

## QUALITATIVE STUDY ON THE SHORT-TERM ECONOMIC IMPACTS OF THE NEW BYPASS ROAD ON TSIMASHAM CORE AREA BUSINESSES, CHUKHA, BHUTAN

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**Abstract:** A relief route or bypass's impact on the town's economy is not significant for medium and large cities than in comparison to the small towns. Though there are positive impacts, such as less noise, traffic, and peace, business people in the town fear that it will impact their sales, and property value will decline. Research studies indicate that other factors affect the economy of a bypassed town in addition to the size of the population. The outcomes of the studies are neither consistent nor conclusive across locations; however, the most negatively impacted are small towns dependent on highway traffic. This paper seeks to study the economic impact on small towns through the study of Tsimasham, where Chukha-Damchu's new bypass road became operational with effect from July 18, 2018. Survey questionnaires were used to interview the business people in the Tsimasham core area. The findings confirm most of the earlier research results of small towns that businesses in the Tsimasham core area are adversely impacted. There are also other issues such as the lack of commuting options for the residents as public transport or taxis barely enter the town. This could be due to the geographical isolation of the town as it is located at a higher level than the new bypass road.

**Key Words:** *highway bypass, economic impact, small towns, Tsimasham.*

### Introduction

The investment in efficient and safer roads has direct and indirect impacts on the local or regional economy (Andersen et al. 1993, Otto and Anderson 1995, Seggerman and Williams 2014). The road provides access to the outside world for merchandise and services. Transport investment does not always bring in a positive experience for all. A synopsis of studies in the 1970s and 1980s concludes that other factors affect economic growth at regional level, besides the highway (Andersen et al. 1993). The effects of transportation enhancement are not easy to forecast when the economic systems are well integrated. As part of the transportation network, highway bypasses are developed to shorten the travel distance and the time. Though it brings in several benefits to the bypassed town, there are also fears among the business people that it will impact their sales. Research studies have also shown that small towns dependent on bypass traffic are mostly adversely affected, often leading to a devastating situation. In Bhutan, recently, there has been news in the media on the businesses affected in the Tsimasham core area due to Chukha-Damchu's new alignment bypass road. This paper is on the economic impacts of the new bypass on the Tsimasham core area.

The Tsimasham Yenlag Thromde (satellite town) is located along Thimphu-Phuentsholing Highway in Chhukha District, Bhutan (Fig. 1). It is an administrative headquarters of the Chukha District and it has an area of 192.66 acres with a total population of 2135 (National Statistics Bureau 2018). It is about 81 km from Thimphu and about 91 km from Phuentsholing. Thimphu is the capital of Bhutan and Phuentsholing is the commercial hub located in the southern part of Bhutan and it has a border with the Indian town of Jaigaon. The other towns between Thimphu, Tsimasham, and Phuentsholing are Chukha, Darla, and Gedu towns.

The Tsimasham Satellite town comprises three pockets, namely the old Dzong (fortress) area, Tsimasham area, and Tsimalakha area, connected by the Thimphu-Phuentsholing Highway (Ministry of Works and Human Settlement 2015a). The three pockets of the areas are served by two small commercial cores located in Tsimasham and Tsimalakha, respectively. The study area for this research is the commercial core in the Tsimasham area, and herein it will be called the 'Tsimasham core area' (Fig. 2), as the bypass has been diverted from this area. The Tsimasham core area was dependent on highway traffic as the bus or other vehicles stop for meals and breaks before the new bypass. On July 18, 2018, a 29.19 km new bypass (Chukha-Damchu bypass) road opened for traffic, which shortened the distance between Phuentsholing and Thimphu by 19.5 km and the travel time by more than an hour. The new bypass is constructed from Damchu, which is 38 km from Tsimasham (towards Thimphu) to Chukha town, which is about 9 km from Tsimasham towards Phuentsholing (Ministry of Works and Human Settlement 2015b). There is a road connection from the old Dzong area to the new highway bypass. The new bypass construction entailed the removal of over 2500 meters of hard rock and it traversed over difficult topography as per Bhutan's former Prime Minister report during the road inauguration. Less than two weeks after opening the road for traffic, i.e. on July 30, 2018, there was a roadblock due to a continuous rainfall causing the boulders to fall on the road and another block in the following month. The roadblock was cleared and, during the block, the traffic was diverted half-way towards the old route as per the Kuensel report (Bhutan National Newspaper). The travelers have to travel cautiously, especially during the summer months. The road is proposed to be widened by 10-15 meters along with protection works to prevent mishaps, as per the official information from Project Dantak which was involved in the construction of the road.

Geographically, the satellite town is perched on the sloping mountain and the new highway bypass has been constructed at a level lower than the town level, leaving out completely the Tsimasham area. The Tsimalakha core area remains unaffected by the bypass road as it was not connected directly to Thimphu-Phuentsholing Highway. The Tsimasham town does look deserted during the site visit in December 2018, as there are almost no buyers or vehicles visible on the old highway route. As the total population is about 2135 people for the satellite town area, the population residing in the Tsimasham area is only little over 1000 people.

The study of the economic impact of the bypass on Tsimasham core area businesses is at an appropriate time as it includes an analysis on the period of less than a year since the opening of the bypass for traffic and the economic impact tends to occur within the first year (Parolin 2012). Moreover, this research paper will guide to proactively improve the existing situation of the commercial core through local government intervention or an urban development plan proposal and its implementation. This research paper will contribute to the existing knowledge base on the economic impacts of highway bypass on small towns that are geographically isolated and in proximity to another competing similar type of commercial core.

The paper consists of the introduction followed by the literature review of the economic impacts of the bypass on towns/cities along with other impacts. It will be followed by the methodology, results, and discussion, and finally the conclusions.

#### *Literature Review*

As a part of a transportation network, highway bypasses/highway relief routes are constructed to divert traffic from certain areas, mostly from the core of the town. The main reasons for the provision of the bypass are to reduce travel time, to improve traffic flow, and to minimize traffic accidents (Leong and Weisbrod 2000). Srinivasan and Kockelman (2000) highlight that planners identify the development of a bypass with mobility enhancement and as a contribution to the regional economy. Highways bring in new business opportunities, improve business



Fig. 1 - Bhutan districts, showing the approximate location of the study area – Tsimasham  
Source: Wikipedia (2019)

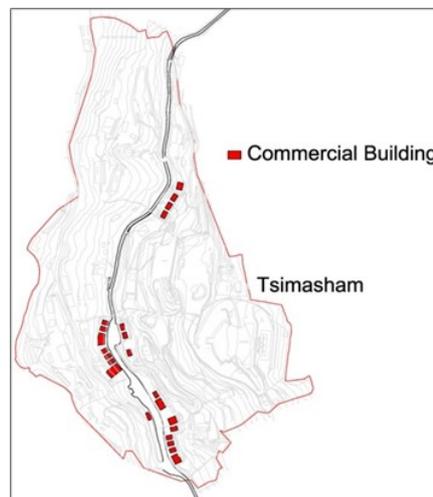
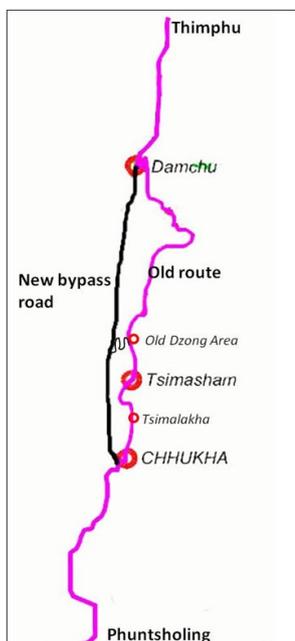


Fig. 2 - Tsimasham core area with the new bypass road (L) and Tsimasham commercial buildings (R)  
Source: Ministry of Works and Human Settlement (2019)

access, reduce travel time, minimize traffic congestion, and enhance the quality of life (Transportation Research Board 1996, Handy et al. 2002). Despite the benefits, the majority of business people dread that the bypass will negatively impact their sales and the properties' value will decline (Babcock and Davalos 2004, Plaut and Deakin 2006, Parolin 2017). However, it was found that the travelers' purchases were very less (IADOT 1992, Pettit 2007). The majority of the business people were of the view that the bypass adversely affects sales and employment and that it had adverse impacts on the overall town (Babcock and Davalos 2004). Studies from the 1950s and the early 1960s prove that bypasses are economically and socially desirable, though there are momentary adversities that are minor in comparison to the benefits they bring (Missouri State Highway Department 1961, Winfrey 1969). Although the highway bypass affects the communities both positively and negatively, most of the communities eventually recognize that the bypass is vital and advantageous (Otto and Anderson 1995, Srinivasan and Kockelman 2000, Thompson et al. 2001, Handy et al. 2002, Phibbs et al. 2009, Nevada Department of Transportation 2018).

Most of the prior studies concentrated on the economic aspects of bypasses (Mills and Fricker 2011). Highway bypasses were seen to have a minimal negative influence on the overall economic activity of most of the communities (Yeh et al. 1998, Srinivasan and Kockelman 2000, Gaffney et al. 2017). Studies by Yeh et al. (1998), on 17 Wisconsin Communities bypassed by the State Highway since 1980, highlight that there is little proof that bypasses cause a negative impact on a community's economic growth. But it is not that the highway does not impact commerce to some extent. Traffic-related businesses are affected the most due to traffic diversion. In other sectors, Fricker and Mills (2009) found no major change in the population, employment, and retail business, in most communities, after the bypass construction. Conversely, the negative impact of a bypass on employment and payroll was discernible in the first 15 years after the opening of the bypass for some sectors, while it was not discernible for other sectors, even after 20-25 years. It further highlights that the impact of a bypass on employment and payroll is generally not expected before 15 years of the bypass being operational. Statistically, as per Babcock and Davalos (2004), the bypass did not have a substantial positive or negative effect on the overall employment of the bypassed towns. The studies in Kempsey and Frederickton discovered that the bypass has a considerably minimal negative impact on employment and gross annual return (Parolin 2014, Parolin 2017). Half of the businesses that experienced a decline in turnover had adjusted following the bypass operation through advertising, diversification, and improving services. Other businesses "adopted a wait and see attitude" (Parolin 2014: 3). There is no substantiation that the bypass has directly led to the closing down of businesses (Handy et al. 2002, Plaut and Deakin 2006), but it is evident that studies on the effects of highway bypasses are neither "uniform nor conclusive across locations" (Andersen et al. 1993: 145).

Researchers have indicated that there are often complicated factors that affect the economic activity at the local level and it is difficult to statistically conclude (Transportation Research Board 1996). Some of the influencing factors indicated in earlier studies were the nearness of the bypass city to another similar city or a larger city, the distance between the old route and the new bypass highway (Andersen et al. 1993), and urban demographics (Srinivasan and Kockelman 2000). Studies carried out in the United States in the early 1960s (45 bypass studies out of 70) were reviewed by Horwood et al. (1965) and they concluded that town size is probably the main indicator of economic changes brought in by the bypass. It was further added that though the town size was crucial in accessing the impacts of bypasses, it was not the only cause of the towns' future decay. A recent study cites additional factors like the national economy, geography, type of road alignment, and government policies (Handy et al. 2002). Among the factors, the geographical factor was found to be the most important element that has a significant impact on how the bypass will affect the community. Other factors are the 'urban design quality' of the bypassed town and the 'existing communities issues' (Phibbs et al. 2009: 7-8, Elias et al. 2006). Parolin (2012) concluded, through the study of three Australian

communities, that the level of dependence on the highway is a more important factor than the community size in finding the economic conditions after the bypass.

In terms of community size, the new bypass roads in medium and small-sized cities can bring devastating changes (Comer et al. 2000, Comer and Finchum 2001). On the contrary, large towns showed steady and constant improvement after the bypass. As per Yeh et al. (1998), the medium and large communities showed economic growth after the bypasses were opened (the definition of size was: 2000-5000 people in the medium community, more than 5000 people in a large community, and less than 2000 people in a small community). Cities with a population greater than 2000 people will gain larger benefits than negative impacts from the highway bypass (IADOT 1992). In another study on medium-size towns (Collins and Weisbrod 2000), the impacts of bypass highways are rarely either devastating or a boon to the area. The shift in traffic due to the bypass has resulted in shutting down or the relocation of some business but it has created new business opportunities along the new bypass route. The net economic impact of the community is relatively very less. The shifting of heavy traffic from the downtown areas has encouraged more local traffic thus resulting in little or no change in traffic volume (Collins and Weisbrod 2000) or even more than before in medium or large communities (Yeh et al. 1998, Parolin 2012, Douglas and Van Den Bos 2016). Large towns showed steady progress annually after the bypass, indicating that they can easily accommodate the changes caused by the bypass. The impacts are varied in medium-sized cities and small cities, and the impacts are mostly negative.

In the small towns, the effects of the bypass are also not clear from the literature (Plaut and Deakin 2006) or they have a negligible or inconclusive effect (Andersen et al. 1993, Srinivasan and Kockelman 2000, Babcock and Davalos 2004). Some studies found positive impacts, whereas others found negative or even devastating effects of a bypass on small towns. The inconsistent result from these studies is that it depends on the context of the study area (Plaut and Deakin 2006). The highway bypasses have affected travel-related business (fuel, food, accommodation provider) and they have seen an increase in annual sales for non-traffic related businesses. The small towns (under 2000 people) are more likely to be negatively impacted as they do not have diverse business sectors to operate as a destination (Yeh et al. 1998). In a small highway town of Karuah (population 1070 in 2001) in Australia, the bypass has adversely impacted its economy and, in the first year of the bypass being operational, 21 percent of the employment was lost (Phibbs et al. 2009). The impact of the bypass on Karuah town exists even after five years of the bypass being operational. The study of small towns of Iowa (New London, Olds, Denver, and Raymond) indicates that the bypasses are not the probable reason for the negative impact felt by the communities (Pettit 2007). Evidence from research studies and small towns like Littlefield indicate adverse consequences for businesses in towns with a population below 1000 (Transportation Research Board 1996). The effect of the bypass is the greatest for small populations and when a high percentage of total trade comes from traffic. In the small town of Berrima, the medium-term effects have been positive owing to an increase in the town's tourist appeal (Bureau of Transport and Communications Economics 1994). The bypass has caused a 7% increase in gross sales and a 2% increase in employment (Bureau of Transport and Communications Economics 1994). Whereas Mittagong's economy has suffered in the short term and the most adversely impacted were the petrol stations, the budget motels, and the take-away food shops (Bureau of Transport and Communications Economics 1994). The bypasses have reduced sales by 6 percent and employment by 3 percent in the short-term study (Bureau of Transport and Communications Economics 1994). In the community of Wentworth, there has been a decrease in community income and new businesses have replaced the former traffic-dependent businesses, thereby mitigating the negative economic impacts (Chase and Gustavson 2004). As in Kentucky, the bypass did not affect the overall employment or the inhabitants (Thompson et al. 2001). Moreover, it was found that the traffic volumes in the old route of small towns significantly declined, differing to

large and medium communities. In another study for a small town, the traffic has slightly decreased or it remained the same as before (Prekop and Dolejš 2016), thereby giving an inconclusive result.

The other geographical factors, besides the size of the community, are the geographical isolation and the relative location of the bypassed town to other communities. Geographical isolation was researched to be a potentially important factor that will impact the effect of a bypass on a community beyond the size of the community (Handy et al. 2002). Research studies explain that small towns in Southeastern Oklahoma have declined for some time and they showed very less signs of recovery. This is likely due to Southeastern Oklahoma being not easily accessible due to its terrain and bounded by interstate highways. Studies have indicated that isolated communities that draw the main portion of their business from the highway traffic will suffer from a decrease in business volume (IADOT 1992). The economic impact due to the presence of the metropolitan area in the proximity of the bypassed town has been largely positive though the larger city will attract customers owing to the diverse services and goods it provides. For a highway-dependent small bypassed town, the presence of a community of similar size has negatively affected the business because of competing businesses (Handy et al. 2002).

Small measures were carried out to alleviate the impact of the bypass on business in Karuah. The measures focused on the local market and increased marketing. However, there was no adjustment made in response and this is due to a lack of adequate financial resources and a perception that the recovery of town lies in the local council. The key to survival after the bypass construction is the effective and adaptive management of the business in combination with actions by the government as per Phibbs et al. (2009). The businesses that have adjusted in response to the bypass were found to have better results than the businesses that did not make any adaptation. Some firms adopted new business strategies such as new products and services. Or the integration of the bypass into the community, through land use planning and signage to direct traffic, made the communities stable (Chase and Gustavson 2004, Pettit 2007). It is imperative for the government to take the role to provide optimal adjustment, however, the small towns that are highly dependent on traffic will experience harm to the economy. In 2017 in Kempsey, about 8.8% of the businesses stated they continued to be negatively impacted by the bypass since the 2013 study (Parolin 2017), and their turnover improved by 2016 and it was expected to improve further. However, the majority of the business people indicated an increase in turnover by 38.9% after the bypass (Parolin 2017). These business people made business adjustments through marketing and sale in social media and internet technology (Parolin 2017). In total, the turnover figure was higher than the figures for 2012 (one year before the operation of the bypass, Parolin 2017). The streetscape revitalization program and the highway service center are the post bypass strategies adopted to mitigate the bypass adverse impacts (Parolin 2017).

Besides the impacts on commerce, there are further impacts. The bypass has an impact on aspects such as land value and land use in the community. It was found that the bypass has a positive impact on the value of land within one mile of the bypass in the Kokomo bypass study (Evans and Michael 1965). The impact depended on the distance from the bypass and the location of developed city areas. The land use within a mile of the bypass was transformed from agriculture to industrial, commercial, and residential land uses (Evans and Michael 1965). However, in the long run, the land values in the old route also increased substantially in Kokomo, thereby demonstrating that the bypass does not have a damaging effect on the property values along the old route (Evans and Michael 1965). In the case of Berrima, there have been an increase in tax revenues and land and property values in the medium term after the bypass (Bureau of Transport and Communications Economics 1994).

The key findings from the literature study are that the bypass development impacts the traffic-dependent businesses in the short-term, but it has very little or no major economic impacts overall (Chase and Gustavson 2004). Generally, it can be concluded that there will be an initial decline in total sales in small communities which will be followed by an increase with adjustment and diversifying the businesses. The highway-oriented business is adversely affected the most and many of these recover through adjustment towards the local trade. As per Berrima's experience, the tourism sector has improved due to an enhanced environment because of traffic diversion (Bureau of Transport and Communications Economics 1994). Communities do view that bypasses bring benefits overall and it does bring changes that have to be dealt with proactively (Yeh et al. 1998).

The research study on the economic impact of the bypass on Tsimasham Town is at an appropriate time since it is less than a year after the opening of the bypass, though it is too early to study medium and long-term impacts. This research will augment the existing knowledge base of the impacts of a bypass on the businesses of small towns which are in the proximity of other competing small business towns (not in the proximity of a larger city), being also geographically inaccessible while businesses are completely dependent on the pass-through traffic.

### **Methodology**

The survey was carried out during the Tsimasham Satellite Town Structure Plan preparation's site visit and data collection. The Tsimasham core area consists of 23 buildings, and it also houses institutions such as the Royal Bhutan Police, Royal Safety and Transport Authority, Bhutan Power Corporation, Bhutan Telecom, and financial institutions besides other small businesses. Since there were just over 20 businesses in the town, almost all (20 businesses) have been surveyed except for a few (a cobbler shop) that were closed at that time. The business people in the Tsimasham core area were interviewed on 4<sup>th</sup> and 5<sup>th</sup> December 2018, using a structured survey questionnaire, since they are the stakeholders directly affected by the relief route and thus likely to provide insights on the economic impacts of the route. The institutions are not interviewed as it caters to the residents generally. The survey data was recorded in the questionnaire. The survey questionnaire is adapted from Parolin (2012). The emphasis was given on the qualitative impression of how the bypass affected their sales, the effects on employment, the post-bypass environment perception, and the duration of businesses. The impression of bypass' impacts on businesses was considered qualitatively since people are reserved to provide financial details; however, few of the shops provided their approximate daily sales before and after the bypass functioning. The question on the impact of sale was: 'Was your turn over affected by the opening of the bypass?', followed by: 'Less by how much?'. Since it was difficult to get the approximate value in currency, it was decided to ask for approximation in percentages, which will also give an idea of the impact to some extent. Some stated a decrease in sales by over 40% or some even by 95%. Following the impact on sales, other details such as years of business operation, type of business sector, and perception of the livability of Tsimasham after the bypass was recorded.

### *Businesses profile*

There were just over 20 business establishments in Tsimasham and some of the spaces in the core area are rented by institutions and service providers (Fig. 3). At the time of the survey, 20 businesses were in operation and those were surveyed accordingly. Out of the 20 establishments, 7 were general shops, 2 groceries, 6 were hotel/restaurant, and one each of bar, sales (cloth shop), photo studio, beauty parlor, and meat shop. For the convenience, two of the general shop with the bar is clubbed into the category of the general shop.

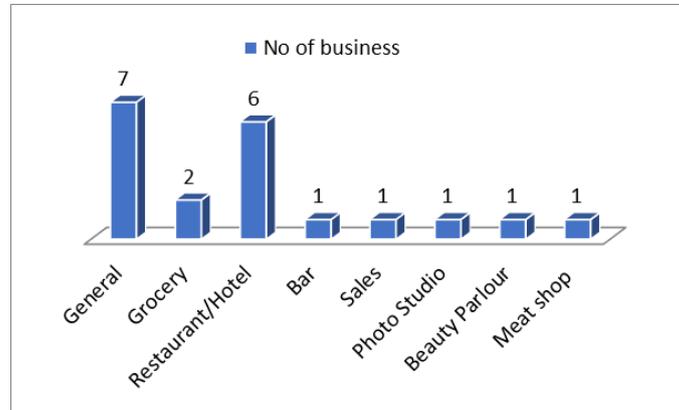


Fig. 3 - Type of businesses in the Tsimasham core area

Of the 20 businesses, 14 have been operating for less than 10 years; which consists of 7 businesses operating one year and below; and 7 operating above one year but below 10 years (Fig. 4). Out of the 7 businesses that were running the business for one year and below, the 6 were the new business taken over by the new people after the opening of the new bypass. The rest of the businesses were in operation for quite a long time. The 3 businesses were in operation for 10 years and above but below 20 years, and 2 have been in operation above 20 years. Only one business respondent said they were running the business for many years but could not provide the exact number of years, so they have been put under the 'do not know' category.

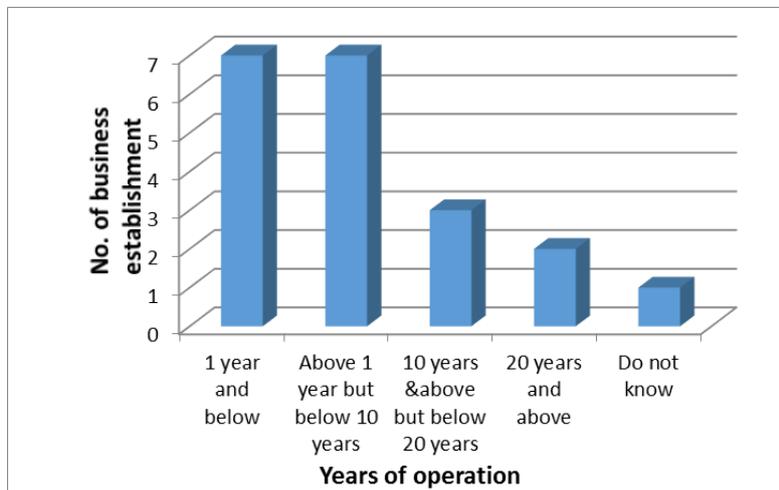


Fig. 4 - Years of businesses operating in the Tsimasham core area

## Results and Discussion

The pocket containing the Tsimasham core area has a little over 1000 people and the businesses were dependent on highway traffic (Fig. 5). The research studies carried out to date confirm that highway-dependent towns with a population less than 2500 people are at higher risk of adverse economic impacts (Parolin 2011). Additionally, the Tsimasham Satellite town is geographically isolated due to the bypass construction as the town is located high atop, and the bypass is at a lower level. Geographically isolated or isolated communities that depend on the highway are adversely impacted the most (IADOT 1992, Handy et al. 2002). As per Freer (2017) and the Highway 97 Peachland study (Ministry of Transportation and Infrastructure 2020), the bypass which is located far from the core area (extend of diversion) diverts the traffic farther away, thereby impacting the business more. The Chukha-Damchu new bypass has been built very far from the town, thereby the bypass is taking all the traffic with it, given the shorter travel time to Phuentsholing or Thimphu. The Satellite town has wide-ranging institutions such as the District Administration office, hospital, schools, and other institutions. However, most of the institutions such as two schools, a hospital, and other offices are in the Tsimalakha area and they are served by the Tsimalakha core. The neighborhood node in Tsimalakha is not impacted as it used to serve only the residents and it was not directly connected to the Highway. The research study by Handy et al. (2002) emphasizes that the presence of a similar service-providing community in the neighboring area will adversely affect the bypassed community. Tsimasham is a highway dependent town and it is left deserted after the bypass. Also, Tsimalakha is competing for business with Tsimasham by catering to the majority of the people in the Satellite town.



**Fig. 5 - Tsimasham core area along the old route**  
Source: Author (2018)

The results from the prior research studies of the economic effects of a bypass on small towns are neither clear nor conclusive, but some studies showed devastating effects on small towns. Though the literature studies have a different threshold of the population for small towns such as 1000 (Transportation Research Board 1996), 2000 (Yeh et al 1998), or 2500 people (Parolin 2011), it is evident that the impacts are more on the towns with a lesser population. Further, the impacts are dependent on the context of the area, the geographical location, the type of alignment, and the location to other towns/communities. It is quite clear from the studies that traffic dependent towns are adversely impacted the most due to the bypass.

Tsimasham town core catered to the highway passengers; consequently, the adverse impact on the traffic-related businesses (food, accommodation provider) is experienced. Out of the 20

establishments, 6 hotels or restaurants have been mostly catering to the travelers due to which they have responded to have impacted the most. It can also be concluded from the survey data that this sector has been affected the most as 3 out of the 6 hotels/restaurants have been already rented out to new people, though the type of business is as initially. The 8 out of the 20 businesses have been operating as grocery and general shops along with some bars and surprisingly none of these shops are rented out to new people during the time of the survey.

The 5 general and grocery shops have responded that the bypass has affected their business by less than 50% and two of them responded to have been affected beyond 50% while two responded that they do not know the impact (Table 1). The hotel/restaurant sector has responded that their businesses have been negatively impacted by more than 50% and 2 of the hotels/restaurants experienced a decrease in turnover by 95%. The other 3 hotels/restaurants were a few months in operation and they do not know about the impact on their return. The other business sectors such as the meat shop, the photo studio, and beauty parlors, which have been in operation for 3-5 years, responded to have felt the impact by less than 50%, thereby indicating that there has been an impact, but smaller in comparison to the hotel/restaurant category. The bar and the cloth shop have been in operation for a few months and they did not know about the impact but one of them said that the sale is very minimal.

Table 1

Sales affected in approximate percentage

| Sales affected less (by %) | General Shop | Grocery  | Restaurant/Hotel | Others   |
|----------------------------|--------------|----------|------------------|----------|
| 81-100%                    | -            | -        | 2                | -        |
| 51-80%                     | 1            | 1        | -                | -        |
| 21-50%                     | 4            | 1        | 1                | 3        |
| 10 -20%                    | -            | -        | -                | -        |
| Do not know                | 2            | -        | 3                | 2        |
| <b>Total</b>               | <b>7</b>     | <b>2</b> | <b>6</b>         | <b>5</b> |

The small businesses in the Tsimasham core area are mostly operated by 1 or 2 people. Out of the 20 businesses, 12 shops were operated by one person, 5 operated by 2 people, 2 operated by 3, and one operated by 5 people. Only one of the shops has put off staff after the bypass. This indicates that the bypass has not affected the employment status in the town, which confirms with the literature studies' findings in the case of Kentucky (Thompson et al. 2001). However, it has been noted that it is too early to confirm as such on the employment aspect, as it has just been over 4 and half months after the new bypass operation. Fricker and Mills (2009) have indicated that the impact on employment for some sectors will not be visible before 15 years of the bypass being operational.

35% (7) of the respondents were positive about the impact of the bypass on the environment and they described Tsimasham as peaceful, with less noise, less air pollution, and a tranquil place to reside (Fig. 6). On the contrary, 40% (8) of the business people describe Tsimasham as a deserted town and a dejected place to live. The 3 of the respondents did not have any view and 2 of the respondents highlighted that they encounter problems to commute as the public transport or even the taxis do not pass through the town. These findings are different from earlier research studies, where the majority of the people viewed post bypassed environments positively. In the Tsimasham core town area, only over one by forth view the post bypassed environment positively. It is a predicament to say what is called the improved environment in a small town, which gives a deserted look with empty streets.

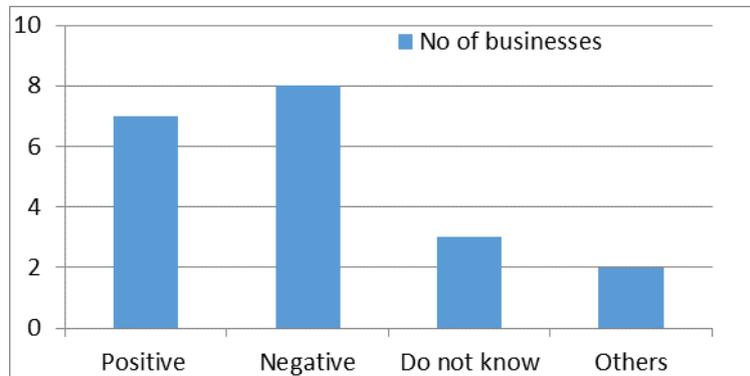


Fig. 6 - Tsimasham core area post-bypass environment perception

The short-term economic impacts of the highway bypass on the small town are quite evident as in the Tsimasham core businesses. The study was carried out within 4-5 months of the opening of the new bypass route. The businesses have suffered losses due to the diversion of traffic and due to which old businesses have been replaced with new ones. Once a bustling town, it has transformed into a quiet and empty town with even a lack of travel options for the residents. Having said that, there is a possibility of revival with new business research and survey and understanding the local strengths to adjust with the current situation. The diversification of business would be necessary to cater to larger catchment areas like the surrounding villages and to provide unique services in comparison to the nearby commercial core in Tsimalakha so that people have a pulling factor to come to the town. Isolated and located high on the terrain, very far from the new bypass route, and with the other nearby towns (Chukha, Gedu, and Darla) providing similar services, there is a need to come up with a unique marketing base. Since it also serves as a headquarter to the District, there is potential to provide sales/services catering to the residents and people from the nearby villages and at least the local catchment population will remain constant as long as offices/other financial institutions operate in the area. The local government and the business community people have to come together to chart up a new plan for Tsimasham and to build on its innate strengths to come up with something new and unique.

### Conclusions

The research studies' results are neither uniform nor conclusive and it was also emphasized that other factors contribute to the post bypass environment. However, the bigger cities have more advantages as it can transition owing to their diverse business base as well as the huge catchment population. The economic impacts on small towns that are dependent on traffic are devastating, however, there are studies where it has been able to revert or enhance further. The towns that cater services to the pass-through traffic are more likely to be adversely impacted (California Department of Transportation 2006). Accordingly, it can be concluded that the new bypass has adversely affected the businesses in the Tsimasham core area due to which the travel-related services such as hotels/restaurants have been rented out to the newcomers. It is also evident from the peace and the almost no traffic in the core that there are minimal or no business going on. This can be due to the geographical isolation of the Tsimasham area, whereby the commuters must drive up to avail goods and services. This could be the reason due to which even the taxis are not available for the businesses and for the residents to commute. These are the short-term impacts as the study has been conducted less than a year after the bypass being in operation in July 2018. Intermediate and long-term

bypass economic impacts have to be carried out in the future. According to Parolin (2011), the involvement of the local government would play a major role in bringing in the change or at least to mitigate the impacts on the businesses through major economic interventions or developmental projects. Having said that for the revival of the business, there is a need to improve the services or to bring in a variety of businesses to attract people from the surrounding towns and even within the catchment area that houses institutions such as schools, the District Administration, and other financial institutions. As per the extensive research studies, the negative impacts of a bypass on the economy of the town are short-term though exception holds for small towns dependent on the bypass traffic, which have a difficult time transitioning after the bypass. With the intervention from the local government and the proposal of economic development activities and the provision of different levels of services and goods, it will be possible to revive the community and its businesses in the long run. In doing so, the economy in the long run for all the different sized communities will be positively impacted (Parolin 2012).

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