Market Level Assessment Report Fruits and Vegetables intake Vietnam and Nigeria – Vietnam report

Work package 1

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Alliance

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ACRONYMS

CIAT	International Center for Tropical Agriculture
DGLV	Dark Green Leafy Vegetables
FVN	Fruits and vegetables in Vietnam and Nigeria
HH-Q	Household Questionnaire
HMU	Hanoi Medical University
MLA	Market Level Assessment
OV	Other Vegetables
SD	Standard Deviation
IQR	Interquartile Range
VHLSS	Vietnamese Household Living Standard Survey
VND	Vietnamese Dong
WUR	Wageningen University and Research

INTRODUCTION

The research described in this document is part of the FVN project: "Fruits and Vegetables intake in Vietnam and Nigeria'. This project addresses the problem of the triple burden of malnutrition among low-income urban populations in Nigeria and Vietnam by increasing intake of fruits and vegetables through food system innovations that improve access through the diversification of retail outlets, enhance affordability through a client-specific coupon system, and boost acceptability of fruits and vegetables through promotional campaigns involving public and private stakeholders and civil society organizations. The project is implemented in one central and one peripheral urban area in Hanoi, Vietnam and Ibadan, Nigeria offering insights into different contexts related to the level of urbanization, percentage of urban poor, stunting of under-fives, minimum dietary diversity, and availability of fruits and vegetables per day per person. The project intervention consists of three interrelated demand-side interventions addressing accessibility, affordability and acceptability of fruits and vegetables.

The research described in this document is the market level assessment (MLA) of Work package 1 that was conducted as part of the information gathering exercise within the baseline of the FVN research project in March, April 2019.

The research focuses on direct actors (formal and informal vendors who buy and sell the targeted foodstuffs), using structured market surveys to map the physical location of markets within the selected communities, define the market actor (retailer) typology, including four main characteristics of the retailer:

- General characteristics of the retailer,
- How do retailers buy/source ingredients to be processed/traded?
- How do retailers add value to their products?
- How do retailers sell/market their products?

This component will inform the project on the behavior of the retail market sector where our study population source their fruits and vegetables and therefore allow for understanding marketing practices on fruit and vegetable distribution that affects the target households. Data was gathered by RIKOLTO (formerly known as VECO) in Vietnam. The analysis contained in this document is instrumental in informing Work package 2 retailer level interventions.

Hanoi, July 2020,

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My Lan Hoang
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METHODOLOGY

Study area

This study is based in the same urban and peri-urban areas where the household study was conducted, the main difference is that instead of targeting consumers, this study focuses on different types of retailers within the same areas. This study was conducted in the city of Hanoi, Vietnam. Within Hanoi, the districts of Ha Dong and Dong Da were selected (figure 1,2). These districts were selected to represent an urban (Dong Da) and peri-urban (Han Dong) setting with a high density of people living in lower socio-economic status. The selected wards were Biên Giang and Đồng Mai in Ha Dong district (figure 3, 4) and Hàng Bột and Văn Chương in Dong Da (figure 5, 6).

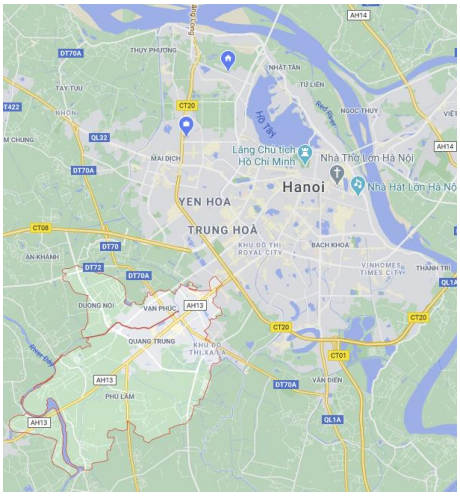

Figure 1. Map of Ha Dong district

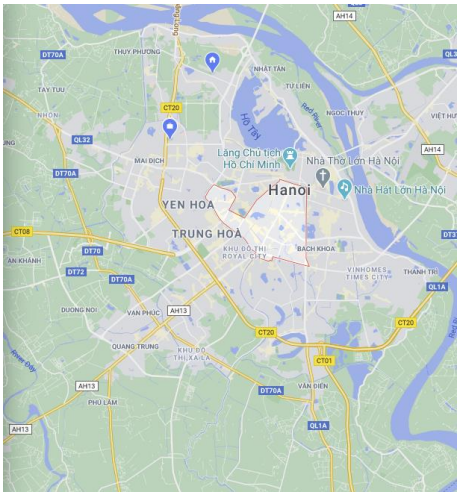

Figure 2. Map of Dong Da district

Figure 3. Ward Biên Giang, Ha Dong

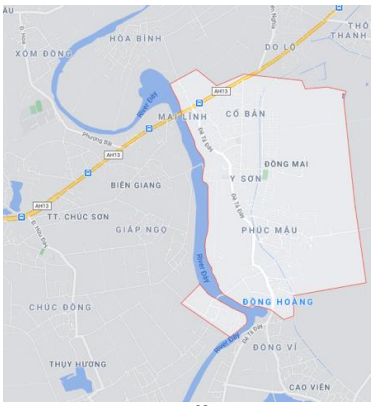

Figure 4. Ward Đồng Mai, Ha Dong.

Figure 5. Ward Hàng Bột, Dong Da

Figure 6. Ward Văn Chương, Dong Da

Study population

A rapid enumeration (census) of different types of retailers was done in the four selected wards, the objective of this census was to identify the "universe" of retailers that traded 32 pre-selected fruits and vegetables[1] within the study area. Once, the census was completed, two products were dropped from the study (Kumquat and Gac Fruit), because we did not find enough retailers selling these products in the four selected wards.

Table 1. Distribution and characteristics of retailers in two districts of Hanoi.

District	Ward	Retailer Type	Share of traders who are wholesalers	Share of traders who are retailers	Share of traders buying F&Vs	Share of traders with own production	Number of actors	Average number of products
Dong Da	Hang Bot	Informal wet/street market	7	100	93	57	72	12.6
	Van Chuong	specialized shops	100	100	100	0	1	5.0
		Informal wet/street market	16	99	86	72	70	11.9
Ha Dong	Bien Giang	convenient store (traditional)	23	100	92	38	13	15.1
		formal wet market	100	50	0	100	2	5.5
		Informal wet/street market	60	98	58	60	40	12.2
	Dong Mai	convenient store (traditional)	0	100	100	60	10	16.6
		formal wet market	56	100	67	47	36	8.8
		Informal wet/street market	18	100	36	73	11	8.9

TOTAL	**255**	**11.9**
Informal wet/street market	193	12.1
convenient store (traditional)	23	15.7
formal wet market	38	8.7
specialized shops	1	5.0

Table 1 shows the main characteristics and distribution of retailers in the study area. We found 255 retailers, and the main results from the census is that the vast majority (76%) of retailers present in the study area are informal wet/street market retailers, selling on average 12 target products per retailer, very few act as both retailer-wholesaler, and around 60% of retailers have "own production", as part of their selling inventory, implying that they do not only rely on buying from suppliers.

Randomization and sampling

The randomization process was performed in a two-stage approach. First, a random selection of 100 retailers per district, and second, once retailers were selected, each retailer would be asked about five target products in the questionnaire, hence there was a need to randomize the target products that retailers were going to be interviewed for.

The second stage procedure was challenging due to a limited number of observations (retailers) for a small number of target products. Hence, we could not do a complete random sampling of products per

[1] We collected information about fruits and vegetables that are consumed by Hanoi residents from different sources of information, starting with our project's 24-hour recall, and other recent 24-hour recall and consumption studies. Once we collected a long list of fruits of vegetables, we identified products that are nutritious, are widely available through the year, that do not have adverse perceptions (for example, no excess use of pesticide in farm production), and that are relatively affordable. After applying this selection criteria, we ended up with 32 pre-selected target products. A more detailed record of product selection is included in APPENDIX 1

retailer because we did not want to run the risk of not being able to collect enough (30 or 35) observations per product in the final sample.

Table 2. Sample distribution of four categories of products (Fruits, DGL Vegetables, Vitamin A Rich Vegetables, Other Vegetables).

Product	Number of traders selling this product (**1st stage**)	Sample (**2nd Stage**)
Passion fruit	35	30
Chinese leek	39	30
Persimmon	47	30
Mushroom	48	30
Papaya	53	30
Lettuce leaves	58	30
Amaranth, spineless	60	30
Tangerine	62	30
Pomelo	63	30
Watercress	63	30
Orange	69	35
Guava	69	35
Ripe mango	69	35
Mungbean sprouts	75	35
Napa cabbage	76	35
Piper lolot	77	35
Sweet potato, leaves	91	35
Onion, common, garden	93	35
Carrot	94	35
Lettuce, romaine, leaves	97	35
Broccoli, leaves and stem	104	35
Amaranth, white	107	35
Pumpkin	108	35
Cabbage	113	35
Katuk	116	35
Choy-sum	118	35
Amaranth, red	120	35
Mustard greens	124	35
Morning glory	124	35
Ceylon spinach	130	35
Total Sample		**1000**

In order to overcome this challenge, we randomly sampled retailers starting from the product that has the fewest number of retailers, in this case passion fruit. Then, we moved to randomly select products for the second product that has the fewest number of retailers (Chinese Leek), and so on. Once a given retailer has been randomly assigned five products, the retailer is excluded from the sampling procedure for the subsequent products. Table 2 shows the number of products available by the random selection of retailers (first stage), and the random selection of products (second stage)

The random sample procedure yielded 200 retailers and 1,000 target product observations. After fielding the questionnaire, we ended up with 192 retailers, and 956 products.

Questionnaire and data collection

The retailer questionnaire included modules to inquire about four main aspects and characteristics of the retailer: 1) the general characteristics and assets of the retailer, including socio-demographic, location data, and perceptions about food safety, 2) information about how retailers source/buy their raw ingredients, 3) information about how retailers add value to their raw or semi-processed ingredients, and 4) information about how retailers sell/market their products.

The questionnaire was originally created in English, translated to Vietnamese by RIKOLTO and CIAT, and then programmed into Android-based tablets using CS Pro. Data collection was performed by one team of ten local enumerators selected by RIKOLTO and trained for data collection.

Statistics

The collected data were downloaded from CS Pro and imported to Stata 14.0 software. The cleaning was performed jointly by CIAT and RIKOLTO and the final dataset was shared into the project OneDrive space. Collected data was analyzed by CIAT, and Stata 14.0 software was used to perform the descriptive analysis of this report.

Table 3. Distribution of the sample by district and retailer type.

	Mom & Pop	Formal Wet Market	Informal Wet Market	Convenience Store	Total
Observations	27	16	148	1	192
District					
Dong Da	2	0	108	1	111
Ha Dong	25	11	40	0	81

Table 3 shows the distribution of the sample of retailers by district and retailer type. As expected, given the distribution of retailers obtained in the census of the four selected wards (Table 1), the vast majority of the observations in the random sample are retailers located in informal wet markets (77% of total sample), followed by Mom & Pop retailers, and formal wet market actors. The sample produced only one observation for retailers with a convenience store format, hence we decided to drop this observation for the descriptive analysis segregated by type of retailer.

Table 4. Distribution of the sample by product type.

Product Type	Frequency	Percentage
Dark Green Leafy Vegetables (DGLV)	20	10.4
DGLV + Other Vegetables (OV)	101	52.6
Fruits	64	33.3
Fruits + DGLV	4	2.1
Fruits + DGLV +OV	3	1.6
Total	192	100

Table 4 shows the distribution of the sample by product type. Following the product distribution (Table 2) of the sample, the original plan was to segregate the statistical analysis in three categories of products; DGLV, other vegetables, and fruits. However, this was not possible as the data collected showed significant challenges. First, there is no group of retailers who only trade "other vegetables", as the vast majority also trade DGLV (97%), and a small share also trade fruits (3%). Second, fruits were the only category where a defined group of retailers trading only fruits (90%) existed, and third, the vast majority of retailers trading DGLV also market other vegetables. Taking into consideration this situation, we opted to carry out the statistical analysis segregated by type of product considering only two categories; "vegetables" that include traders who only market DGLV and retailers who trade DGLV and other vegetables (20 + 101 = 121), and the category of "fruits" which include traders who only market fruits (64 observations), and retailers who market fruits and DGLV (4 observations), and retailers trading fruits, DGLV and other vegetables (3 observations).

CHARACTERISTICS OF RETAILERS.

This section discusses the asset characteristics of the retailers sampled. The results are presented segregating retailers by retailer type (mom & pop's, formal wet market, and informal wet market) as well as segregating by the type of target product that they sell (fruits, and vegetables). The following points stand out.

First, retailers are nearly all middle-aged women, around 27% have completed high school or above high school, and have roughly 15 years of experience since they started their trading business (Tables 5 and 6). There is no major difference on these retailer characteristics segregated by retailer or product type.

Table 5. Human capital by retailer type

	Mom & Pop	Formal Wet Market	Informal Wet Market	All
Observations	27	16	148	191
1) Age of owner	48	47	47	47
2) Owner is female (%)	96	100	95	95
3) Education level of owner				
a) None	0	0	5	4
b) Primary	24	30	20	21
c) Secondary	33	50	47	45
d) High school	33	10	28	27
e) Above high school	10	10	1	2
4) Did you crop (any target product) in the last 12 months (%)	26	6	29	27
5) Experience – years since started trading business	16.3	16.3	14.8	15.2

Second, 29% of informal wet market retailers and 26% of Mom & Pop retailers also produce part of the target products that they sell. This practice is less common by formal wet market retailers, and interestingly it is a more common practice (twice as much) around retailers who produce vegetables, compared to retailers who sell fruits. Yet, roughly 1/4th of the sample are farmer-retailers since they produce target products, yet this is still not a widespread practice among retailers.

Table 6. Human capital by product type

	Fruits	Vegetables (DGLV, Vit A rich, Other)	All
Observations	71	121	192
1) Age of owner	45	48	47
2) Owner is female (%)	96	95	95
3) Education level of owner			
a) None	5	4	4
b) Primary	21	21	25
c) Secondary	46	44	45
d) High school	24	29	27
e) Above high school	5	2	3
4) Did you crop (any target product) in the last 12 months (%)	15	33	27
5) Experience – years since started trading business	15.0	15.2	15.1

Table 7 and 8 show the functional status of retailers. Several points emerge.

First, as expected, virtually all retailers, regardless of retailer or product type take possession of the products that they sell. However, roughly 1/6th of wet market retailers (formal and informal) also take commission for some of their transactions, yet this is not a widespread practice among retailers. The analysis yields similar results when segregating retailers by target product, hence confirming that taking commission is not common among retailers.

Second, around 30% of informal wet market and "mom and pop" retailers sell their own production of target products within the array of produce that they sell, this again is a less common practice among formal wet market retailers, perhaps showing their dedication to "ONLY" trading activities. Furthermore, the analysis by product type shows similar results, as 30% of retailers sell their own farm production.

Table 7. Functional status of traders by retailer type

	Mom & Pop	Formal Wet Market	Informal Wet Market	All
Observations	27	16	148	191
Transaction Characteristics				
1) Share of retailers who take possession	100%	100%	97%	98%
2) Share of retailers who take commission	4%	13%	15%	13%
3) Share of retailers who sell their own production	30%	6%	32%	30%
Purchasing Volume per season (KGS)				
4) Weekly volume in high season (HS)	368	924	522	536
5) Weekly volume in HS (5 years ago)	324	1,772	615	674
6) Weekly volume in low season (LS)	108	266	173	172
7) Weekly volume in LS (5 years ago)	87	422	208	210
Minimum and Maximum Sold Volume (KGS)				
8) Maximum weekly volume sold in HS	429	783	533	542
9) Minimum weekly volume sold in HS	106	211	140	142
Waste Volume per season (KGS)				
10) Waste volume (Kgs) in HS	21.7	48.2	21.2	23.5
11) Waste volume (Kgs) in LS	6.9	9.8	3.6	4.5

Third, the vast majority of retailers trade lower weekly volume now than five years ago. Only mom and pop retailers have modestly increased their sales (13%) over the past five years, formal (-40%) and informal (-16%) wet market retailers have decreased weekly volumes, which signals the increased competition that is occurring given a growing number of markets (both formal and informal), traditional retailers, and other retail formats (supermarkets and online shopping).

Fourth, all retailers tend to sell three times more volume in high season compared to low season now and also five years ago. Formal wet market retailers have a higher difference between high and low season as they sell 3.5 to 4.2 times higher volumes now and five years ago respectively. Furthermore, formal wet market retailers trade higher volumes compared to mom and pop and informal wet market retailers, they tend to have 1.8 to 2.5 times higher weekly volumes compared to informal wet market and mom and pop retailers respectively.

Table 8. Functional status of traders by product type

	Fruits	Vegetables	All
Observations	71	121	192
Transaction Characteristics			
1) Share of retailers who take possession	100%	97%	98%
2) Share of retailers who take commission	14%	12%	13%
3) Share of retailers who sell their own production	25%	32%	30%
Purchasing Volume per season (KGS)			
4) Weekly volume in high season (HS)	915	315	537
5) Weekly volume in HS (5 years ago)	1,032	416	644
6) Weekly volume in low season (LS)	275	120	177
7) Weekly volume in LS (5 years ago)	297	151	205
Minimum and Maximum Sold Volume (KGS)			
8) Maximum weekly volume sold in HS	957	334	564
9) Minimum weekly volume sold in HS	207	106	144
Waste Volume per season (KGS)			
10) Waste volume (Kgs) in HS	45.3	11.0	23.7
11) Waste volume (Kgs) in LS	7.7	2.9	4.7

Similar trends are evident when analyzing weekly volumes by product type, as all retailers trade lower weekly volumes than five years ago, they tend to trade roughly three times more volume in high compared to low season, and the only high difference between retailers with different product types is that retailers trading fruits sell roughly two to three times more volume than retailers trading vegetables. This is expected as many of the target vegetables in this study are DGLV, which have lower density than fruits.

Fifth, waste is not a major concern for all retailers, it represents roughly 2.5 to 4.4 percent of weekly volumes in high and low seasons respectively, with only mom and pop retailers having a slightly higher percentage of waste (around 6%). Retailers selling fruits tend to have higher waste (4.9% in high season, 2.8% in low season) compared to retailers selling vegetables (3.5% in high season, 2.4% in low season), however, waste is still a minor concern among all retailers regardless of retailer and/or product type.

Tables 9 and 10 show the physical assets of retailers segregated by retailer and product type. Several points stand out.

Table 9. Physical assets by retailer type

	Mom & Pop	Formal Wet Market	Informal Wet Market	All
Observations	27	16	148	191
1) Location of stall/shop of retailers				
Number of stalls/shops in the current location	1.0	1.4	1.1	1.1
Share of retailers who have stalls/shops in a different location	0%	19%	5%	5%
2) Shares of retailers owning different type of assets:				
Boxes (plastic)	15%	13%	16%	16%
Boxes (wood)	0%	0%	0%	0%
Boxes (other)	7%	6%	3%	4%
Scales	100%	94%	98%	98%
Truck (small)	4%	13%	2%	3%
Truck (large)	4%	0%	0%	1%
Warehouses	4%	0%	3%	3%
Telephone	48%	31%	41%	41%
Electric Generator	4%	0%	0%	1%
Computer	4%	6%	0%	1%
Refrigerator	33%	0%	3%	7%
Bicycle	15%	13%	13%	13%
Motorcycle	56%	56%	78%	73%
Other	67%	81%	76%	75%
6) Total value of business assets (VND thousands)	76,619	76,599	60,588	64,195

First, all retailers regardless of type of product that they sell have a stall/shop. The main difference found is that roughly one of every five formal wet market retailers also have stalls in a different location, while this is not as common for informal wet market retailers (one of every twenty retailers) and mom and pop shops. There is no difference about owning a stall in a different location when segregating this by product type.

Second, all retailers regardless of product and retailer types have similar asset profiles, with a few exceptions. One third of mom-and-pop shops have a computer, which is not common among formal and informal wet market retailers, three times more formal wet market retailers own trucks compared to other types of retailers, and 22% more informal wet market retailers have motorbikes compared to the other types of retailers.

Third, mom-and-pop and formal wet market retailers have 25% more business assets (assessed by the total value of business assets), this difference is exacerbated when analyzing this by product type, as

retailers who sell vegetables have twice as much assets compared to retailers who sell fruits, implying that vegetable vendors are wealthier (asset-wise) than fruit vendors, this is a surprising result, as fruits are generally more expensive products than vegetables, and have higher volumes than vegetable sellers. It is important to emphasize that these results reflect the status of retailers that trade the target products and are located in low-income areas of Hanoi, hence the "fruits" that are considered as part of this study are not particularly more expensive than the target vegetables.

Table 10. Physical assets by product type

	Fruits	Vegetables	All
Observations	71	121	192
1) Location of stall/shop of retailers			
Number of stalls/shops in the current location	1.1	1.1	1.1
Share of retailers who have stalls/shops in a different location	6%	6%	6%
2) Shares of retailers owning different type of assets:			
Boxes (plastic)	18%	15%	16%
Boxes (wood)	0%	0%	0%
Boxes (other)	8%	2%	4%
Scales	100%	97%	98%
Truck (small)	1%	5%	4%
Truck (large)	0%	1%	1%
Warehouses	4%	2%	3%
Telephone	42%	41%	42%
Electric Generator	0%	1%	1%
Computer	1%	2%	2%
Refrigerator	7%	7%	7%
Bicycle	10%	15%	13%
Motorcycle	73%	73%	73%
Other	79%	74%	76%
6) Total value of business assets (VND thousands)	40,989	83,164	67,568

Tables 11 and 12 show employment and labor cost of retailers segregated by retailer and product type. Several points emerge.

First, overall, retailers do not generate much employment beyond their own labor, and a bit of family labor working in their stall/shop, this is the same result for all types of retailers, as well as for retailers selling fruits or vegetables. This is expected, as previous results on functional status and retailer assets imply that overall, most retailers have small operations.

Table 11. Labor and business costs by retailer type

	Mom & Pop	Formal Wet Market	Informal Wet Market	All
Observations	27	16	148	191
Business labor				
Permanent workers	0.3	0.0	0.0	0.0
Daily workers	0.0	0.0	0.1	0.0
Other workers	0.0	0.0	0.0	0.0
No. family member working in the shop/stall	0.5	0.3	0.2	0.3
Share of traders having family as traders	0%	13%	13%	11%
Business costs and other information				
Total monthly business costs (VND thousands)	1,429	988	2, 210	1,998
Profit per KG (VND thousands)	3.8	4.2	4.2	4.1
Amount to money to be willing to abandon the stall/shop for a week (VND Thousands)	2,589	3,188	2,652	2,679
Share of retailers who sell organic vegetables/fruits (%)	4%	0%	1%	2%
…. If you sell organic vegetables/fruits what is the markup compared to the traditional price (%)	5	.	4	4

Share of retailers who sell safe/clean vegetables/fruits (%)	4%	0%	3%	3%
…. If you sell clean vegetables/fruits what is the markup compared to the traditional price (%)	1	.	8	5

Second, surprisingly informal wet market retailers have significantly higher monthly business costs than mom-and-pop, and formal wet market retailers. A deeper analysis into the cost structure revealed that informal wet market retailers have higher rent (as they are not part of a government subsidized market facility), and lacking public services, they incur extra costs (such as electricity generation via electric generator fuel). Retailers who sell vegetables have higher monthly business costs, but this is rather anecdotal as a higher share of vegetable retailers are informal wet market retailers, hence the higher operating costs.

Third, we asked retailers about the perceived "profit" they are earning per kg, as well as the amount of money they would need to receive to be willing to abandon their stall/shop for a week, and the results are interesting. The profit does not change much across retailer type, roughly four thousand VND per kg of traded product, yet retailers who sell fruits expect a slightly higher profit (5.1 thousand VND) over retailers who sell vegetables. This is expected as fruits are usually more expensive than the vegetables in Vietnam.

Moreover, on the willingness to abandon the stall/shop, formal wet market retailers expect a 20% higher amount of money compared to the other two types of retailers. This is expected, as previous results show that formal wet market retailers have a higher weekly volume traded, hence higher gross earnings. Retailers who sell fruits expect twice as much money to be willing to abandon the stall for a week compared with retailers who sell vegetables. This is also expected, as discussed before, fruits are a more expensive food item than vegetables.

Table 12. Labor and business costs by product type

	Fruits	Vegetables	All
Observations	71	121	192
Business labor			
Permanent workers	0.0	0.1	0.1
Daily workers	0.0	0.1	0.0
Other workers	0.0	0.0	0.0
No. family member working in the shop/stall	0.4	0.2	0.3
Share of traders having family as traders	10%	12%	11%
Business costs and other information			
Total monthly business costs (VND thousands)	1,663	2,192	1,998
Profit per KG (VND thousands)	5.1	3.7	4.2
Amount to money to be willing to abandon the stall/shop for a week (VND Thousands)	5,478	2,600	3,518
Share of retailers who sell organic vegetables/fruits (%)	4%	1%	2%
…. If you sell organic vegetables/fruits what is the markup compared to the traditional price (%)	4	5	4
Share of retailers who sell safe/clean vegetables/fruits (%)	1%	4%	3%
…. If you sell clean vegetables/fruits what is the markup compared to the traditional price (%)	2	6	5

Fourth, regardless of type of retailer or type of product that is traded, there are not many retailers trading organic (2% of retailers) or safe/clean (3% of traders) fruits and vegetables, and for the few who sell, the markups compared to the traditional price are minimal (4 to 5% markup), hence signaling that these products are not purchased in low-income districts of Hanoi, and a general lack of trust by consumers about organic/safe claims by retailers.

CONDUCT OF RETAILERS.

This section discusses the conduct of retailers, including general transaction characteristics, a description of their suppliers and clients, origin of supply, services provided and received, and complaints. Similar to the previous section, results are presented by segregating retailers into retailer type as well as by the type of target product that they sell (fruits, and vegetables).

In the analysis of the conduct of retailers and suppliers (Tables 13 and 14), several points stand out.

First, formal wet market retailers source roughly 2.5 times more products from suppliers than the other two categories of retailers, while retailers selling fruits source three times more product than retailers selling vegetables. Both results are expected, as formal wet market retailers tend to have more stalls than the other two types of retailers, and as discussed before, fruits have a higher density than vegetables.

Second, retailers source ¾ of their products from wholesalers and directly from farmers as their main two sources of supply. Roughly half of the sourced product comes from wholesalers and then product is sourced via direct purchase from farmers (31%). The main difference regarding supply sources is that 1/5th and 1/7th of the weekly volume sourced by informal retailers and mom-and-pop retailers respectively comes from their own production. Furthermore, the segregation by product shows that retailers who produce vegetables have a slightly higher share of selling their own produce compared to retailers who sell fruits. The latter result is expected, as especially DGLV are mainly consumed fresh, and therefore are produced in small areas near Hanoi, while the production of tropical fruits is distributed across the country.

Third, roughly 2/3 of retailers buy products that have been sorted, this share is slightly higher for mom-and-pop (74%) and fruit retailers (72%). This is expected as retailers buy mainly from wholesalers, and this is one of the main services that wholesalers usually provide. Furthermore, there is little evidence of retailers keeping written records of supplied produce. Only formal wet market retailers have a slightly higher share of record-keeping (31%), signaling that this is not a widespread practice in the target districts. In addition, retailers virtually do not have written agreements with their suppliers regardless of retailer or product type. Roughly 70% of retailers have verbal agreements only and this is the only common practice among retailers.

Table 13. Conduct of retailers and suppliers by retailer type

	Mom & Pop	Formal Wet Market	Informal Wet Market	All
Observations	27	16	148	191
Weekly volume NOW (KGS)	382	1,057	452	493
Price per KG (VND thousands)				
Origin of supply (%)				
Own production	13.7	0.0	20.1	18.2
Directly from farmers	35.3	26.3	30.2	30.9
Rural Broker	3.9	5.3	5.5	5.2
Wholesaler	47.1	68.4	43.0	45.3
Farmer's coop	0.0	0.0	0.4	0.3
Transaction characteristics				
Share of retailers who buy product sorted (%)	74%	56%	64%	65%
Share of retailers who keep written records of purchase (%)	4%	31%	13%	13%
Share of retailers who have any agreement with suppliers (%)				
….. Do not have an agreement	19%	19%	31%	28%
….. Written	4%	0%	0%	1%
….. Verbal	77%	81%	69%	72%
Number of suppliers	27	22	22	23

	Mom & Pop	Formal Wet Market	Informal Wet Market	All
Observations	27	16	148	191
Services PROVIDED to suppliers (%)				
No service provided	22	25	18	19
Advancement of money	4	19	6	7
Inputs	0	0	0	0
Harvests	0	0	1	1
Own transport	56	63	66	64
Transportation arrangements	37	50	44	43
Services RECEIVED by suppliers (%)				
No service received	7	0	9	8
Delivery in stall	52	38	25	30
Sorting	78	44	58	60
Sales on credit	19	81	42	42
Packaging	48	38	49	48
Cleaning	52	50	45	47
Other	11	0	3	4
Share of retailers who complained about suppliers' produce over the past 12 months (%)				
Yes	78	91	60	64
No	22	9	40	36
Reason of complaint (%)				
Dirty product	0	10	2	2
Variety	50	20	41	40
Color	44	0	35	34
Size	39	40	52	49
Firmness	61	60	40	45
Lack of volume in the box	0	20	5	6
Other	56	40	41	43

Fourth, the main service provided by retailers to suppliers is transportation, whether the retailers provide their own transportation, or hire a third-party provider for delivery. This is a common practice among all retailers, and it is expected as it guarantees product delivery. Retailers receive many different types of services from suppliers, with sorting, cleaning, packaging, and sales on credit constituting the main services.

Fifth, even if retailers receive different types of services from suppliers which are meant to assure product quality, it is not uncommon for retailers to issue complaints about the produce that they sourced. 2/3 of retailers have issued complaints within the last 12 months. This is higher among formal wet market retailers, where the vast majority (91%) have complained about the supplied produce. This is also expected, as formal wet market retailers trade higher volumes, which leads to higher probability of receiving lower-quality produce at some point in time over the past 12 months. The reasons for complaints are varied, but mainly related to physical attributes of the sourced products.

Table 14. Conduct of retailers and suppliers by product type

	Fruits	Vegetables	All
Observations	71	121	192
Weekly volume NOW (KGS)	888	279	504
Price per KG (VND thousands)	26.1	12.8	17.9
Origin of supply (%)			
Own production	13.9	20.6	18.2
Directly from farmers	21.3	36.2	30.9
Rural Broker	8.3	3.5	5.2
Wholesaler	56.5	39.2	45.3
Farmer's coop	0.0	0.5	0.3
Transaction characteristics			

	Fruits	Vegetables	All
Observations	71	121	192
Share of retailers who buy product sorted (%)	72%	61%	65%
Share of retailers who keep written records of purchase (%)	14%	13%	14%
Share of retailers who have any agreement with suppliers (%)			
….. Do not have an agreement	23%	31%	28%
….. Written	0%	1%	1%
….. Verbal	77%	68%	72%
Number of suppliers	22	23	23
Services PROVIDED to suppliers (%)			
No service provided	13	24	20
Advancement of money	11	4	7
Inputs	0	0	0
Harvests	0	1	1
Own transport	73	59	64
Transportation arrangements	44	43	43
Services RECEIVED by suppliers (%)			
No service received	6	10	8
Delivery in stall	31	29	30
Sorting	63	58	60
Sales on credit	55	35	42
Packaging	51	47	48
Cleaning	32	55	47
Other	6	3	4
Share of retailers who complained about suppliers' produce over the past 12 months (%)			
Yes	69	60	64
No	31	40	36
Reason of complaint (%)			
Dirty product	4	3	3
Variety	51	36	42
Color	33	38	36
Size	53	40	45
Firmness	45	45	45
Lack of volume in the box	8	4	6
Other	35	42	39

In the analysis of the conduct of retailers and clients (Tables 15 and 16), several points emerge.

First, formal wet market retailers sell roughly two to three times more products to clients than informal wet market and mom-and-pop retailers respectively. Similarly, retailers trading fruits sell roughly three times more in weekly volumes than retailers selling vegetables. Both results are expected, as discussed before, formal wet market retailers tend to have more stalls in several locations, and source more product than the other two types of retailers, and fruits have a higher density than vegetables. It is interesting to note that the average selling price of target fruits is roughly twice as expensive as target vegetables, hence signaling the affordability differences among target products.

Second, as expected most retailers sell directly to consumers as their main clients. Only formal wet market retailers have a more diverse clientele, as roughly 40% of their clients are not direct consumers but rather traditional retailers, restaurants, street/sidewalk eateries, and other types of clients. The analysis by product shows no difference in the client portfolio.

Third, interestingly there is a wide variation about selling "sorted" products to clients. The vast majority of mom-and-pop retailers (78%) sell sorted products, while a bit over half of informal wet market retailers and less than 40% of formal wet market retailers follow this practice. This can be attributed to the fact that formal wet market retailers sell produce to non-direct consumers (traditional retailers, sidewalk/street eateries, restaurants, and others), that might do the sorting themselves or the nature of

their business do not require to have sorted product (for example, the products are processed to be delivered to the final consumer). There is a slightly higher share of fruit sellers sorting their products compared to vegetable sellers, yet roughly 40% of retailers still sell unsorted products.

Table 15. Conduct of retailers and clients by retailer type

	Mom & Pop	Formal Wet Market	Informal Wet Market	All
Observations	27	16	148	191
Weekly volume NOW (KGS)	374	925	466	491
Price per KG (VND thousands)				
Clients (%)				
Directly to consumers	93.4	61.4	88.6	86.9
Traditional retailer	1.6	17.0	2.8	3.8
Restaurant	0.8	4.5	2.2	2.2
Street/sidewalk	0.0	5.7	5.5	4.9
Other client	4.1	11.4	0.9	2.1
Transaction characteristics				
Share of retailers who sell product sorted (%)	78%	38%	57%	58%
Share of retailers who keep written records of sell (%)	11%	13%	14%	13%
Share of retailers who have any agreement with clients (%)				
….. Do not have an agreement	73%	75%	63%	72%
….. Written	4%	0%	1%	1%
….. Verbal	23%	25%	36%	28%
Number of clients	158	224	178	179
Services PROVIDED to clients (%)				
Discount over prices	63%	69%	72%	70%
Volume discounts	48%	94%	80%	76%
Sales on credit	41%	69%	43%	45%
Packing	37%	50%	43%	42%
Special sorting	22%	13%	22%	21%
Other	0%	6%	9%	7%
Share of retailers who received complaints from clients over the past 12 months (%)				
Yes	91	100	86	87
No	9	0	14	13
Reason of complaint (%)				
Dirty product	0	8	1	1
Variety	40	36	37	37
Color	28	31	41	38
Size	24	46	58	52
Firmness	36	46	45	44
Lack of volume in the box	0	0	0	0
Other	52	38	34	37

Fourth, there is little evidence of retailers keeping written records of sales regardless of retailer or product type. Furthermore, the vast majority of retailers do not have any type of agreements (verbal or written) with their clients implying that both practices (keeping written records of sales, and implicit or explicit agreements) are not widespread practices in urban and peri-urban Hanoi.

Fifth, formal wet market retailers have more clients than the other types of retailers, they have between 25 to 40 percent more weekly clients than mom-and-pop and informal wet market retailers respectively. This is expected, as through this study we have seen that formal market retailers tend to have more stalls, are located in several markets, and trade higher volumes than the other categories of vendors. The analysis by product type yields no difference in term of number of weekly clients between fruit and vegetable sellers.

Sixth, all types of retailers provide a wide variety of services to their clients (discounts over prices/volumes, credits, packing, special sorting, etc.), but the results show that a lower share of mom-and-pop retailers provide services to clients compared to formal and informal wet market retailers. Only on the service of "special sorting" a slightly lower share of formal wet market retailers offer this service, this is expected given the nature of the clientele of this type of retailer. Once again, there are no significant differences regarding services provided to clients by fruits and vegetable retailers.

Seventh, it is highly common for all retailers to receive complaints from clients regardless of category of retailer or the product that they sell. There is a wide variety of reasons why clients complain, but the main reasons are related to: size, firmness of product, color, and variety of product.

Table 16. Conduct of retailers and clients by product type

	Fruits	Vegetables	All
Observations	71	121	192
Weekly volume NOW (KGS)	846	300	502
Price per KG (VND thousands)	32.6	16.1	22.3
Clients (%)			
Directly to consumers	85.4	79.3	81.5
Traditional retailer	6.1	6.7	6.5
Street/sidewalk vendor	1.2	2.7	2.2
Restaurant	3.7	7.3	6.0
Other client	3.7	4.0	3.9
Transaction characteristics			
Share of retailers who sell product sorted (%)	62%	56%	58%
Share of retailers who keep written records of sell (%)	18%	11%	14%
Share of retailers who have any agreement with buyers (%)			
….. Do not have an agreement	70%	73%	72%
….. Written	1%	1%	1%
….. Verbal	29%	26%	28%
Number of clients	179	178	179
Services PROVIDED to clients (%)			
Discount over prices	66%	72%	70%
Volume discounts	87%	70%	77%
Sales on credit	51%	41%	45%
Packing	38%	45%	43%
Special sorting	17%	25%	22%
Other	8%	7%	7%
Share of retailers who received complaints from buyers over the past 12 months (%)			
Yes	89	86	87
No	11	14	13
Reason of complaint (%)			
Dirty product	3	0	1
Variety	44	33	37
Color	46	34	38
Size	63	45	52
Firmness	48	41	44
Lack of volume in the box	0	0	0
Other	30	41	37

OVERVIEW

The market level analysis of different types of retailers who trade selected nutritious fruits and vegetables in low-income urban and peri-urban areas in Hanoi revealed important overarching findings.

First, our analysis has shown that trade of selected products is vastly dominated by "traditional" type of retailers, especially informal wet market retailers, there is very little presence of "modern" sector actors, other than a few scattered modern convenience stores across the selected urban and peri-urban wards.

Second, although informal wet market retailers are the dominant type of retailers in the area (76% of total number of retailers), formal wet market retailers tend to be in the upper-end of the "traditional retailer" category (whereas informal and mom-and-pop are in the lower-end). Formal sellers have as much capital (measured by business assets) as mom-and-pop retailers, but have more stalls (in multiple markets), have higher trading volumes, higher amount and diversity of clients, and lower business costs.

Third, "formal" transaction characteristics are not widely common among actors in the supply chain. Having a written agreement, and record keeping are not widespread practices of retailers in their relationship with suppliers and clients, yet there is evidence of buying/selling product sorted and/or credit, which are common characteristics of more formal implicit arrangements.

Fourth, "safe/clean" and organic products are not commonly traded among retailers in the selected urban and peri-urban districts. even if traded, these products have very small markups, which implies that these are not commonly consumed by low-income consumers, or traditional (mom-and-pop, formal and informal wet market) retailers) are not the typical source of these kind of products for consumers.

APPENDIX 1: PROTOCOL FOR SELECTION OF 32 TARGET FRUIT AND VEGETABLES

Vietnam List of Fruits and Vegetables

Selection process (in summary):

1. Start from the consolidate list based on the *Retail Diversity for Diet Diversity (RD4DD)* project, added presence of fruits and vegetables in this list in the FVN 24hr recall, the *Agriculture for Nutrition and Health* (A4NH) bench-mark study, the Household questionnaire and the seasonality study

2. We selected from the combined list: (1) vitamin A rich fruits; (2) Dark green leafy vegetables; (3) vitamin A rich vegetables

3. From these three groups we selected all vitamin A rich fruits irrespective whether they were consumed, and we selected from group 2) and 3) the vegetables that were present in FVN 24hr recall OR in A4NH 24 hr recall OR in FVN household questionnaire (highlighted red)

4. We added a selection of (1) brassica; (2) onions; (3) citric fruits; (4) berries; (5) vitamin C rich fruits to the list because of their association with health (we have scientific evidence for that). (highlighted orange)

5. During discussion we added fruits and vegetables based on 'subjective reasons' (not based on a dataset but on knowledge of FVN partners) related to seasonality, availability, highly consumed, etc. (highlighted blue)

6. Based on frequency of consumption, perceived safety and price perceptions, certain fruits and vegetables were excluded. In total included are: 11 fruits, 13 dark green leafy vegetables, 2 vitamin A rich vegetables and 6 other vegetables

FRUIT								
Vietnamese	Scientific name	English name	VA RAE	24h	24hr Bench sites	HHQ (%)	Seasonality	Reason to include
Chanh leo	*Passer montanus* Linnaeus, 1758	Passion fruit	64				Year round	Vit A rich, perceived as not expensive, perceived as safe
Hong mem	*Diospyros kaki* Thunb.	Persimmon	81.375		X (Hong do; Huong ngam)		Jun-Dec (Soft); Hard variety available year round	Vit A rich, perceived as not expensive, perceived as safe, *however very seasonal and available for a short time*
Qua gac	*Momordica cochinchinensis* (Lour.) Spreng.	Gac fruit	1926.25				Sept-Dec	Vit A rich, perceived as *acceptable in price, perceived as safe*
Cam	*Citrus aurantium* L.	Orange		x	X	X (68%)	Year round	Commonly consumed, year round available, rich in Vit C, perceived

							as *acceptable in price, perceived as acceptable in terms of safety*
Oi	*Psidium guajava* L.	Guava	x	X	X (40%)	Year round	Commonly consumed, year round available, rich in Vit C, perceived as *acceptable in price, perceived as acceptable in terms of safety*
Xoai chin	*Mangifera indica* L.	Mango, ripe (32 RAE)	x	X	X (50%)	Year round	Commonly consumed, year round available, Vit A rich, perceived as *acceptable in price, perceived as safe*
		Pomelo		X		Year Round	Perceived as commonly consumed, Vit C rich, perceived as acceptable in price and in terms of safety
		Tangerine		X		Year Round	Perceived as commonly consumed, Vit C rich, perceived as acceptable in price and in terms of safety
		Papaya		X			Perceived as commonly consumed, Vit A rich, perceived as acceptable in price and in terms of safety
Quat	*Citrus Japonica*	Qumquat		X (RD4DD)		Year round	Perceived as commonly consumed, availability year round, perceived to have many health benefits, due to its contents: Vitamin C, vitamin A, beta-cryptoxanthin, lutein, alpha-carotene, polyphenol (skin). Its beta-cryptoxanthin have potential function to anti-cancer (lung cancer) and weight loss.
DARK GREEN LEAFY VEGETABLES							

Cai ngong	*Brassica rapa* L.	Chinese flowering cabbage/ choysum	X (fermented)	X (also common, Cai bap)		Year round	Commonly consumed, year round available (although some indicate that there is seasonality), perceived as acceptable in price and in terms of safety
Cai soong	*Nasturtium microphyllum* Boenn. ex Rchb.	Watercress	X (fermented)			Aug-April	Perceived as commonly consumed, although seasonal available, perceived as acceptable in price and in terms of safety
Cai thao	*Brassica rapa* subsp. pekinensis (Lour.) Hanelt	Napa cabbage	X (fermented)	X		Year round	Perceived as commonly consumed, year round available, although perceived seasonal available, perceived as acceptable in price and in terms of safety
Cai xanh	*Brassica juncea* (L.) Czern.	Mustard greens	X (also fermented)	X	X (65%)	Year round	*Highly consumed, year round available, although perceived seasonal available, perceived acceptable in price, perceived safety risk (persticides++), high vit A and C.*
La lot	*Piper sarmentosum* Roxb.	Piper lolot	X			Year round	perceived as acceptable in price and in terms of safety
Rau den com	*Amaranthus viridis* Linnaeus	Amaranth, spineless	X		X (20%)	Jan-Oct	perceived as acceptable in price and in terms of safety
Rau den do	*Amaranthus viridis* Linnaeus	Amaranth, red	X	X	X (20%)	Feb-Nov	perceived as acceptable in price and in terms of safety
Rau den trang	*Amaranthus viridis* Linnaeus	Amaranth, white	X		X (20%)	Jan-Aug	perceived as acceptable in price and in terms of safety
Rau diep	*Lactuca sativa* L.	Lettuce, cos, leaves	X (just lettuce)			Year round	Perceived as commonly consumed, year round available, although perceived seasonal available, perceived as acceptable in price and in terms of safety
Rau khoai lang	*Ipomoea batatas* (L.) Lam.	Sweet potato, leaves	X	X		Year round	Commonly consumed, perceived as acceptable in price and in terms of safety

Rau mong toi	*Basella alba* Linnaeus	Ceylon spinach	X (malabar)	X (malabar)	X (33%)	Year round	Perceived as commonly consumed, year round available, although perceived seasonal available, perceived as acceptable in price and in terms of safety
Rau muong	*Ipomoea aquatica* Forssk.	Water spinach (Morning glory)	X	X		Year round, peak may-jun	Commonly consumed, perceived as acceptable in price and in terms of safety
Rau xa lach	*Lactuca sativa* L.	Lettuce, romaine, leaves	X (just lettuce)			Year round	Perceived as commonly consumed, year round available, although perceived seasonal available, perceived as acceptable in price and in terms of safety
Rau ngót	*Sauropus androgynus*	Katuk	X		X (29%)	Year round, peak may-june	Frequently consumed, highly nutritious, and perceived to be very good food especially for children and mother after birth, not expensive and no perception of food safety issues.
VITAMIN A RICH VEGETABLES							
Ca rot	*Daucus carota* L.	Carrot	X	X	X (20%)	Year round	Vit A content relatively high, Commonly consumed, year round available, perceived as acceptable in price and safe
Bi ngo	*Cucurbita maxima* Duchesne	Pumpkin	X	X	X (16%)	Year round	Vit A content relatively high, Commonly consumed, year round available, perceived as acceptable in price and safe
OTHER VEGETABLES							
Cai bap	*Brassica oleraceae* var. capitata L.	Cabbage	X (also fermented, also purple)	X	X(67%)	Year round	NCDs prevention, commonly consumed, year round available, although perceived seasonal available, perceived as acceptable in price and in terms of safety

Hanh tay	*Allium cepa* L.	Onion, common, garden	X (dry, also western)	X (41)		Year round	NCDs prevention, commonly consumed, year round available, perceived as acceptable in price and safe
He la	*Allium odorum* L.	Onion, Chinese leek	X			Year round	NCDs prevention, commonly consumed, year round available, although perceived seasonal available, perceived as acceptable in price and in terms of safety
Sup lo xanh	*Brassica oleracea* var. *italica* Plenck	Broccoli, leaves and stem	X	X		July to April	NCDs prevention, commonly consumed, although seasonal available, perceived as acceptable in price and in terms of safety
		Mungobean sprouts		X (51)		Year Round	Commonly consumed, year round available, nutrient rich (folate), adds to diversity
		Mushroom, common					Although not commonly consumed, high in nutrients; Nutrient rich (Mushroom Chinese, dried (raw is less nutrient rich): high in 4 nutrients (Ca, iron, riboflavin, Niacin) and in 3 nutrient densities (iron, riboflavin, niacin); Mushroom, common: high in 3 nutrients (thiamine, riboflavin, niacin) and in 5 nutrient densities (zinc, thiamine, riboflavin, niacin, B6))

EXCLUDED FROM LONG LIST									
Excluded FRUIT									
Vietnamese	Scientific name	English name	VA RAE	24h	24hr Bench site	HHQ (%	Seasonality	Reason to add	Reason to exclude
Dua vang	*Cucumis melo* var. cantalupensis	Cantaloupe, orange	169		X		Year round	Vit A	Not very commonly used, expensive (many varieties imported) and perceived unsafe when originating from China
Mo	*Prunus armeniaca* L.	Apricot	213.04				Feb-Aug	Vit A	Too sour and eaten with a lot of sugar, although not expensive and perceived as safe; although available in the market, not consumed in our study population, not in the benchamrk sites and also not found in the RD4DD.
Qua da chin	*Ficus benghalensis* L.	Banian fruit	520.21				?	Vit A	Not consumed, not known by partners
Qua mac nu	*Pouteria campechiana* (Kunth) Baehni	Mac nu, eggfruit	335.33				Oct-Feb	Vit A	Not consumed, not known
Nho ngot	Vitaceae	Grape			X	X (25%)	Year round	Vit C	Is seen as expensive, and there might be a perceived safety issue when the grape is coming from China
Excluded DARK GREEN LEAFY VEGETABLES									
Cai thia	*Brassica rapa* subsp. *chinensis* (L.) Hanelt	Pak choy		X			Year round		*Hardly consumed, Seasonality, acceptable price, but perceived as having high level of pesticides (Pesticide ++)*
Rau bi	*Cucurbita maxima* Duchesne	Pumpkin, leaves		X	X		Year round		*Commonly consumed but perceived seasonality in availability, acceptable in price, but perceived as having*

								high level of pesticides (Pesticide ++)
Rau tam bop	*Physalis angulata* Linnaeus	Groundcherry, leaves	X			Nov-Jan		*Is not known and not frequently consumed, although very nutrient dense (vit A and vit C)*
	=Ipomea aquatica?	Morning glory	X	X	X (67%)	Year round, peak may-jun		*Is the same as water spinach, which is already included*
Excluded VITAMIN A RICH VEGETABLES								
Excluded OTHER VEGETABLES								
		Yellow pepper (Bell pepper)						*It is expensive and normally people stir fry with beef, beef is also expensive, therefore not often used*
		Tomato						*Very frequently consumed by all households, it is not adding to diversity, a lot of research already done on tomatoes, if household have increased income, will not spend more on tomatoes*
		Banana (dwarf)						*Very frequently consumed by all households, it is not adding to diversity, a lot of research already done on bananas, if household have increased income, will not spend more on tomatoes*

APPENDIX 2: MARKET LEVEL ASSESSMENT RETAILER QUESTIONNAIRE.

FVN FRESH FRUIT & VEGETABLE RETAILER SURVEY

Informed consent and confidentiality of interviews

Good morning/afternoon, Mr/Mrs _____. My name is _____ and I am here to administer a survey on behalf of_____. Your business is one of the few selected. The purpose of this survey is to gather information about fruit and vegetable consumption. The interview will take about ____. All the information we obtain will remain strictly confidential and your answers and name will never be revealed. Also you are not obliged to answer question you do not want to, and you may stop the interview at any time.

The objective of this study is to assess the dynamics related to fruit and vegetable markets and its consumption. This is not to evaluate or criticize you, so please do not feel pressured to give a specific response and do not feel shy if you do not know the answer to a question. I am not expecting you give a specific answer; I would like you to answer questions honestly, telling me about what you know, how you feel, the way you live and how you eat and prepare food. Feel free to answer questions at your own pace. Would you like to participate in this survey? 1.Yes □ 2.No□

Signatures

I. GENERAL INFORMATION

Enumerator: _____ Date _____ Survey No _____ Ward: _____

Street Name: _____ GPS coordinates: _____

1. Type of retailer: _____

1. Ambulant Street vendor	
2. Mom-&-Pop / small traditional family-owned grocery store	
3. Formal wet-market	
4. Informal (wet) market	
5. Chain-based micro/minimarket	
6. Larger supermarket	
7. Convenience store	

2. Location: _____ **3.** Name: _____ **4.** Relationship with owner: _____ **[Key: 1 self, 2 spouse, 3 son/daughter, 4 other] 5.** N. of partners: _____

6. What is the last educational year approved by the owner? ____ **7.** Gender: 1.M □ 2.F □ **8.** Age: _____

Retailer characteristics

9. Product	**10.** Do you buy this product to sell or just charge a commission for brokering?	**11.** Where are these products coming from? LOCATION CODE	**12.** Where are these products coming from? LOCATION NAME
1. □	1.buy 2. commission 3. own prod.		
2. □	1.buy 2. commission 3. own prod.		
3. □	1.buy 2. commission 3. own prod.		
4. □	1.buy 2. commission 3. own prod.		
5. □	1.buy 2. commission 3. own prod.		

LOCATION CODE: 1. Same district, 2. Different district same province, 3. Different province, same region 4. Different region

5. Imported from China, 5 Imported from other SEA countries 6. Imported from other countries

Perishability of the products and other information

13. Product	**14.** How often is [product] supplied? CODE 1	**15.** How long is the [product] stored normally? days	CODE 2	**16.** What is the maximum storage time in winter? (days)	**17** What is the maximum storage time in summer? (days)	**18.** Did you crop [product] in the last 12 months? 1.Yes 2.No	**19.** What was the cropping area? (mt^2)	**20.** When did you began cropping? (year)
1.								
2.								
3.								
4.								
5.								

CODE 1: 1. Daily, 2. Every other day 3. Weekly

CODE 2: 1. Room temperature 2. Chilled/refrigerated

Location of the retailer

21. How much product can be stored on your stall/shop(s)? _____ (capacity in Kgs or mt^2):
How much of each product can be stored in your stall/shop?
Product 1: _____(kg) Product 2: ____(kg) Product 3: _____(kg) Product 4: _____(kg)Product 5: _____(kg)
22. In this ward, how many stalls/shops do you have?_____ 23. For how long? _____

24. Do you have stalls/shops in other places? 1.Yes □ 2.No □ (*if no, then go to question 24*)

25. In which other places do you have stalls/shops?	**26.** Where is this located?	**27.** Property 1. owned 2. rented 3. borrowed 4. market fee 5. none	**28** How many stalls/shops do you have in this place?	**29** since when? (year)
1.Stall in a formal retail market				
2.Stall in an informal retail market				
3.Stall next to a road				
4.Stall in your home				
5.Other				

30. Prior to your current business (your current stalls/shop), Did you work in selling any of these products? 1.Yes___ 2.No____ (If no go to question 26) **31.** For how long ?_____ years.
32. Prior to your current business (stalls/shops), did you have another stall/shop in other market in which you are no longer present? 1.Yes____ 2.No____ (if not go to question 36) **33**. Where _____ **34**. When _____ **35**. Why did you change? _____
36. In what other businesses are you involved (indicate type of business)? _____

II. COMERCIALISATION

Purchasing volume per season (for your current stall/shop in this ward)

37. Product	**NOW**		**5 YEARS AGO**	
	38. Average weekly volume in high season	**39.** Average weekly volume in low season	**40.** Average weekly volume in high season	**41.** Average weekly volume in low season
1.				
2.				
3.				
4.				
5.				

Maximum and minimum volumes (for your current stall/shop) in this ward

42. Product	**43.** What is the maximum weekly volume (Kgs) that you have sold in the last 12 months?	**44.** What is the minimum weekly volume (Kgs) that you have sold in the last 12 months?	**45.** Considering your weekly volume, What is the waste in high season (Kgs)?	**46.** Considering your weekly volume, What is the waste in low season (Kgs)?
1.				
2.				
3.				
4.				
5.				

Average weekly purchased volume in the high-volume season.

	P1. _____			P2. _____			P3. _____			P4. _____			P5. _____		
47. Main Suppliers (Top three types of suppliers per product)															
48. Share of main suppliers (%)															
49. Weekly Volume NOW															
50. Price per Kg NOW (if not Kg used, then specify Unit)															
51. Do you buy the product graded/sorted?															
52. Where is the delivery of this product? 1.At your stall/shop 2. At the seller's place 3. Other place_____															
53. Do you keep written records of the purchase transactions? (KEY 1)															
54. Do you pay this buyer at the moment of transaction? (1. Yes 2. No)															
55. How long does it take you to pay them? (days)															
56. From how many (actors) did you buy in the last 12 months?															
57. How many of these actors are regular suppliers?															
58. Since when did you began buying from them?															
59. Do you have any agreement with them? 1. Do not have 2. Written, 3. Verbal															
Suppliers: 1. Own production, 2. Directly from farmers, 3. Rural broker or trucker, 4. Wholesalers, 5. Importer, 6. Farmer's cooperative, 7. Agribusiness, 8. Other: _____															

Services received and rendered

60. What services do you perform for your suppliers? _____[Key: 1 advancement of money, 2 inputs, 3 harvests, 4 own transport, 5 transportation arrangements, 6 other] **61**. What services do you received from the suppliers? _____

[Key: 1 delivery in stall 2 sorting, 3 sales on credit, 4 packing, 5 cleaning, 6 other]

Relationship with suppliers

62. In the past 12 months, did you made any complaint or price cut to any of your suppliers about quality issues? 1.Yes__ 2.No __ (If you have not made claims go to question 104)

63. If you have made claims about quality, What was the motive?:

1. dirty product __ 2.Variety __ 3.Color __4.Size ___ 5.firmness__ 6.lack of volume in a box __ 7.Other ___ **64**. How did you solve this problem? 1. Did not buy the product ___ 2.Negotiated the price ___ 3.Other ___

Average weekly selling volume in the high-volume season.

	P1. _____			P2. _____			P3. _____			P4. _____			P5. _____		
65. Clients (Top three types of clients per product)															
66. Weekly Volume NOW															
67. Price per Kg NOW (If not Kg, specify Unit)															
68. Do you sell the product graded/sorted?															
69. Where do you deliver the product? 1.At your stall 2. At the clients' place 3. Other place_____															
70. Do you keep written records of the sales transactions? (KEY 1)															
71. Do this client pays at the moment of transaction? (1. Yes 2. No)															
72. How many actors of this type you sell?															
73. How many of them are regular clients?															
74. For the regular clients, since how long have you been selling to them?															
75. Do you have an agreement? 1 Verbal 2 Written 3 Don't have															
76. What services do you provide for this type of clients? (KEY 2)															
77. If you offer discounts to buyers, in what cases do you do this? (KEY 3)															

Clients: 1. Directly to consumers, 2. Traditional retailer, 3. Ambulant street vendor, 3. Street/sidewalk catering/restaurant, 4. Mom & Pop small grocery store. 5. Restaurant, 6. Chain-based convenient store, 7. Others _____

KEY 1: 1. yes, maintain written detailed records of every transaction, 2. I only have written records of how much I sell for every product in a day 3. I only have written records of how much I earn in a day 4. I do not maintain any written records

KEY 2: 1. discount over prices 2. volume discounts 3. Sales on credit 4. Packing 5. Special sorting 6.other_____

KEY 3: 1. Yes, when they buy large quantities, 2. Yes, on lower quality products, 3. Yes, for frequent buyers, 4. Other (specify) _____

78. In the past year, did a client demanded price cuts for the quality of your product? 1.Yes__ 2.No __ (If no, go to question 82) **79**. In the past year, did a client rejected your product? 1.Yes__ 2.No __

80. If you have had quality claims, they were based on? 1. Dirty product___ 2.Variety ___ 3.color ___ 4. Size __ 5.firmness__ 6.Box filling ___ 7.Other ____

81. How did you solve this problem? 1. Lost the customer ____ 2. Renegotiate the price ____ 3.Replace the product ___ 4.Other _____

III. INFRASTRUCTURE

Own and rented infrastructure and equipment for operation of your stall/shop in THIS location**:**

82. Equipment	**83.** Do you have it? 1 Yes 2 No	**84.** Quantity	**85.** Property 1. owned 2. rented 3.borrowed	**86.** Capacity/ Unit		**87.** If owned equipment, since when?	**88.** How much did it cost?	**89.** If rented, what is the monthly rent?
1. Boxes (plastic)								
x. Boxes (wood)								
x. Boxes (other)								
2.Scales								
3.Truck (small)								
4.Truck (large)								
5.Warehouses								
6.Telephone								
7.Electric Generator								
8.Computer								
9. Refrigerator								
10.Bicycle								
10. Other								
10. Other								
10.Other_____ __								

90. Do you regularly check the prices in other markets? 1.Yes__ 2.No __ (*If no, go to question 63)* **91.** Where? _____

IV. BUSINESS COSTS (FIXED AND VARIABLE)

92. Cost category	**93.** Did you pay for this service? 1 Yes 2 No	**94.** Amount (thousand VND)	**95.** Time frame CODE 1
1.Electricity			
2.Rent of stall			
3.Market/commune fee			
4.			
5.Electric generator fuel			
6.Labor expenses			
7.Transportation maintenance			
8.Car insurance			
9.Piped water			
10.Telephone			
11.Internet			
12.Pest control			
13. Other taxes			
14.Other expenditures			

CODE 1: 1. Daily, 2. Weekly, 3. Bi-weekly, 4. Monthly, 5. Every six months, 6. Yearly. 7. Other_____

Employees and infrastructure for commercialization

96. Number of employees that you have in THIS shop/stall

Permanent _____ per day _____ Other_____

97. How many family members do you have working with you selling these products?_____

98. How many of your family members are traders of these product on their own?_____
99. For how much money (thousand VND) would you be willing to abandon your stall for a week? _____

V. LAST TRANSACTION

Last buy (only one product)

100. Now think about the last time you bought 1. □ 2. □ 3. □ 4. □ 5. □
101. Variety _____ **102**. What date did you buy it? _____
103. did you buy raw product? 1. Yes_____ 2. No___ (If no, go to question 146)
104. How many kgs (if other unit, specify unit) did you buy? _____ **105**. At what price per kg (or unit)?_____
106.Did you grade the product? 1. Yes_____ 2. No___ **106.A** How many kgs came out of each grade?
Grade A _____ volume_____ Grade B _____ volume_____
Grade C _____ volume_____ Waste volume_____
107. Did you buy sorted product? 1. Yes_____ 2. No____ (If you did not buy graded product go to 149)
108. At what price? _____ **109**. How many graded bags / boxes / dozens did you buy?
Grade A _____ volume_____ Grade B _____ volume_____
Grade C _____ volume_____ Waste volume_____
110. Who did you buy it from? _____

111. Costs and payments	**112.** Did you pay for this? 1 Yes 2 No	**113.** If not, who paid?	**114.** if you paid, what was the total amount?	
			Cost	Unit
1.product harvest				
2.sorting at the farm				
3.packing at the farm				
4.truck loading				
5.transportation to your stall				
6.clearence costs				
7.weighting costs				
8.brokerage costs				
9.Wholesale market costs				
10.costs of downloading in your stall				
11.costs on case exchange				
12.sorting in your stall				
13.advance given to the farmer				
14.advance given to the broker				
15.your own transportation costs				
16.Other costs				
17.Price paid per grade A				
18.Price paid per grade B				
19. Price paid per grade C				
20.distance from your stall to the buying place				

Last sale (for only one product)
115. Now think about the last time that you sold 1. □ 2. □ 3. □ 4. □ 5. □
116. Variety _____ **117**. What date did you sell? _____,
118. Did you sell several grades? 1. Yes ____ 2.No ___ (If you answered no, skip to the question 159)
119. If you sold by grades, what were the grades and volumes sold?
Grade A _____ volume_____ Grade B _____ volume_____
Grade C _____ volume_____
120. Who did you sell the product?_____

121. Costs and payments	**122.** Did you pay for this?	**123.** If no, who paid it?	**124.** if you paid, How much did it cost?

	1.Yes 2.No		Cost	Unit
1.Sale tax				
2.sorting for buyer				
3.special packaging				
4.product load to the transportation means				
5.transportation from your stall to your buyer delivery point				
6.product download				
7.Other expenses				
8.Sale price per unit of grade A				
9. Sale price per unit of grade B				
10. Sale price per unit of grade C				
11.Distance from your stall to the sale place				

125. How much do you profit per kg (or sale unit) sold? _____
126. How much is the maximum that you have profited per kg (or sale unit) sold? _____
127. How much is the minimum that you have profited per kg (or sale unit) sold? _____

VI. FOOD SAFETY PERCEPTIONS

128. Do you sell organic produce? (1 Yes, 2 No) _____
129. If you sell organic produce, what is the markup compared to the traditional price? _____ %
130. Do you sell safe/clean vegetables/fruits? (1 Yes, 2 No) _____
131. If you sell safe/clean vegetables/fruits, what is the markup compared to the traditional price? _____ %
132. Do you sell imported produce? (1 Yes, 2 No) _____
133. If you sell imported produce, Do your customers know if they are buying imported produce? (1 Yes, 2 No) _____
134. Do you know if the produce that you buy and sell has agro-chemical residues? (1 yes, I know it is clean from chemical residues, 2 yes, I know that sometimes the produce that I sell might have agro-chemical residues, 3. I have no idea, if the products that I sell have or don't have agro-chemical residues) _____
135. if you know if your produce have or don't have agro-chemical residues (Q134:1 or 2), Do your customers know if the produce that they are buying have or don't have agro-chemical residues? (1 Yes, 2 No) _____