehicle was adapted to rugged terrain where a number of rural settlements are located since public transport are reluctant to penetrate remote areas most in need of accessibility.

On the issue on whether or not they are allowed to operate on public roads, the law governing land transportation and traffic code in the country clearly states that motorized vehicle should be equipped with vehicle accessories in order to be mixed with the traffic along major roadways. From the assessment of the features and accessories of the "kuliglig", the vehicle lacks the appropriate features to be mixed with the traffic along public roads such that they have damaged headlights, no taillights, ineffective braking system and inappropriate signaling device. If upgraded to comply with the provisions of the law, its low operating speed, maneuverability and configuration cannot enable the vehicle to pass the vehicle registration requirement of the government

Notwithstanding the benefits it brings to the rural residents, the "kuliglig" is still not suited to ply on public roads, especially on national highways. It should only be allowed to operate as a localized transport where it would require short-distances and as a link to access motorized vehicles to adjacent municipalities. Local government units should enact ordinances to provide for the regulation of the "kuliglig" within the municipality. Such provisions would include fees and charges, route selection and terminal facilities.

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