The Global Health Crisis Affected the Economy of an Emerging Metropolis: The Case of Cagayan de Oro City, Philippines

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Abstract - **This paper estimates the impact of government strategies that aimed at containing the spread of COVID-19, to the local economic activities of Cagayan de Oro - a highly urbanized city in the Northern region of Mindanao. In the absence of city-level measure for Gross Domestic Product (GDP), gross sales among the 20,626 registered businesses are utilized as an alternative determinant. GDP measures the amount of output produced of a certain area within a specific time-period. Cagayan de Oro is predominantly food sector dependent contributing to almost 80% of its local economic activities. BPO, however, is the fastest growing sector but the food industry is near second. The gross sales of BPO, Tourism and Construction recorded the highest increase for the past ten-years, which indicates that these sectors are massively growing within the city. Using a simple moving-average equation from the business registration data of the City Finance Office from 2010-2019, this paper discovers that the friction created to slow down economic activities cost the city P131, 704,672.26 of foregone sales per week. The estimated impact of a week-long lockdown in the food sector amounts to P645,296,177.66 or a per capita loss of income of P2,428.95. In other words, the impact of lockdown to one food company is around P2,000. Per-capita cost is bigger among medical (P6,631.40) and construction (P7,747.14) firms considering lumpy inputs and higher set-up costs. A one-week lockdown leads to a P104,840,708.03 and P84,954,117.49 of foregone sales in the medical and construction sectors, respectively. This paper also locates the business concentration landscape and potential of Cagayan de Oro City among its 80 barangays and calculates the estimated revenue loss of each sector located among these barangays.**
Keywords: **COVID-19 Impact, City-Level GDP, Foregone Sales, Lockdown Restrictions, Economic Slow-Down**

I. INTRODUCTION

The Philippine economy has contracted to 9.5 percent in 2020 as a result of the restrictions imposed to private activities, in order to contain the spread of COVID-19 (PSA, 2020). A two consecutive quarters of negative growth qualifies the country to a technical recession, which was the case of the country for the past two quarters of 2020. This is the first time since the height of the Asian Financial Crisis in 1999. The last time that the economy experiences a major drop of economic performance was in the 1980s at around negative 10 percent.

The overall economy of the Philippines is estimated to lose 2.1 trillion Philippine pesos (approximately USD 42 billion) resulting from the pandemic, accounting for ripple effects (Yu *et al.,* 2020). Halfway through the pandemic (i.e., around 05 May 2021), the country has already recorded a whopping number of 1,073,555 cases, with 993,042 recovery and 17,800 deaths. Several regions in the country have remained to be on a modified lockdown status. One way or the other, the restrictions imposed to contain the virus eventually hampered a lot of private economic activities in most months of 2020.

All key sectors in the economy have experience negative growth in 2020. Agriculture, Fishing, and Forestry (AFF) has recorded the least contraction rate at 0.2% compared to Industry (-13.2%) and Services (-9.2%). Despite this, 60.7% of the Philippine economy remains to dominated by the service sector in 2020. Industry (20.9%) and Agriculture, Forestry and Fishing (10.2%) are far next to service.

Construction (-25.7 percent) and Mining and Quarrying (-18.9%) are the most adversely affected sub-sector under manufacturing. Accommodation and Food Service Activities (-45.5 percent) and Transportation and Storage (-30.9 percent), on the other hand, are the most affected from the service sector.

Financial and Insurance Activities (5.5%), Information and Communication (5%) and Public Administration and Defense (4.6%) were the only sub-sectors that record a positive growth. Although Public Administration & Defense and Financial and Insurance Activities have appeared to survive the effects of the pandemic, its growth rates were lower than the previous year.

Table I below enumerates the top three sectors that have gained momentum during this pandemic and also those that have been adversely impacted from the lockdown policies of the government.

TABLE I COMPARISON OF GROWTH PERFORMANCE BY SUB-SECTORS AT CONSTANT 2018 PRICES

Sl. No.	2018-2019	2019-2020
Top 3		
1	Public Administration and Defense (13.5%)	Financial and Insurance Activities (5.5%)
2	Financial and Insurance Activities (11.9%)	Information and Communication (5.0%)
3	Construction (9.7%)	Public Administration and Defense (4.6%)
Bottom 3		
1	Professional and Business Services (2%)	Accommodation and Food Services (-45.4%)
2	Mining and Quarrying (3.4%)	Other Services (-41.1%)
3	Manufacturing (3.8%)	Transportation and Storage (-30.9%)

Source: Philippine Statistics Authority (PSA)

In response to the adverse effects of the lockdown measures to the economy, the Philippine government has introduced various recovery strategies to minimize the economic loss while health experts are still looking for a vaccine. Government agencies like the Department of Labor and Employment (DOLE) and the Department of Social Welfare and Development (DSWD) have introduced the COVID-19 Adjustment Measures Program (CAMP) and the Social Amelioration Program (SAP), respectfully. Both CAMP and SAP were designed to provide financial support for the poor and affected employees - just right enough monetary support to purchase their basic necessities.

Furthermore, a stimulus package has been in place through the Republic Act 11469 or the Bayanihan to Heal as One Act (Bayanihan 1), which allotted a P200 billion-peso for social protection and recovery programs. The economic managers eventually went on to another law through Bayanihan 2 (i.e., and several succeeding versions of Bayanihan 2), which composed of programs that aimed to create jobs and restore income levels through the following, a) increasing the health system capacity and infrastructure, b) improve food value chain in terms of food manufacturing, logistics, and food trade and c) restart the government's mega infrastructure project through the Build, build, build. There were also bills that complemented the existing government's strategies such as CREATE or the Corporate Recovery and Tax Incentives for Enterprises Act and the ARISE or the Accelerated Recovery and Investments Stimulus for the Economy, among many others.

To narrow it down in region 10, Northern Mindanao's economy shrank by 5.2 percent in the year 2020, due to COVID-19 pandemic (NEDA, 2020). In terms of economic downturn, the region ranked third slowest across the country. These have created trickle down effects to the landscape of business activities of its major economic nodes in the region. Cagayan de Oro City, for instance, is the capital of Northern Mindanao and is projected to be the country's next metropolitan area.

According to Sabal and Mansueto (2021), nearly 22,000 registered businesses in the city had ceased operation in March and April 2020 in response to the mandate of

government authority, in order to contain the spread of COVID-19. In May 2020, stringent government policies were dismantled but many companies remained closed. Their study further elaborates that there are a recorded total of 204,062 registered businesses in Cagayan de Oro City 10 years prior to 2020. In which, these companies recorded a whopping gross sales of P803 billion with an accumulated capitalization of P12 billion, at least between 2010 and 2019. Within these time-period, the are 758,067 employed workers.

Sabal and Mansueto (2021) utilized the Business Registration data acquired from the City Finance Office. They have discovered that there are 20,626 average annual business registration in Cagayan de Oro City. These firms earn around P950 million in gross sales with an average capitalization of P19 million. Barangay employment, on average, among these business is 900 workers,

Considering this information, this study attempts to extend the results of Sabal and Mansueto (2021) through measuring the potential impact of restricting the private economic activities in Cagayan de Oro City. So far, there are no city-level studies that accounts for the economic impact of COVID-19. The nearest productivity measure is through Gross Regional Domestic Product (GRDP) but there is no effective determinant yet in measuring the magnitude of economic activities in the city-level.

I propose the use of gross sales among the registered businesses in Cagayan de Oro, between 2010 and 2019, as proxy variable for a city-level gross domestic product (GDP). GDP is the value of outputs produced within an area at a specific time-period. In other words, the sales declared by around 20,000 registered businesses can be considered a determinant for GDP.

Hence, this paper aims to determine the effect of COVID-19, and the corresponding government policies to contain the spread of the virus, to the private economic activities in Cagayan de Oro City. Specifically, I analyze the existing business landscape of the city within 2010 and 2019 and estimate the potential impact of the pandemic (or if there are future exogenous events that will suppress the local

economy) to the registered business in the city on a sectoral and barangay perspective.

The end-goal of this paper is to determine the business impact of the COVID-19 on the local economy of Cagayan de Oro City, a first-class highly urbanized city in Northern Mindanao. It uses the same data-set used by Sabal and Mansueto (2021) using barangay-level and selected sectoral-level information on business registration, gross sales data, among registered establishments between 2010 and 2019. The rest of the paper is organized into three sections. Section 2 presents the research framework and methodology. Section 3 discusses the results of the analysis, while Section 4 concludes and outlines possible policy recommendations.

II. METHODOLOGY

This paper employs a simple moving average estimation (SMA) technique in identifying the extent of the adverse impact of the stoppage of the regional economy to the agriculture, manufacturing, and service sectors. SMA is normally used to get the average measure of time-series data set, which is known to be an effective method in smoothing-out outliers within a variable over a longer period of time.

$$y_Q = \frac{\sum_{i=t-9}^{t} x_Q}{9} \qquad (1)$$

Equation 1 represents the formula of the SMA estimation for this study. The numerator explains the sum of the yearly gross sales of the local businesses in the city (x_Q) from 2010 to 2019. The denominator represents the ten-year period enumerated above. The results of equation 1 will show the performance of the registered local businesses in Cagayan de Oro in terms of their declared gross sales.

$$\delta = SMA \; x \; \varphi \qquad (2)$$

Government policies and initiatives to contain the spread of the virus have one way or the other, hampered local economics activities. For brevity, we label this as "lockdown". To estimate the impact of the hibernation of the local economy using barangay and sectoral levels, four assumptions will serve as foundations for the succeeding estimates, to wit:

1. In order to contain the spread of the virus, the government halted most of the private business activities. There are firms across all sectors that were asked to temporarily stop their operations. Some firms implemented work-from-home arrangements, while only skeletal employees are allowed to work on a rotational basis. Hence, it is safe to assume that business activities have been operating around 50 percent capacity since the beginning of the pandemic.
2. On the average, there are 48 weeks a year.
3. Do nothing scenario: This study excludes the impact of government intervention to revive the local economy.

The do-nothing assumption only accounts for the impact of the restrictions (i.e., imposed by the government) to the business activities of private individuals. The author, however, acknowledges that the actual impact of the pandemic could be higher or lower, depending on the effectiveness of government strategies to reduce the adverse effects of the global health crisis to the economy.

4. The Philippine Statistics Authority (PSA) can only provide as much as the Gross Regional Domestic Product (GRDP) as illustration of local economic performance. There are no economic estimations that explain city-level economic performance in the Philippines. Hence, this study will use gross sales of registered businesses from 2010 to 2019 as proxy variable for GDP. GDP is defined as the value of the over-all production or output of a certain place within a period of time.

Delta (δ), in equation 2, represents the cost to the local businesses if the government decides to continue the restrictions to the economy following the aforementioned scenarios. Phi (φ) represents the percentage share of the length of the lockdown following a 48 week a year assumption. The denominator is the nine-year simple moving average of the gross sales of the registered businesses in Cagayan de Oro. The result will give a rough estimation of the cost to the economic performance of the city, using business registration data, if the government decides to implement lockdown measures within a specific length of time. This provides an analysis on which sub-sectors or barangays have been adversely impacted of the series of precautionary policies to contain the spread of the virus.

III. RESULTS AND DISCUSSION

A. Local Commercial Situation in Cagayan de Oro City

This section presents the summary of the business registration data in Cagayan de Oro from 2010-2019, using barangay-level and sectoral-level results. There are eighty barangays in the database with four more major local markets (i.e., Bulua market, Carmen market, Agora market, Cogon market, and Puerto market) and seven sectors namely, Food, Medical, Construction, Education, Tourism, Logistics, and Business Process Outsourcing (BPO). Table II, below, enumerates the list of commonly registered business establishments in the city and their corresponding sectoral category as identified from the records of the City Finance Office. Restaurants and recreational activities have been identified as part of tourism, while agricultural production and smaller snack inns are part of the food sector. Educational institutions, on the other hand, refer to private schools that are subject to local government regulations. The list of barangay-level business registration is available from the database of the City Finance Office. Both sectoral and barangay-level data also show the level of business capitalization, gross sales, and employment numbers from 2010 to 2019.

TABLE II SECTORAL CLASSIFICATION

Sectors	Sub-Sectors
Food	Agricultural, Bakery, Cafeteria, Canteen, Catering, Cooked Food, Eatery, Fast-food, Fish, Food, Food Production, Fruit and Vegetable, Hogs, Lechon, Manufacturing, Meat, Poultry, Purified Water, Retailer, Salt Fish, Snack Inn, Wholesaler.
Medical	Birth home, Dental Laboratory, Hospital, Medical Clinic, Medical Supply, Medicines, Optical, Pharmacy.
Construction	Cement, Concrete, Construction, Contractor, Electrical, Hardware, Heavy Equipment, Lumber, Quarry.
Education	Education/Educational, School, Tutorial.
Tourism	Bar, Beach/Resort, Billiard, Bowling, Gym, Hotel/Inn/Lodge, Massage, Music Bar, Music Studio, Night Club, Restaurant, Sauna, Travel.
Logistics	Cargo, Gasoline, Shipping, Transport, Logistics, Warehouse.
Business Process Outsourcing	BPO

Source: City Finance Office

For the past nine-years, the city has recorded a total of 204,062 registered businesses across all key sectors. These firms have recorded approximatelyP803 billions of gross sales with an accumulated initial capitalization of P12 billion between 2010 and 2019. Within these years, these 200 thousand firms have employed 758,067 workers.
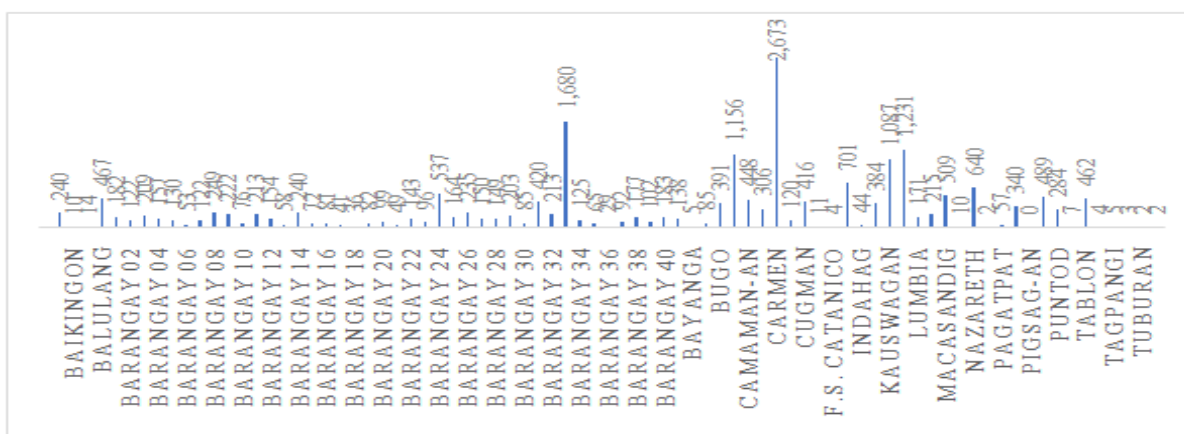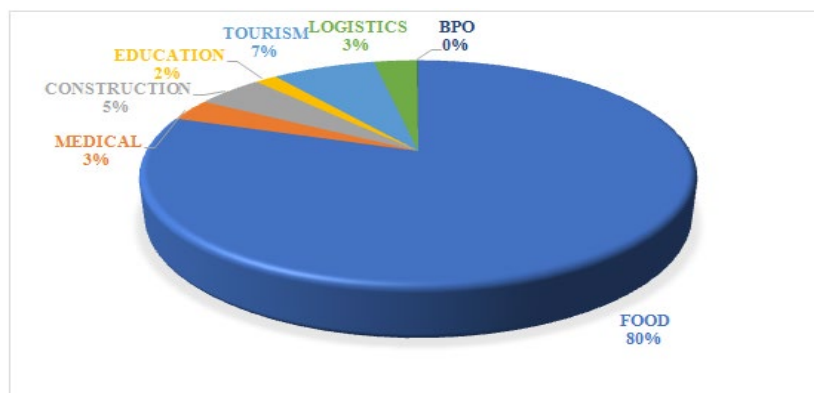

Source: City Finance Office
Note: No data in Besigan

Fig. 1 Average Business Concentration Per Barangay/Area, 2010-2019

Barangay Carmen has recorded a 2,673 average yearly business registration, making it a major node of economic concentration in Cagayan de Oro City. Barangay 33 ranks second at 1,680 average business registration, Lapasan (1,231), Bulua (1,156) and Kauswagan (1,087) are also in the top five major commercially concentrated areas in city.

Cagayan de Oro, in general, has an average of 20,626 yearly business registration, in which these firms record an average of P19 million initial capitalization and approximately a P950 millions of gross sales. Employment average, per Barangay/Area, among these businesses is around 900 workers.

Source: City Finance Office
Fig. 2 Average Business Concentration Per Sector 2010-2019

Food sector has the highest number of business registration from 2010 to 2019. Within these years, the food sector has recorded a total business registration of 78,753, followed by tourism (7,145), construction (4,654), medical (3,119), logistics (3,008), education (1,510) and business process outsourcing (53). BPO registration has started to appear in 2017.

In terms of total employment, the food sector still ranks first with a total of 192,232 employed workers for the past ten-years. Tourism also ranks second at 54,131 total employed workers, followed by construction (30,278), medical (19,720), education (19,405), logistics (17,052) and BPO (223). Hence on the average, there are around 19 thousand workers employed in the food sector, 5 thousand in tourism, 3 thousand in construction, around 2 thousand in medical, logistics and education respectively.

Fig.2 above shows that food dominates the number of business registration in Cagayan de Oro City from 2010 to 2019. In other words, 80 percent of the total businesses in the city are categorized as food services. This sector records an average of 7,875 registration every year. Tourism is far second comprising 7.3 percent of the total businesses, followed by construction (4.3 percent), medical (3.2 percent), logistics (3.1 percent), education (1.5 percent) and BPO (0.1 percent).

Food also dominates the average gross sales among all other key sectors (see Table III). Every year, food earns around P32 billion, which comprises 69.99 percent of the total average recorded gross sales among the selected sectors identified for this analysis.

Although tourism ranks second among the number of registered businesses, medical follows food in terms gross sales, which is at P5 billion every year. Construction earns at around P4 billion yearly, followed by tourism (P2 billion), logistics (P 990 million) and education (P827 million).

TABLE III AVERAGE YEARLY GROSS SALES, PER SECTOR 2010-2019

Rank	Sector	Gross Sales (In PhP)	Percentage Share
1	Food	32, 264, 808, 882.96	69.99%
2	Medical	5, 242, 035, 401.26	11.37%
3	Construction	4, 247, 705, 874.26	9.21%
4	Tourism	2, 523, 113, 463.46	5.47%
5	Logistics	990, 264, 569.96	2.15%
6	Education	827, 748, 076.67	1.80%
7	BPO	959, 023.22	0.00%

Source: City Finance Office
Note: BPO sector begins gross sale reporting in 2018

Table IV lists the top ten areas in the city with the highest number of average yearly business registration for the past ten-years. As mentioned in fig. 1 above, Carmen has biggest node of commercial concentration in Cagayan de Oro. Barangay 33, Lapasan and Bulua rank next in terms of yearly business registration. Kauswagan, Gusa, Nazareth, Barangay 24, Macasanding and Puerto are also on the list.

The BPO sector constitute only less than one percent in Carmen, Lapasan, Kauswagan, Bulua, Gusa and Nazareth. Business registration in this sector started to emerge in 2017 and is yet to grow in the coming years (see table XIV for BPO's growth rate). Details of sectoral composition per Barangay are available in table I of the appendix section.

All top ten barangays and/or areas in terms of business concentration are food sector dependent, which constitutes more than 50 percent of their total commercial activities for the past years. Barangay 33 and Bulua have the highest number of food businesses covering more than 85 percent of the total establishments in the area. Barangay 24 records a 17 percent dependence on tourism activities. Medical sector covers 9 percent of Kauswagan's local economy, while education is highest in Macasanding.

TABLE IV SECTORAL CONCENTRATION PER BARANGAY/AREA, 2010-2019

Barangay	Food	Medical	Construction	Education	Tourism	Logistics	Total
Carmen (2,673)	85%	3%	3%	1%	6%	2%	100%
Barangay 33 (1,680)	97%				3%		100%
Lapasan (1,137)	82%	3%	4%	1%	7%	3%	100%
Bulua (1,156)	87%	2%	4%	1%	3%	3%	100%
Kauswagan (1,087)	73%	4%	9%	3%	5%	6%	100%
Gusa (701)	73%	6%	8%	2%	3%	8%	100%
Nazareth (640)	72%	3%	7%	3%	12%	3%	100%
Barangay 24 (537)	81%	1%	1%		17%		100%
Macasandig (509)	76%	3%	7%	6%	5%	3%	100%
Puerto (489)	84%	5%	3%	1%	3%	4%	100%

Source: City Finance Office
Note: Numbers in parenthesis are average yearly registration. Empty boxes mean zero or less than one percent

Fig. 2 illustrates that the food sector constitutes 80 percent of the total business registration in Cagayan de Oro City for the past years. Tourism is far second at 7 percent, construction at 5 percent, medical and logistics at 3 percent and education at 2 percent. Meanwhile, the business process outsourcing sector is only less than 1 percent.

Table V, on the other hand, shows the areas in the city where the seven key sectors are dominant. 19 percent of the total food related establishments are found in Barangay 33, where Cogon Market is located. The other 32 percent are found in Carmen, Bulua, Lapasan and Kauswagan. 11 and 8 percent of the total tourism businesses are in Carmen and Barangay 24, respectively. The other 17 percent are in Barangay 33, Lapasan and Barangay 31. Most construction firms are also in Carmen, Kauswagan, Kauswagan, Bulua, Tablon, and Gusa. Over-all, these areas constitute 32 percent of all cement, concrete, construction, electrical, hardware, heavy equipment, and lumber related establishments in Cagayan de Oro.

Medical sector is composed of birthing homes, dental laboratories, hospitals, medical and optical clinics, pharmacies, and medical supplies (see table II for the list of sub-sectors). Around 14 percent of these medical clinics and laboratories are found in Carmen. Gusa, Kauswagan, Lapasan individually contribute 5 percent to the total number of medical-related firms in the city. The highest number of logistics-oriented companies is in Puntod (9 percent), Carmen (8 percent) and Kauswagan (8 percent). There are also cargo, gasoline, shipping, transport, logistics and warehouses in Tablon and Gusa.

12 percent of private intuitions and tutorial services in the city are located in Carmen. Kauswagan and Macasandig rank second with 11 percent of the education sector are found in these areas. Carmen also tops the highest number of BPO concentration in the city, 19 percent of these firms are located on this Barangay. Other BPOs are also located in Kauswagan, Nazareth, Barangay 16, Balulang, Barangay 4, Gusa, Lapasan and Lumbia.

TABLE V SECTORAL COMPOSITION PER BARANGAY

Sectors	Barangay
Food (80%)	1. Barangay 33 (19%) 2. Carmen (15%) 3. Bulua (7%) 4. Lapasan (6%) 5. Kauswagan (4%)
Tourism (7%)	1. Carmen (11%) 2. Barangay 24 (8%) 3. Barangay 33 (6%) 4. Lapasan (6%) 5. Banagay 31 (5%)
Construction (5%)	1. Carmen (9%) 2. Kauswagan (8%) 3. Bulua (5%) 4. Gusa (5%) 5. Tablon (5%)
Medical (3%)	1. Carmen (14%) 2. Gusa (5%) 3. Kauswagan (5%) 4. Lapasan (5%) 5. Puerto (4%)
Logistics (3%)	1. Puntod (9%) 2. Carmen (8%) 3. Kauswagan (8%) 4. Tablon (7%) 5. Gusa (7%)
Education (2%)	1. Carmen (12%) 2. Macasandig (9%) 3. Kauswagan (7%) 4. Bulua (5%) 5. Nazareth (5%)
Bpo (<1%)	1. Carmen (19%) 2. Kauswagan (11%) 3. Nazareth (11%) 4. Barangay 16 (8%) 5. Balulang (6%) 6. Barangay 4 (6%) 7. Gusa (6%) 8. Lapasan (6%) 9. Lumbia (6%)

Source: City Finance Office

From 2011 to 2019, Cagayan de Oro City has expanded exponentially making it a top-tier city in terms of growth and development. The city recorded an increase of 82 percent of gross sales among its registered businesses.

Commerce in the city has also increased by 39 percent. In other words, there are 39 percent more businesses in the city from 2011 to 2019. This increase in numbers created 169 percent more local employment.
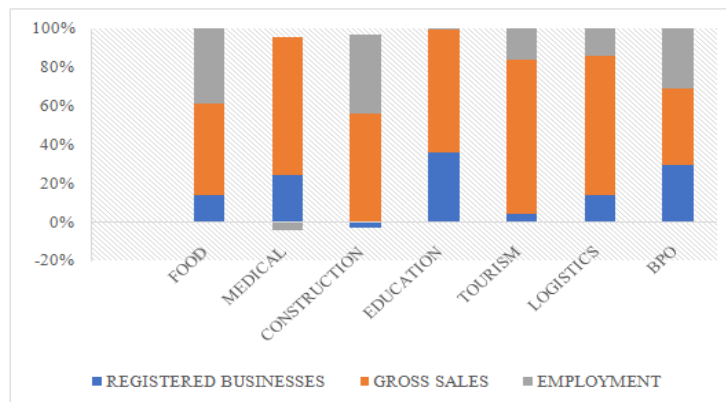

Source: City Finance Office

Fig. 3 Comparison of Gross Sales and Business Registration on Selected Barangays 2011-2019

The Fig. 3 above illustrates the selected Barangaysin the city that have experienced volatility in terms of their employment conditions, declared gross sales among firms, and recorded number of registered businesses. Bayanga has experienced a 67 percent decline of registered businesses between 2011 and 2019. The barangay's remaining businesses have also reported a negative 200 percent growth of their gross sales with a contraction of employment by 38 percent. Taglimao and Tuburan have also experienced a decline in both registered businesses and gross sales. However, these Barangays have only an average 4 registered businesses every year.

Between 2010 and 2019, food and tourism are the fastest growing sectors in the city, with an increase of 72 percent and 44 percent of registered businesses, respectively. Construction and logistics have also experienced an increase

in sectoral participants by 16 percent and 5 percent. The education sector has reported a 36 percent decline in business registration between 2010 and 2019 together with the medical sector (decline by 8 percent).

The fastest growing sector in terms of gross sales from 2010 to 2019 is tourism. Within this ten-year period, the sector has recorded a 117 percent increase in sales. This shows that the city has a fighting chance as a favorite vacation and business destination among domestic and international tourists. Sales in construction have also increased by 110 percent, which is reflective of the growing demand in real estate and wider roads in Cagayan de Oro City. Other sectors have also recorded a growth in sales between the aforementioned period; logistics (99 percent), education (77 percent), medical (68 percent), and food (67 percent).

Source: City Finance Office

Fig. 4 Comparison of Gross Sales and Business Registration among Key Sectors, 2018-2019

The City Finance Office has reported the entry of the BPO sector in Cagayan de Oro City in 2017. Since then, it has grown to 122 percent in terms of business registration, a 166 percent growth in over-all sectoral sales, creating an additional 128 percent local employment in the city. Other

sectors have also experienced an increase in sectoral participation, except construction which has reported a negative 0.6 percent between 2018 and 2019. Gross sales among the sectors enumerated in fig.4 have also increased between 2018 and 2019. The highest earning is BPO,

followed by food (18 percent), tourism (14 percent), education (13 percent), logistics (12 percent), medical (11 percent), and construction (10 percent). Employment in these sectors has also increased, except medical. Employment among medical firms has declined to 0.7 percent. In 2019 alone, Tablon earns P14,434,092,729.45 while Carmen and Cugman recorded a P13,060,220,492.09 and P9,777,664,319.89, gross sales respectively (see table VI below). These are recorded earnings of all registered businesses from these aforementioned Barangays. The 2019 total business gross sales in the city is at P122,434,637,509.74.

Between 2010 and 2019, the registered businesses in Cagayan de Oro have declared an accumulated gross sale of P803,915,347,724.21 across all Barangays/Areas. 16 percent of this billion-peso gross sales comes from the commercial earnings of Tablon. Carmen, Cugmanand Kauswaganrank second and third highest contributors to the nine-year gross sales in Cagayan de Oro City.

TABLE VI PERCENTAGE SHARE OF GROSS SALES PER BARANGAY/AREA

Rank	2010-2019	2019
1	Tablon (16%)	Tablon (16%)
2	Carmen (10 %)	Carmen (10%)
3	Cugman (7%)	Cugman (8%)
4	Gusa (6%) Kauswagan (6%)	Balulang (6%) Barangay 24 (6%) Kauswagan (6%)
5	Barangay 4 (4%) Barangay 24 (4%)	Lapasan (5%) Gusa (5%)
6	Balulang (3%) Bulua (3%)	Barangay 31 (3%) Bulua (3%)

Source: City Finance Office

The ranking is consistent in 2019, except for the exclusion of Barangay 4 and the addition of Barangay 31 in the list. Almost the same barangays/areas have been contributing the biggest share of over-all commercial gross sales in the city.
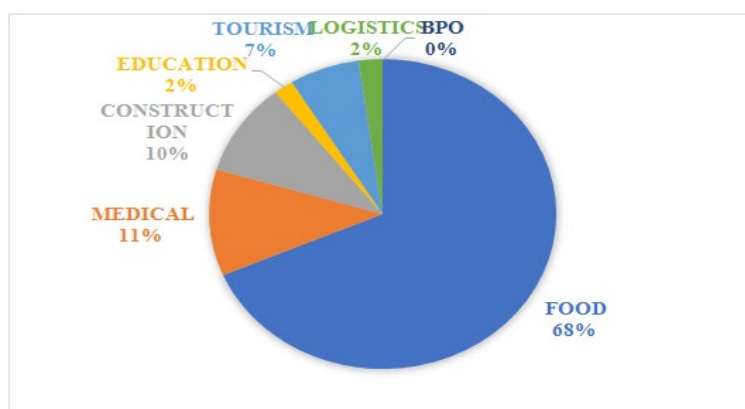
Source: City Finance Office
Fig. 5 Percentage Share Per Sector, 2019

Food sector dominates the percentage share of the total gross sales of businesses in Cagayan de Oro City, both in 2010-2019 and in 2019. Food sector earns P68,511,708,151.55 in 2019, compared to its total accumulated earnings of P460,966,352,919.10 between 2010 and 2019. The medical sector ranks second highest in terms of percentage contribution to the city-wide gross sales at P7,602,990,950.47 in 2019. Food and medical are followed by construction (P6,675,139,652.72), tourism (P4,494,141,299.61), logistics (P1, 515,132,967.47), education (P1,248,759,016.51), and BPO (P8,772,732.17), respectively. The ranking in 2019 is consistent with that between 2010 and 2019.

B. Estimated Covid-19 Impact to the Local Commerce: Barangay and Sectoral Levels

Table VII shows the extent of the over-all loss of the city-level gross sales from all its registered businesses across all Barangays/Areas if the lockdown restrictions will continue. For the past ten-years, commerce in Cagayan de Oro earns around P950 million yearly. The growth rate of the gross

sales of registered businesses in the city is 82 percent. In other words, earnings from commercial activities are growing by 82 percent or equivalent to around P780 million additional gross sales per year. Hence, a one-week lockdown will consume about 2 percent of the average gross sales of these commercial activities, costing firms in the city around P19 million. If the government fails to effectively contain the virus and contact trace the potential virus super spreader, then the lockdown restrictions will continue, which will cost approximately P77 million per month and P239 million per quarter.

Table VI, from the previous section, shows that registered businesses in Tablon contribute the biggest share of gross sales of commerce in the entire city, followed by Carmen, Cugman, Kauswagan, Lapasan, Gusa, Barangay 4, Barangay 24, Balulang and Bulua. Hence, it is safe to assume that the aforementioned Barangays are the badly affected when the lockdown restrictions will continue. These are the highest earning areas in Cagayan de Oro in terms of declared gross sales from all its registered businesses.

TABLE VII COVID-19 IMPACT TO THE CITY-LEVEL BUSINESS GROSS SALES, BARANGAY/AREA LEVEL

Lockdown	Pre-Covid City-Level Gross Sales (2010-2019)	Loss Of Income	Percentage Share
1-WEEK	P957,042,080.62	P19,140,841.61	2
2-WEEK	957,042,080.62	38,281,683.22	4
3-WEEK	957,042,080.62	57,422,524.84	6
1-MONTH	957,042,080.62	76,563,366.45	8
2-MONTH	957,042,080.62	153,126,732.90	16
1-QUARTER	957,042,080.62	239,260,520.16	25
2-QUARTER	957,042,080.62	478,521,040.31	50
3-QUARTER	957,042,080.62	717,781,560.47	75

Source: City Finance Office

The accumulated earnings of all commercial establishments in Tablon are around P12 billion pesos a year. For the past years, the total gross sales of all the registered businesses in Tablon have been growing at around 12 percent. Carmen, although is the mostly business concentrated in the city, comes far second with a declared gross sale of P7,490,686,257.52, among all its registered businesses. However, its gross sales from commercial activities have been growing exponentially at 100 percent yearly. Business gross sales from other Barangays are also growing, except that of Barangay 4. Every year between 2010 and 2019, the earnings of registered businesses in Barangay 4 have been declining by 114 percent. However, it has declared an accumulated amount of P3,612,087,002.17 business gross sales within the ten-year period.

Table VIII provides a menu of possible economic costs if the government won't be able to restart the economy quickly in its full operational capacity. If businesses continue to operate on a limited capacity at around 50 to 80 percent, they will certainly be in a difficult position to achieve their pre-COVID gross sales.

For instance, in Tablon alone, a one-week lockdown will cost its registered businesses an accumulated loss of around P250 million, while around P1 billion for an additional month and around P3 billion for another quarter of lockdown restrictions. The more time that the local businesses are hampered, the higher will be the potential loss of sales. Same is true for all registered businesses from the top ten highest earning Barangays/Areas.

TABLE VIII COVID-19 IMPACT PER BARANGAY/AREA

Barangay	Pre-Covid Gross Sales (2010-2019)	1-Week Lockdown	1-Month Lockdown	1-Quarter Lockdown
TABLON	12,802,838,115.40(12%)	256,056,762.31	1,024,227,049.23	3,200,709,528.85
CARMEN	7,490,686,257.52(100%)	149,813,725.15	599,254,900.60	1,872,671,564.38
CUGMAN	5,231,629,331.56(130%)	104,632,586.63	418,530,346.52	1,307,907,332.89
KAUSWAGAN	4,604,068,066.43(114%)	92,081,361.33	368,325,445.31	1,151,017,016.61
GUSA	4,451,393,983.07(58%)	89,027,879.66	356,111,518.65	1,112,848,495.77
LAPASAN	4,220,238,900.76(76%)	84,404,778.02	337,619,112.06	1,055,059,725.19
BARANGAY 4	3,612,087,002.17(-114%)	72,241,740.04	288,966,960.17	903,021,750.54
BARANGAY 24	3,008,877,405.89(130%)	60,177,548.12	240,710,192.47	752,219,351.47
BULUA	2,685,670,186.42(110%)	53,713,403.73	214,853,614.91	671,417,546.60
BALULANG	2,522,281,489.71(175%)	50,445,629.79	201,782,519.18	630,570,372.43

Source: City Finance Office
Note: Numbers in parenthesis are gross sales growth rate among its registered businesses from 2010-2019. Numbers are in Philippine peso.

While the pre-COVID gross sales among registered businesses in Cagayan de Oro using barangay/area-level data is around P950 million, the average gross sales among commercial activities from the selected seven key sectors amounts to P6,585,233,613.13. Sectoral gross sales before the pandemic are higher than the average gross sales among Barangays/Areas in Cagayan de Oro City. Plausible explanation for this might have something to do with the

absence of comprehensive business registration data per Barangay/Area. Strikingly, there is an absence and/or lack of complete data from hinterland areas such as in Besigan and Pigsag-an. There might also be firms that are located in various Barangays but have only declared their business registration at their main branch.

Table IX shows that a week of temporary hibernation in most of our economic activities would cost the key seven sectors around P132 million. One-month lockdown cuts their average gross sales by 8 percent or equivalent to P526,8181,689.04. If lockdown continues for the next quarter or two, it will cost them around P1.6 billion per quarter.

TABLE IX COVID-19 IMPACT TO THE CITY-LEVEL BUSINESS GROSS SALES, SECTORAL LEVEL

Lockdown	Pre-Covid	Loss Of Income	Percentage Share
1-Week	P6,585,233,613.13	P131,704,672.26	2
2-Week	6,585,233,613.13	263,409,344.53	4
3-Week	6,585,233,613.13	395,114,016.79	6
1-Month	6,585,233,613.13	526,818,689.05	8
2-Month	6,585,233,613.13	1,053,637,378.10	16
1-Quarter	6,585,233,613.13	1,646,308,403.28	25
2-Quarter	6,585,233,613.13	3,292,616,806.56	50
3-Quarter	6,585,233,613.13	4,938,925,209.85	75

Source: City Finance Office

Since the food sector dominates 80 percent of the total gross sales among the key seven sectors, it is also the most affected from the lockdown restrictions imposed by the government to contain the spread of the virus. Food sector also has the highest number of business concentration in the city. As a matter of fact, 7,875 business registrations have been recorded under food sector since 2010, in which its gross sales averages at around P32 billion and is growing at 67 percent a year. For a one-week lockdown, with only skeletal workers are allowed to work and at around 50 percent operational capacity, it will cost the food sector an approximately P650 million loss of accumulated sales.

The medical sector is also affected as it is composed mostly of birthing homes, dental, optical and medical clinics. Pharmacies and hospitals are also part of this sector. With the increasing public paranoia against COVID-19, many clinics were closed for a certain period of time. Some are already operating but at a limited capacity. Hospitals and pharmacies were also required to have additional facilities to maintain safety among its employees and existing clients against possible COVID-19 contamination. Hence, these additional requirements entail added costs for these medical institutions without a striking increase in regular client demands. These additional government requirements and continuous lockdown restrictions will cost medical establishments around P100 million pesos for one-week, approximately P400 million for every additional month, and a whopping P1,310,508,850.31 for every quarter.

Construction is one of the first sectors to be halted since the height of this pandemic. Before COVID-19, construction firms have been mushrooming in the city at around 15 percent. Every year, the sectoral gross sales are increasing at an overwhelming 110 percent, which is reflective of Cagayan de Oro's growing demands in real estate and efficient public infrastructure. A one-week lock down entails P85 billion loss of gross sales, P330 million loss for another month, and a billion pesos loss for every additional quarter. When you say hibernation of commercial activities, the first few sectors to be certainty affected are tourism and logistics. These sectors require movement of people and goods. These economic activities may have a huge potential of spreading the virus to different places. In Cagayan de Oro, tourism is flourishing as the city is starting to receive attention from domestic and international tourists. Since 2010, the tourism sector has been earning an additional 117 percent of gross sales. As a matter of fact, tourism among the seven key sectors has the highest year-on-year increase in gross sales. Hence, the continuous stoppage of economic activities within tourism will cost between P50 million and P630 million in Cagayan de Oro. Same is true for logistics. Although there are only around 5 percent additional registered businesses in logistics per year, the sector's pre-COVID gross sales is around P990 million. If the lockdown restrictions continue, the sector's loss of income will be between P19 million and P630 million.

One of the major challenges among educational institutions is to adapt with the full-online teaching method to accommodate their students who are studying at home. Setting-up these internet and ICT infrastructure requires costs on the part of private schools. Many teachers and staff members were already terminated from work. Some students have decided to postpone their enrollment as things are still very uncertain. Education is already one of the lowest earning sectors in the city before this pandemic. It is the least growing sector in terms of sector-level gross sales. On the average, education sector only earns around P800 million yearly. Hence, a one-week to one-quarter lockdown will cost private schools between P16 million and P206 million. Since the business process outsourcing (BPO) in Cagayan de Oro is relatively new, with only 53 registered firms since 2017, it is the least to be affected by the stoppage of local business activities. For the past year or two, BPOs have recorded a 128 percent increase in gross sales. The sector has been earning an average of P959,023.22 a year. Hence, the lockdown restrictions affect the BPO sector minimally as it is still relatively new and has still fewer sectoral participants.

TABLE X COVID-19 IMPACT PER SECTOR

Sector	Pre-Covid Gross Sales	1-Week Lockdown	1-Month Lockdown	1-Quarter Lockdown
Food	32,264,808,882.96 (67%)	645,296,177.66	2,581,184,710.64	8,066,202,220.74
Medical	5,242,035,401.26 (68%)	104,840,708.03	419,362,832.10	1,310,508,850.31
Construction	4,247,705,874.38 (110%)	84,954,117.49	339,816,469.95	1,061,926,468.59
Education	827,748,076.67 (78%)	16,554,961.53	66,219,846.13	206,937,019.17
Tourism	2,523,113,463.46 (117%)	50,462,269.27	201,849,077.08	630,778,365.87
Logistics	990,264,569.96 (99%)	19,805,291.40	79,221,165.60	247,566,142.49
Bpo	959,023.22 (128%)[1]	19,180.46	76,721.86	239,755.80

Source: City Finance Office

Note: Numbers in parenthesis are gross sales growth rate among its registered businesses from 2010-2019. Numbers are in Philippine peso.

[1]Since 2018.

IV. CONCLUSION AND RECOMMENDATION

The previous sections present relevant information pertaining to the business registration situation and projection in Cagayan de Oro City. Among all eighty barangays (and five major local markets) in city, Carmen is the most concentrated in terms of commercial activities. It has recorded an average of 2,025 business registration every year. It has also the highest number of employment record both in the ten-year period and in 2019. Carmen's employment between 2010 and 2019 is an average of 7,821 workers every year, while a total employment of 11,926 in 2019. However, Tablon constitute the highest share of total gross sales among its registered businesses. The average gross sales of commercial activities in Cagayan de Oro for the past years is around P950 million. In 2019, the registered businesses in the city reports P1.4 billion total sales. The registered businesses in Tablon contribute 16 percent of these gross sales in the city. Carmen is far next at 9 percent of the city-wide value of commercial activities.

TABLE XI CURRENT COMMERCIAL PERFORMANCE PER BARANGAY/AREA, 2010-2019

Number of Business Registered	Amount of Gross Sales of Registered Businesses	Employment
1. Carmen	1. Tablon	1. Carmen
2. Cogon Market	2. Carmen	2. Kauswagan
3. Lapasan	3. Cugman, Kauswagan	3. Lapasan
4. Kauswagan	4. Lapasan, Gusa	4. Tablon
5. Bulua	5. Barangay 24, Barangay 4	5. Barangay 24
6. Gusa	6. Balulang, Bulua	6. Bulua
7. Carmen Market		7. Gusa
8. Nazareth		8. Bugo
9. Barangay 24		9. Barangay 31
10. Macasandig		10. Balulang

Source: City Finance Office

However, the outlook provides a different direction. Most of the barangays that are reported to be the highest earning, have more workers employed and highly concentrated node of commerce, are not found in the list of the highest growing in terms of gross sales, businesses registration and employment condition.

The areas and/or barangays with the fastest growing number of business registration for the past years are mostly from hinterland and numbered barangays/areas. In other words, Barangay 24, Bulua market, San Simon, Baikingon and Mambuaya have experienced an overwhelming growth of commercial activities between 2010 and 2019. Registered businesses among mostly numbered barangays/areas reported an exponential growth of gross sales; Barangay 36 being the highest at 189 percent growth, followed by Barangay 23 (186 percent), Lumbia (178 percent), Barangay 10 (176 percent) and Balulang (175 percent). Employment condition in potential growth areas is also increasing, such as in Cogon market (199 percent), Bulua market (196 percent), Barangay 4 and 35 (195 percent), Agora market (194 percent), and Barangay 39 (192 percent).

Table XII shows a striking reality that economic opportunities and growth potential in Cagayan de Oro are now slowly shifting to its other areas. With the congestion of the traditional commercial nodes, better public roads, and affordability of private transportation (i.e., motorcycles and surplus cars), hinterland barangays are getting a competitive position to also become a bustling business start-up. It is, however, interesting to study the origin of these businesses, whether these are owned by local residents or by new land owners in the barangay/area. Numbered barangays/areas are also getting a competitive niche being at the heart of the city with the spill-over of business opportunities from the existing business districts.

TABLE XII POTENTIAL COMMERCIAL PERFORMANCE PER BARANGAY/AREA, 2010-2019

Growth Rate of Business Registration	Growth Rate of Gross Sales	Employment Growth[1]
1. Barangay 24	1. Barangay 36	1. Cogon Market
2. Bulua Market	2. Barangay 23	2. Bulua Market
3. San Simon	3. Lumbia	3. Barangay 35, Barangay 34
4. Baikingon	4. Barangay 10	4. Agora Market
5. Mambuaya	5. Balulang	5. Barangay 39
6. Pagatpat	6. San Simon	6. Barangay 30
7. Balubal	7. Bayabas	7. Barangay 19, Pagatpat
8. Barangay 29	8. Barangay 6	8. Barangay 22
9. Iponan	9. Barangay 14	
10. Dansolihon	10. Tagpangi	

Source: City Finance Office
[1]Begins in 2011 as there is no employment data in 2010

Currently, the food sector dominates all other key sectors in the city. It has the highest number of sectoral participants. In other words, the food sector has the greatest number of registered businesses in Cagayan de Oro. These businesses reported the highest gross sales and biggest employment record for the past years. Tourism ranks second in terms of business registration and employment created. Medical sector, however, reports the second largest gross sales contribution among its registered firms.

TABLE XIII CURRENT COMMERCIAL PERFORMANCE PER SECTOR, 2010-2019

Number of Business Registered	Amount of Gross Sales of Registered Businesses	Employment
1. Food	1. Food	1. Food
2. Tourism	2. Medical	2. Tourism
3. Construction	3. Construction	3. Construction
4. Medical	4. Tourism	4. Medical
5. Logistics	5. Logistics	5. Education
6. Education	6. Education	6. Logistics
7. BPO	7. BPO	7. BPO

Source: City Finance Office

Looking forward, the business process outsourcing sector has the potential to dominate all other key sectors in the city. Since 2017, BPOs have recorded a whopping growth of 121 percent. Meaning, every year there are 121 percent more BPOs being registered in the city. These firms report an increase of 166 percent gross sales and generated an additional employment of 128 percent. Food ranks second only in business registration growth, last in gross sales growth, and second in employment growth. Tourism and construction remain to be on a competitive position as Cagayan de Oro City is still on its growth trajectory of becoming the second metropolitan area in Mindanao. Both tourism and construction play an important role to this growth prospects.

TABLE XIV POTENTIAL COMMERCIAL PERFORMANCE PER SECTOR, 2010-2019

Growth Rate of Business Registration	Growth Rate of Gross Sales	Employment Growth
1. BPO[1]	1. BPO	1. BPO
2. Food	2. Tourism	2. Food
3. Tourism	3. Construction	3. Construction
4. Construction	4. Logistics	4. Tourism
5. Logistics	5. Education	5. Logistics
6. Medical	6. Medical	6. Education
7. Education	7. Food	7. Medical

Source: City Finance Office
[1]Begins in 2018 as BPO business registration started to appear in 2017

The tables above show both the current and potential performance of major barangays and/or areas and key sectors in the city. However, these data and projections did not account for a potential stoppage of major commercial activities. It did not anticipate a wide-spread and deadly pandemic like COVID-19. In the absence of a vaccine, the government has to halt most of the private business activities. People were encouraged to stay-at-home, while a few firms where only allowed to operate at a limited capacity. Stricter workplace safety protocols are in place, adding more costs to the already losing gross sales of businesses. Firms with an existing technological assisted consumer service (i.e., online ordering) tend to recover quickly.

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The local contraction of economic activities in Cagayan de Oro encouraged firms to operate through work-from-home arrangements. Internet and ICT infrastructure have become a necessity for firms to survive as everything is dependent on online already. With these restrictions, firms from the major sectors in the city is to lose around P10,000 for a one-week of lockdown restrictions, P39,904.46 for another month, and P124,701.44 per every quarter.

Table XV shows the per capita share of all registered business firms, within each sector, in 2019 from the

estimates of the COVID-19 impact in Table XV. A firm in the food sector will lose around P2,000 for a one-week of limited operational capacity, around P10,000 for every additional month of lockdown, and P29,000 for every quarter of restrictions. The same is true for other sectors, each firm will lose between P3 and P8 thousand for a one-week lockdown, around P13 to P26 thousand for another month of limited operational capacity, and approximately P105 thousand for each quarter.

TABLE XV PER CAPITA SHARE OF COVID-19 ECONOMIC IMPACT, SECTORAL LEVEL

Sector	Per Capital Share		
	1-Week Lockdown	1-Month Lockdown	1-Quarter Lockdown
Food	2,428.95	9,715.78	29,147.35
Medical	6,631.40	26,525.59	79,576.77
Construction	7,747.14	30,988.57	92,965.71
Education	8,765.05	35,060.22	105,180.65
Tourism	7,710.63	30,842.50	92,527.50
Logistics	6,555.68	26,222.73	78,668.18
Bpo	3,277.11	13,108.43	39,325.30
Total	9,976.12	39,904.46	124,701.44

Source: City Finance Office

Sabal and Mansueto (2021, pp 185-187) suggested various strategies to restart the local economy. Since this article is the second part of the aforementioned study, the recommendations of this paper will adopt that of Sabal and Mansueto (2021, pp 185-187), to wit:

"The Philippine economic managers have projected that if this pandemic will still continue to make a halt to our economy, the 2020 economic growth of the country will decline by around 5.5 percent. Hence, Philippine GDP is expected to grow at only 2 percent. Economists have projected that the economy will start to bounce-back in 2021 but it will take us until 2022 to recover our pre-COVID growth rate.

In Cagayan de Oro, predicting the recovery of the key seven sectors is challenging. This will all depend on the effectiveness of the strategies and interventions of the government (both local and national). Ideally, recovery from pre-crisis requires the next period plus one. In other words, if there is a contraction for one quarter, recovery will be expected in the next two quarters provided that government programs are properly targeted and effective.

To help firms bounce back from this pandemic, the following policy interventions suggested by Sabal and Mansueto (2021, pp. 185-187) maybe effective:

1. Prioritize the most affected sectors based on the number of sectoral participants (i.e., the number of registered businesses), share to the city-level gross sales, and number of employed workers.
2. The Bangko Sentral ng Pilipinas has indirectly released money to the economy by adjusting bank reserve requirements and interest rates. The city government can provide an inventory of banks and cooperatives that offer loans for micro, small and medium enterprises in the city.
3. Offer flexible tax payment consideration and other incentives for businesses provided that they maintain their workers and offer them flexible work arrangements.
4. Identify the average fixed costs per sector. Government subsidy and/or assistance may be provided just enough for firms to pay for their fixed costs.
5. Offer technical training for micro, small and medium businesses so that they can develop their own technology-assisted customer service (i.e., online marketing, online selling and/or ordering).
6. Help develop local start-ups for delivery services. These will help firms (especially those in the food sector) to connect with their clients through a third-party delivery service.
7. History taught us that in the absence of private activities, an increase in government spending stirs the economy back to the pre-crisis level. Government should act as customers to firms in the execution of the delivery of its social and recovery services. For

instance, it is already commendable that the city government is paying hotels and inns as quarantine facilities for COVID-19 potential patients rather than to build costly temporary facilities. Another plausible intervention is to download to pawnshops all government monetary subsidy to secure and/or augment work to these firms (Ang and Peña-Reyes, 2020). Encourage more agricultural production and use their produce for the distribution of relief goods to the quarantine areas.

8. Restart the business activities immediately and subsidize additional costs for COVID-19 related equipment required for the firms to secure the utmost safety of its clients.

9. Identify jobs that are not vulnerable to future pandemic and crises, create modules for the training of displaced workers in order for them to acquire the skills needed for the 21st century jobs, and coordinate with key agencies (i.e., TESDA, DOLE) on the training of these workers.

10. Tap private sector and other private stakeholders into the planning and implementing of recovery strategies.

No policy and intervention are superior to the rest. Everything always depends on how targeted and strategic government policies are. Although we are not new to economic crisis, what we are experiencing right now is different from the past. This is a health crisis turned into an economic crisis. The first thing that government should do is to improve the capacity of local hospitals for possible COVID referral centers. Encourage them to develop their facilities through generous incentives and tax payment considerations.

Lastly, government should think big and invest its resources to programs that create a multiplier effect to the economy. Multipliers are interventions that create ripples or positive impacts to other sectors and/or economic participants. For instance, strategies that assist the most affected firms recover their income loss may avoid a strike increase of unemployment in the city. Providing temporary employment to affected workers secures their purchasing power, which may lead to substantial general private spending. The idea is that more purchasing power among workers may create potential sales among firms. More importantly, it is an undeniable fact that the blood line of government revenue is the taxes paid by private economic actors. Investing its limited resources in targeted strategies that immediately secure a worker's and/or firm's income should be paramount"

V. ACKNOWLEDGEMENT

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