Vegetable Consumption, Preferences and Supply Chain Myanmar

Final Report

This research was funded through the Making Vegetable Markets Work (MVMW) Program, implemented by Mercy Corps in partnership with Swisscontact and East-West Seed International. MVMW seeks to improve farm incomes from vegetable production, and subsequently household livelihoods, in Southern Shan and Rakhine States, Myanmar. MVMW also seeks to improve competitiveness of the vegetable sector as a whole and to improve the policy and enabling environment in order to promote sector growth. MVMW is funded by the Livelihoods and Food Security Trust Fund (LIFT). LIFT is a multi-donor fund established in 2009 to improve the lives and prospects of and vulnerable people in rural Myanmar. Current governmental donors are Australia, Denmark, the European Union, France, Ireland, Italy, the Netherlands, New Zealand, Sweden, Switzerland, the United Kingdom and the United States of America. From the private sector, the Mitsubishi Corporation is a donor. The donors contracted UNOPS as the Fund Manager to administer the funds and provide monitoring and oversight for LIFT. So far, LIFT support has reached nearly 2.8 million people, or roughly five percent of Myanmar's population

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1 Executive summary

1.1 Context and background

In late March 2015, Making Vegetable Markets Work (MVMW) Program, implemented by Mercy Corps in partnership with Swisscontact, and the Dutch Economic Mission to Myanmar facilitated the establishment of the Vegetable Sector Acceleration Taskforce (VSAT) . The VSAT is a multistakeholder platform that convenes government, the private sector and development partners to help accelerate the development of Myanmar's vegetable sector. The organisation aims to boost vegetable production and consumption by improving access to production knowledge, improving safe use of pesticides, developing a strong seed sector, reducing post-harvest losses and improving existing markets and creating new markets for vegetables.

Mercy Corps and its partners have collected considerable information on the vegetable production aspects of the supply chain that have helped them to identify challenges and opportunities related to improving vegetable production and efficiencies. While the organisations were aware that demand for vegetables was increasing, an information gap was to know more about consumers' preferences for vegetables – how they perceived quality, their buying patterns, eating habits and perceptions towards chemicals and food safety. The research reported here is the first consumer preferences research of Myanmar's vegetable sector.

TNS Myanmar was selected to conduct the consumer preferences research and a mixed methodology approach was adopted. A quantitative survey of households (n=800) was conducted in Yangon, Mandalay, Taunggyi and Pathein. The locations were selected with the aim of capturing consumers with different levels of access to vegetable markets, and quotas were placed on the sample to ensure consumers from different socio-economic groups were included, as purchasing and consumption patterns were expected to vary between the socio-economic groups. Household consumers were asked about their vegetable purchasing and consumption behaviours, the parameters they consider when evaluating vegetable quality, their willingness to try new vegetables and their concerns about the vegetables available to them in the market. At the same time as the survey was conducted (September 2015), 38 qualitative in-depth interviews were conducted with the main players in the supply chain - brokers, traders, wholesalers, wet market retailers, supermarkets, hotels and restaurants in Yangon. These interviews focussed on supply chain dynamics, perceptions regarding vegetable quality, purchasing and selling behaviours; and specifically investigated willingness to bear risk, relationships with different actors in the supply chain, perceptions of consumers' preferences for vegetable quality, consumers' willingness to try new vegetables, and health and safety concerns related to vegetables.

1.2 Main findings

Consumer preferences

A key objective of the research was to understand how consumers and actors in the supply chain evaluated vegetable quality.

Traders and consumers of vegetables want "good quality". Household consumers, irrespective of their incomes are not willing to buy lower quality vegetables at a cheaper price. They are prepared to pay for “good quality” and there is evidence they are prepared to pay more than they currently spend for improved quality. Lower-end restaurant purchasers of vegetables are the exception as they are more concerned about purchasing their restaurant inputs at lower prices to maximise their profit on low-margin meals. This need is satisfied mainly by wet market retailers who trim bad spots, yellow leaves etc from damaged produce and sell it at a lower price.

So, the primary need of household consumers and supply chain actors that impacts on their evaluation of quality is: “I want this vegetable to last in good condition for a couple of days before I sell it, or my family eats it”.

The shelf-life of a vegetable is particularly important to wet market retailers and supermarkets, and is also a consideration of household consumers, who, although they visit a wet market for vegetables everyday do not necessarily consume what they buy each day and expect produce to last 2-3 days at home. Shelf-life is important to retailers because it may take them 2-3 days to sell what they buy and they want to be able to display the produce on the second or third day still ”looking fresh” and attracting a good price. The key consideration for supply chain actors is to buy vegetables that will transport well and sell quickly at the best price. So, “looking fresh enough that it will last well”, either through transportation, on display at the market or in the home drives the criteria being used to evaluate quality.

“Freshness” is primarily evaluated by visual cues – bruising, insect damage and signs of deterioration. More specific cues of freshness, and therefore quality, naturally varies between vegetable types, and includes colour, shape, size, firmness and ripeness. These are set out in the main findings of this report for specific vegetables. Taste is not a primary driver of quality in most consumers’ minds.

Household consumers mainly shop at wet markets for vegetables and the drivers for this are convenience and the markets’ proximity to homes. There is some dissatisfaction with the cleanliness of wet markets and the produce sold there. About 20% of household consumers from most socio-economic groups say they do visit supermarkets occasionally. As more supermarkets open and they become more convenient for people to access, traffic in modern trade outlets will rise. Supermarkets are working at drawing more customers into their stores and to encourage people to buy vegetables in supermarkets are pricing their fresh produce to compete with wet markets, although this often means a loss in profit.

Household consumers and retailers in wet markets and street stalls are not well informed of where vegetables have been grown or how. Ideas and fears about chemical residues on vegetables are circulating among consumers and retailers who demonstrate a variety of beliefs about how to assess whether there are harmful chemicals on a vegetable and how to avoid them. Consumers believe that chemicals are bad for their health and can cause illness and diarrhoea. They want clean, safe food but they do not know how to determine if that is what they are buying. The “organic” concept has strong appeal, but is not well understood. It may be possible to grow demand for organic, or chemical-free, produce but a willingness to pay more for that produce needs to be developed also. The implications of chemical-free/organic growing on end price or on the look and taste of chemical-free produce is not well understood by consumers. Supply chain actors, who are more connected to farmers, tend to think it would not be possible for farmers to grow organically because they would not have the yields to generate adequate profit and the produce would not look good enough to be accepted by consumers.

There are many information gaps and therefore opportunities to educate consumers, retailers and other actors in the supply chain about vegetable quality and safety.

Consumers are open to trying new things, but in the vegetable sector they are not used to seeing new varieties or types of vegetables in the market. They are accustomed to seeing, buying and cooking the same vegetables as have always been in the market.

Market channels

Strong relationships with elements of trust and loyalty exist between players in the vegetable supply chain. The strongest relationships are between farmers and traders, between some brokers and wholesalers and between some retailers and wholesalers. The players in the supply chain who absorb the most risk are the farmers and the traders who provide inputs to farms and accept the produce to sell on. They risk being left with unsold produce or having to sell produce at too low a price. Wholesalers in urban markets also take risk because they agree to prices before produce arrives in the market and risk having paid too much if a day later, when the produce arrives, another region has flooded the market with the same kind of vegetables and the price drops. Brokers face the least risk in the chain. Traders, brokers and wholesalers all play roles in setting prices.

Risks are minimised in a variety of ways by different actors in the supply chain. One way has been through much-improved communication between actors in the vegetable supply chain channels. Affordable SIM cards and smartphones that have become available in Myanmar in 2015 have had a big impact on improving the certainty and speed of transactions throughout the supply chain. The mobile phone provides opportunities for organisations seeking to support the sector to reach any of the players in the supply chain with information that may improve how the sector functions.

It is a supply-driven market and while there are good communication links between the actors in the chain who are dealing and profiting, the communication link between the household consumer and the supply chain is weak. There appears to be little awareness among consumers of opportunities for them to communicate to suppliers up the chain regarding what they want to see in the vegetable markets where they shop. Hotels and supermarket chains are consumers who do make demands for quality and types of produce and there are wholesalers who are responding to this demand.

1.3 Recommendations

Improving consumer voice in the supply chain

Although there are online forums and pages on social media that consumers could be using to voice concerns or express what they want to see in markets in relation to vegetables, participation in these forums appears low. Consumers are not accustomed to having a voice to suppliers or farmers regarding vegetables and this topic may not be top of mind when using social media. Awareness needs to be raised that these channels are now there, that someone is listening and that there are benefits to consumers of voicing their preferences and concerns. Traditional and modern media channels can be used to inform people of how they could be participating more and how it would benefit them. Cooking shows on television, articles in newspapers and journals, targeted social media are opportunities to do this.

Consumers and retailers appear to know little about where food has been grown or how. Restaurants, supermarkets and retailers who do have direct relationships with farmers experience “better quality” produce, which they appreciate. Improving consumers’ connections with farmers can be done by signage or labelling at retail outlets telling consumers where the produce was grown (country outside Myanmar and region within Myanmar) and whether it is chemical-free. In traditional trade outlets (wet markets/street stalls) this can be done simply with small signs that sit next to the produce, in a similar way that the different rice varieties are labelled in markets. This also improves vendors’ knowledge of where and how the produce has been grown and could spark discussion among consumers and between consumers and retailers and increase the role of demand in the supply chain.

In supermarkets, there is an opportunity for more vivid communications to be made and presented next to vegetables for sale. Price can also be displayed in these fixed-price outlets. Small, colourful leaflets for people to pick up and take with them with information about vegetables, their nutritional value, recipes, safe cultivation can be an effective way to build knowledge and stimulate conversation between consumers and their retailers. While supermarkets are still evolving into people’s shopping repertoires, the research tells us that about one-fifth of people from most socio-economic groups do visit them occasionally. This is likely to grow as more are built and become more convenient for people to visit. Information provided here may reach fewer people initially but if leaflets can be taken away, are attractive and interesting to consumers they will find their ways into homes and conversations. As well as having an impact on stimulating consumer voice this can also have an impact on increasing vegetable consumption if the communication materials link with people’s needs (is this food safe?, recipes that satisfy my family, health and nutrition information, how to store produce).

Increasing vegetable consumption

The research tells us that health and nutrition are in consumers’ minds when purchasing vegetables. There is an opportunity to improve knowledge and awareness of the role of vegetables in nutrition and health through traditional media with good reach, as well as social media. Communications need to be targeted to audiences through the media outlets they use. We know from other consumer research that it is primarily the women in a household who shop and cook for their families and they are rewarded by seeing their family enjoy the food they prepare and seeing their family in good health. Women say that one of the main burdens of this role is deciding what to cook. They do not tend to experiment with dishes outside the traditional repertoire and this has an impact on their willingness to try new vegetables as they are used to buying the same produce they need for the same dishes. They also have not had much exposure to new types of vegetables. Building awareness and interest in vegetables, new varieties, health, nutrition and different dishes with not only the women who shop and cook, but also with their children, husbands and other family members could have a positive impact on families thinking and talking more about what they eat and the role of vegetables.

Certification body

The concept of a certification body is new to consumers and actors in the supply chain. There are doubts about who to believe. Introducing such a system may be effective at building consumer demand and have an impact on their selection of produce but would require considerable knowledge building and awareness raising with consumers and all actors in the supply chain.

Chemical-free/organic

There is growing concern over the safety of vegetables due to chemical usage but little understanding of what chemical-free/organic produce would cost or look like. While it may be too early to develop an organic vegetable market in Myanmar, steps can be taken to circulate information that addresses consumer concerns about pesticide usage and provide information that addresses misconceptions people have about how to tell if produce is affected and how to safely wash produce. Such measures may lay the groundwork for establishing markets for chemical-free/organic produce in the future.

Activities like the annual Myanmar Mango Festival held in Yangon, organised by the Myanmar Fruit and Vegetable Producers' Association (MFVPA) are well attended by growers and organisations promoting chemical-free food. It also receives coverage in the Myanmar media. An activity like this for vegetables may be a way to disseminate information and promote a certification body. A "vegetable festival" is also a chance for growers, retailers and consumers to come together.

Future research

To examine consumer reactions to new concepts (chemical free/certification body), new vegetable varieties and communication materials it is recommended that focus group discussions with consumers would allow for produce, concepts and communication materials to be tested in detail. Attempts in the research reported here to use photographs and showcards to stimulate discussion regarding quality and other concepts was not particularly successful because an image is quite different from the actual vegetable. Group discussions with consumers where they can examine actual vegetables would allow for more realistic and in-depth discussion with consumers and retailers.

The vegetable supply chain in Myanmar has already been researched in a number of qualitative studies including this one, however has not yet been studied in a systematic way. A picture of the supply chain has emerged through the research conducted to date and it would be helpful at this stage to have a more holistic mapping as well as an understanding of the number and relative contribution of the different actors within the chain. This could be achieved through a larger scale, snowball research approach, based on collecting and interviewing supplier contacts from the retail channels and continuing this process up through the levels in the supply chain. A greater number of retailers across a broader range of research locations would need to be targeted as a starting point.

2 Research background

The Making Vegetable Markets Work (MVMW) Program, implemented by Mercy Corps in partnership with Swisscontact, and the Dutch Economic Mission to Myanmar facilitated the establishment of the **Vegetable Sector Acceleration Task Force (VSAT)** in late March 2015 to help accelerate Myanmar's vegetable sector development by facilitating closer collaboration among a range of relevant stakeholders: government, civil society, and domestic and international agribusinesses and business support organizations. Formation of the VSAT arose from recommendations formulated during the Myanmar Vegetable Sector Round Table event held in Nay Pyi Taw in November 2014. The organisation aims to boost vegetable production and consumption by improving access to production knowledge, improving safe use of pesticides, developing a strong seed sector, reducing post-harvest losses, and creating markets for vegetables.

In order to achieve its aims for the development of Myanmar's vegetable sector, VSAT, facilitated by Mercy Corps via the LIFT-funded MVMW Program, undertook the first consumer research of Myanmar's vegetable sector.

2.1 Research objectives

The core objectives of the study were to:

- Map the current retail market outlets or other consumer access points for vegetables in the country's major cities, and detail the specific characteristics of these market channels.
- Provide a more comprehensive understanding of consumer preferences for vegetables in terms of quality perceptions, buying patterns, eating habits, trade-offs between quantity-quality-pricing, and other related aspects of consumer preference.
- Provide a more comprehensive understanding of current market trends in terms of market share of the different outlets (high-end retail and wholesale, specialized shops, open/wet markets, restaurants, hotels and other industrial/commercial consumers).
- Provide a more comprehensive understanding of consumer preferences (quality, food safety) as they relate to willingness to pay and consumer purchasing power.
- Gather recommendations for increasing vegetable consumption in Myanmar through innovative public and private sector marketing efforts.

2.2 Research methodology

A mixed methods approach was used in the research. A quantitative survey of consumer households and a series of qualitative interviews with various players in the supply chain were conducted.

2.2.1. Quantitative household survey

The quantitative survey was designed to collect information from households about vegetable consumption and purchase patterns, and to understand the needs and priorities that household consumers have. A consumer usage and attitude survey was conducted with n=800 household consumer respondents from Yangon, Taunggyi, Pathein and Mandalay. This sample size provides 95% confidence level of results which are representative of tier1 and 2 cities in Myanmar with +/- 5% margin of error. The survey is robust enough to compare each city with disaggregated data to show differences in SEC, age and other profiling variables at tier level. When selecting the cities, the team took into consideration the size and location of the cities, with the aim of capturing household consumers who would have differing levels of access to vegetable markets. The selected cities account for 47% of urban households in Myanmar, and the sample is allocated proportionally to each location. Quotas were set based on income, to ensure a good cross section of respondents who we expected to have different purchase and consumption patterns, priorities and needs.

The table below shows the sample structure and size. More information on the sampling procedure can be found in Appendix 1: Sampling Methodology:

Table 1 Sample structure and size

Cities	Geographic Zone	Number of households	Sample size
Yangon	Tier 1, South	1,073,678	380
Mandalay	Tier 1, Central / North	221,861	180
Pathein	Tier 2, South	66,036	130
Taunggyi	Tier 2, Central / North	82,604	110
Total			**800**

Data was collected through a household survey of face-to-face interviews using Computer Assisted Personal Interviewing (CAPI) devices, or tablets. These allowed for increased accuracy in data collection, faster processing time and less environmental impact. The quantitative survey instrument can be found in Appendix 2: Quantitative questionnaire.

Quantitative sample profile

Breakdown of the household consumer sample based on key demographic information is shown in the charts below. Socio-economics status (SEC) indicates the wealth of the household (with "A" being most wealthy and "F" being least wealthy). In order to give a more accurate result for socio-economics status (SEC), we incorporated a number of variables including households' income, respondents' education, household durables and no. of rooms in the house, into the calculation (Q12 – Q18 within the questionnaire). Points were assigned according to the responses to each question and respondents were assigned to a quintile based on their score.

Figure 2 Age Group (%)

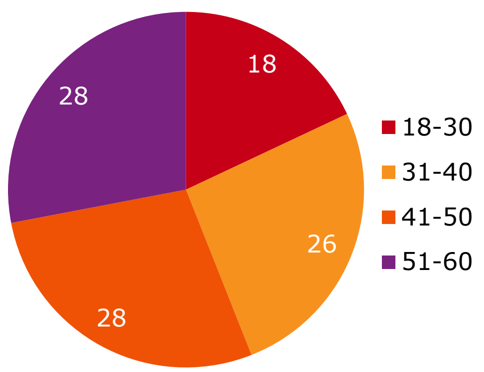


Figure 1 Location (%)

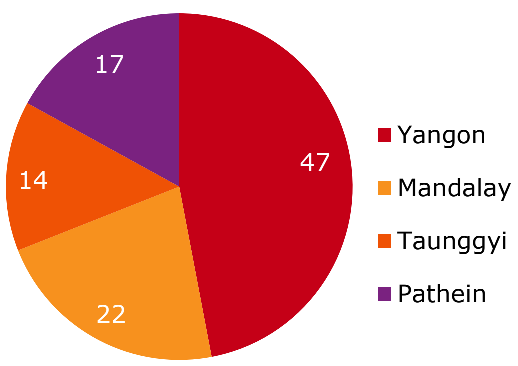


Figure 3. Socio-economics Status (%)

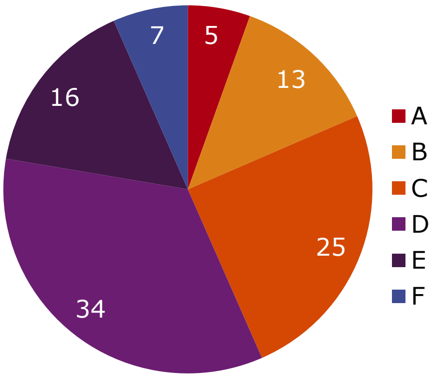
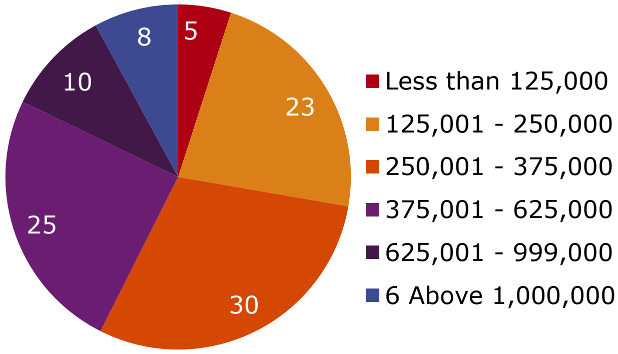


Figure 4. Income Level (%)



2.2.2. Qualitative supply chain research

In-depth interviews were initially conducted with 28 respondents from various levels in the supply chain. The sample was comprised of the following actors:

- 3 traders in the Broker Sales Centre
- 3 brokers
- 4 wholesalers
- 6 wet market retailers
- 4 street stall retailers
- 2 supermarket managers responsible for purchasing
- 4 restaurant owners and purchasers (2 higher-end, 2 lower-end)
- 2 hotel owners

Respondent profiles are included at Appendix 3 – Qualitative respondent profiles.

A further 10 interviews were conducted with Yangon wholesalers during the analysis stage of the research to further investigate and clarify findings. The four wholesalers interviewed initially described slightly different methods for how they placed orders for vegetables and negotiated prices and deliveries. They did not say they purchased vegetables that arrived at Yangon's Thirimingalar market on trucks, without having been pre-ordered. It had been thought at the outset of the research that wholesalers did buy vegetables that arrived at the market on spec. Because of the differences between wholesalers' described behaviours and because none of the four were buying from trucks on spec our interviewer team returned to Thirimingalar during the analysis phase of the research to interview more wholesalers to confirm the purchasing behaviours described were consistent across a larger number of wholesalers. The findings were confirmed.

It should be noted that not all actors fit into these distinct categories, and that they may occupy more than one position in the market. These anomalies are highlighted throughout the report. The typical roles played by each actor are outlined in the following table.

Actor	Myanmar name	Function
Small-time trader	*A wae daw*	▪ Transports farmers' produce to the Broker Sales Centre (BSC) where the *farmer* has no means to do so ▪ Not used by a majority of *farmers* – a minor actor
Broker Sales Centre (BSC)	*Pwal yone*	▪ A centralised venue where *traders* coordinate with *brokers* and *farmers*. ▪ Many provide *farmers* with input materials (e.g. seeds, fertilizers) ▪ Set initial market price by assessing the supply in the market and the demand from the *brokers* ▪ Receive 5–6% of what *farmers* earn ▪ Sell produce to *brokers*
Broker	*Pwal sar (kon thal)*	▪ Buys produce from range of sources: *farmers*, *BSC* and other *brokers* ▪ Haggles the price with the *traders* ▪ Sells to *wholesalers* who place orders with them ▪ Separates the produce into classes of quality for distribution to specific wholesalers
Wholesaler	*Lat Kar*	▪ Usually has an established relationship with a broker or number of brokers with whom they place orders according to a client's orders, and their current stock levels ▪ Generally sells multiple kinds of vegetables
Retailer	*Lat Li*	▪ Includes wet market owners, street stall owners, supermarkets, and restaurant owners ▪ Purchase from a variety of sources – some direct from farmers, most from wholesalers

The in-depth interviews were conducted in Yangon and Aung Ban in southern Shan State according to a discussion guide that investigated:

- the role of the respondent in the supply chain
- their perceptions regarding vegetable quality
- their purchasing and selling behaviours
- their future expectations

The qualitative research specifically investigated the supply chain actors' willingness to bear risk, their relationships with different actors in the supply chain, their perceptions of consumers' preferences for vegetable quality, consumers' willingness to try new vegetables, and health and safety concerns related to vegetables.

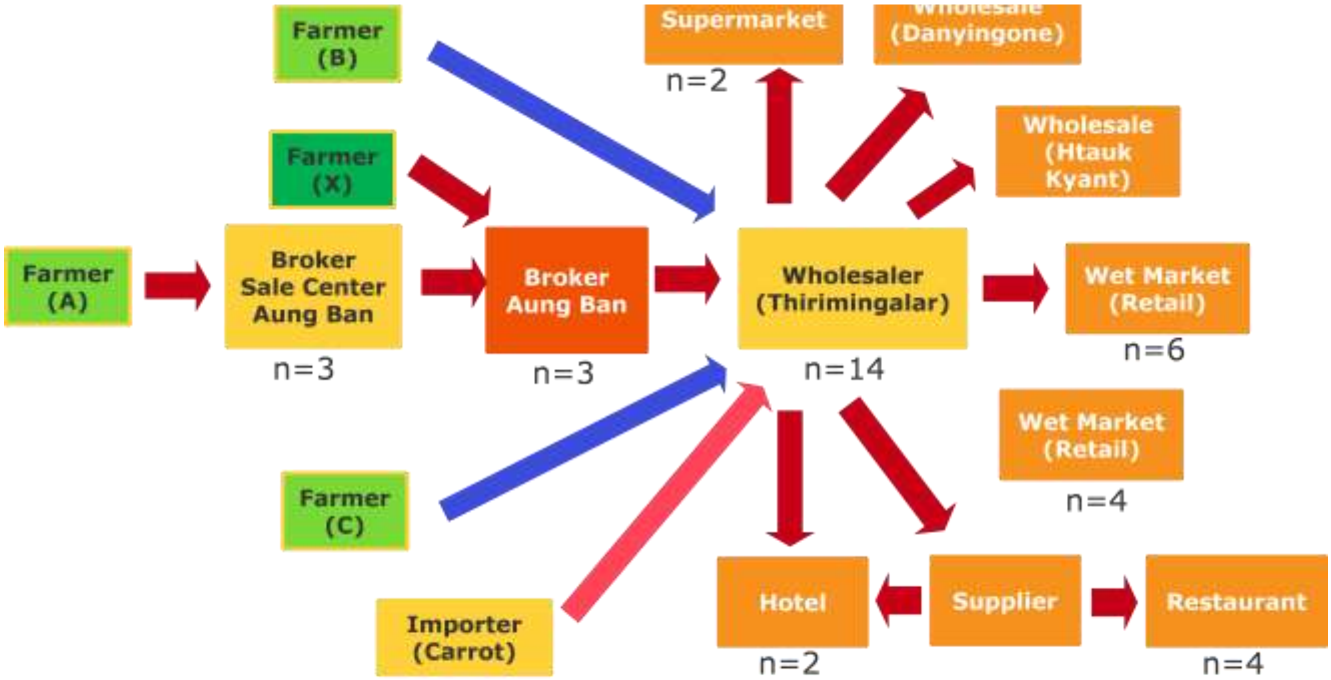
An example discussion guide is included at Appendix 4: Discussion guide for retailer/ restaurant/ supermarket managers.

3 Findings

3.1 Supply chain overview

The relationships between the different actors within the supply chain are complex and varied in nature. This section highlights the central relationships and characteristics that drive the vegetable market in Myanmar, and addresses issues such as price setting, the trust and distrust implicit in transactions, the regularity of customers and orders between supply chain levels, and transport and storage practices. The focus will then turn to an analysis of the consumers – their major purchasing channels and their buying habits and preferences. While the diverse array of business relationships within this sector makes generalisations challenging, interviews with key actors revealed insightful, and sometimes surprising, findings. The following diagram provides an overview of the market and its key actors, indicating the number of respondents that were interviewed at each level.

Figure 3 Market flow diagram



3.2 Traders (broker sales centre)

Inputs and risk-bearing

While all operated at significantly different capacities, the three BSC traders interviewed all provided agricultural inputs to a number of farmers. The supply of agricultural materials such as seeds, fertilisers and pesticides acts as a credit system whereby the farmer is bound to provide the relevant BSC trader with their produce. When the trader on-sells the produce, he receives 5%–6% of the price and the farmer receives the rest. As a key input provider, and with his profit relying on the farmer delivering the promised crop, the trader bears a degree of risk in on-selling the produce to the market. If a farmer were to break his relationship with the trader and sell his produce elsewhere for a better price (such as to an independent broker) then the BSC trader loses out on his input costs. However, despite the informal nature of these credit-bound "contracts", farmers rarely break the trust of the input-providing trader, because a good reputation as a reliable supplier guarantees future input provision.

The sheer number of farmers some of the traders deal with often minimises the risk taken by traders – for example, one trader reported that he dealt with between 700 and 800 farmers each week. The shortcomings of a few of his farmer contacts are diluted by the magnitude of his network. A trader operating on this scale does not provide inputs to all his farmers. He usually provides inputs for around 10% of the farmers he buys from.

> *"I have 700-800 farmers who supply me with vegetables. I don't need to give seeds and fertilizers to all of them. Everyday at this Broker Sales Centre I deal with 200 to 300 farmers so I usually have a good amount of produce to trade."* : **Trader-Aung Ban**

A smaller-scale operator might provide farm inputs to all the farmers he deals with and therefore bears a more significant degree of risk.

> *"I provide 10 farmers with seeds, fertilizers and pesticides. These are the farmers I buy tomatoes from. They bring their tomatoes to me because they want to receive more seeds and fertilizers from me for the next crop. If they do not produce good crops or decide to sell their produce to another trader then I lose."* : **Tomato Trader -Aung Ban**

The size of traders' broker networks also varies. One of the trader respondents said he only dealt with seven Yangon brokers, while other traders reported dealing with up to 100 different brokers.

> *"I have 70-80 brokers (customers) from Yangon, 30 customers are from Mandalay, 10 from Ba-an and 5-10 from Mawlamyaing."*: **Trader - Aung Ban**

The traders' close relationship to the farmers means they are more aware of the agricultural system and factors affecting farmers' ability to supply the market than other actors in the supply chain. As input providers, these BSC traders can influence what is grown and available. Some say they try to choose new seed varieties to see if they will grow well and be accepted by consumers.

> *"I am always looking to test different seeds from Thailand with the farmers. When a new variety has been grown then I send some samples of the vegetables to Yangon to check if they sell well in the market."* : **Tomato Trader -Aung Ban**

Price setting

The BSC traders play an important role in price setting in the market. One BSC trader explained that his position was essential to the functioning of the market because the farmers generally lacked adequate contacts and networks to ascertain supply and demand in the market, and therefore did not know what price to set for their produce.

"We decide the price. The farmer relies on us to do that because they don't know what is happening in the market. For example, when the demand from the brokers is more than the stock I have, the price increases. We have to raise the price when the demand increases. If I have only 50 bags and there are 10 buyers, the price definitely increases." : **Trader-Aung Ban**

However, due to the fact that traders mainly operate within a local area the prices they set do not necessarily translate to the prices found in wholesale markets where demand and supply dynamics shift because of produce being received from other farming areas. Traders are in constant communication with each other in an attempt to assess supply and demand forces within the market, but there is a considerable amount of deliberate miscommunication between different BSCs attempting to get an advantage over their competitors.

3.3 Broker

"Promiscuous" buyers

The next link in the supply chain is the broker, who occupies the most fluid position within the market. Brokers are "promiscuous" buyers, in that they make their purchases from a variety of sources based on daily orders from wholesalers. If a broker cannot complete his orders from the stock at the BSC, he will order directly from producers in the villages.

> *"I buy from vegetable farms directly when I have to. For instance when people want to buy cabbages and there are not enough at the BSC, then I go direct to farmers to buy."*: **Broker-Aung Ban**

They typically do not show loyalty to one BSC trader or other supplier, and most bargain hard for reduced prices. One broker explained his bargaining strategy - he inquires about price at several BSC without making a purchase to ascertain the market price. When a BSC trader asks him what other BSC traders are charging for their produce for, he lies - "We never tell them the correct price – that is our skill" – and instead, tells the trader a significantly lower price, in his attempt to bargain for the lowest price he can achieve.

> *"I start collecting prices from the traders at the Broker Sale Centre. I go from one trader to the next asking for the price of snow peas. They will always ask me what the other traders are quoting for a price. We never tell them the correct price. We make it lower. This is our skill and advantage in this business."*: **Broker-Aung Ban**

Risk-taking and profiteering

The broker's wide networks, the key role they play linking producers and markets and their role in price setting means they are well positioned to achieve profit. One broker explained how he manages to achieve profit. He said that vegetables were sold for the highest price in the very early hours of the morning. As the day goes on the produce becomes cheaper because it is less fresh and traders want to sell, rather than store, unsold produce. A broker may buy carrots from the BSC at K3,000 per viss at 5am, and then move to another BSC later in the morning and buy more carrots for K2,500 per viss, and finally from another BSC for K2,000 per viss. Then when he quotes the price to the wholesaler, he may set the price at K2,900 per viss, leaving him with a sizeable profit.

Quality Sorting

The brokers also play the role of the quality sorters and distributors in the market. Once a broker has purchased a bulk amount of produce from a trader, they will then proceed to separate the produce according to freshness, ripeness and quality, in order to decide where to sell. The highest quality produce is typically sent to Yangon, with secondary-quality produce going to Mandalay and Nay Pyi Taw. The leftover produce gets transported throughout the country. The less ripe produce will be sent to destinations requiring more travel time to ensure it has its maximum shelf life after reaching the end market.

The impact of mobile technology has rapidly transformed the machinations of the agricultural sector. Actors at all levels are in daily contact with both providers and suppliers, taking orders and relaying prices. Instant picture messaging is also useful, with Viber being a key communication platform. If wholesalers are delivered poor quality produce, they can immediately send a photo to their broker demanding new produce or a discount. If a trader wants to know if there is interest in a new crop that they provided to the farmer, they can send a photograph down the supply chain to gauge interest in the market. The ability to communicate means coordination within the market has significantly improved.

Prior to the boom of the mobile phone industry, actors were able to make phone calls to place orders to their providers. However, queuing for a landline phone took time, and it was difficult and often impossible to alter an order once it was placed, which frequently resulted in vegetable dealers having too much, or too little stock depending on the fluctuating supply and demand.

3.4 Wholesalers

Wholesaler interviews were conducted at Yangon's Thirimingalar market, the biggest wholesale market in Myanmar, which receives produce from all over the country. While the wholesaler level is by no means simple, the research revealed there was a greater level of coordination and structure than was expected, despite the fact that all wholesalers interviewed operated in different ways. Wholesalers differ in the scale at which they work, from where and who they source their produce, who they sell their produce to and how they make a profit. Because each of the four wholesalers interviewed operated in different ways each of them is presented below. Three things they had in common were:

- they dealt in a wider range of vegetables than traders or brokers (more of those actors tended to specialise in 1-5 vegetables)
- they often purchase the same vegetables at a different quality grade, so they can offer their customers a cheaper, lower quality option, and a more expensive, high quality option
- they place orders to brokers or farmers for the produce they will buy

Wholesaler 1

This wholesaler places daily orders with one trader. If his trader is unable to deliver him the necessary amount or the desired level of quality, he will purchase extra produce from other wholesalers and brokers without placing an order. He deals with around 40 – 50 customers a day, a majority of whom are regular.

> *"I have one regular trader and I call him and place orders. If he does not have enough produce I buy from the shops around here."*: **Wholesaler-Yangon**

Wholesaler 2

The second wholesaler interviewed also had a regular broker who he placed orders with. But he also had a number of other brokers who he called when his regular broker was not able to fill his orders. He deals with around 40 customers a day, of which around 30 are regular.

> *"I deal with 40 customers in total a day, 30 customers are regular customers who are from wet markets."*: **Wholesaler-Yangon**

Once again showing the proliferation and importance of mobile communication within the market, Wholesaler 2 explained how produce was often damaged during the journey to Yangon from Shan State. If on inspection he finds a significant portion of the produce has been damaged, he will send photographs of the produce over Viber to his broker and demand a reduction in price.

Wholesaler 3

This wholesaler acts similarly to how brokers operate, as well as acting as a wholesaler. He sells in Thirimingalar market but does not use a broker to source his produce. Instead, he has long-established relationships with a group of farmers in Meiktila, who he provides farm inputs on credit. He considers himself business partners with the farmers, and feels he must use their produce even on the days when the quality of the output is not high. He provides vegetables to 15 wholesalers in Yangon, 3 in Mawlamyaing, 2 in both Mandalay and Nay Pyi Taw, and occasionally sells to some retailers. Because he buys directly from farmers he must ascertain the market price himself, which he does by phoning acquaintances at Thirimingalar market.

Wholesaler 4

This wholesaler has close links to farmers in Hmawbi (approximately one hour northwest of Yangon) and plays the roles of broker, wholesaler and retailer. He provides inputs to the farmers who sell their produce to him, which he then sells on to wet market retailers, supermarkets, restaurants and factories. His farmers' proximity to Yangon means his vegetables do not have to undergo the long and damaging journey from further regional farms, and he insists his customers are happy to pay a higher price for his products because they last longer.

> *"It is only one hour's drive from Hmawbi to Yangon, so the produce is fresher and in better shape when it gets to market than vegetables that have come from further away. Customers prefer my produce because it is so fresh. It will last longer from the time they buy it, so the price is higher."*: **Wholesaler-Yangon**

It had been thought at the start of the research that it was a common behaviour for wholesalers at Thirimingalar market to buy produce from trucks that arrived at the market, without having placed orders. Because none of the wholesalers reported this behaviour in the initial four interviews and because it was apparent there were a range of different behaviours among wholesalers the research team returned to the market during the analysis phase of the research to talk to more wholesalers to investigate further how wholesalers bought their produce and established prices. The team spoke to 10 more wholesalers who all said they always place orders for vegetables and contribute to transport costs to get the produce to market. They said that the produce arriving at the market was almost always pre-ordered.

> *"Nobody would just send down a truck of vegetables without having orders and a price agreed. They would not take the risk of paying for the transport and not knowing if they could sell it for a good price once they arrived in Yangon. It's also a matter of trust. We order from the people we trust." :* **Wholesaler - Yangon**

It has become more reliable and convenient to place orders as mobile phones allow wholesalers and brokers to share photographs of produce and determine a price with more certainty of what they are buying, and also be more responsive to market demand and supply when negotiating prices.

> *"Before we had mobile phones we had to queue up for the landline phone and we could not send pictures. It took a lot more time and we could not see photographs of what we were buying like we can now. We receive pictures on Viber and then negotiate the price. I am more certain now of what I am negotiating for and paying for."* : **Wholesaler - Yangon**

> *"The phones also help us to sort out problems if the vegetables that arrive are damaged or there are bad quality items hidden under the good quality ones. Because now we can refer to the photo the broker sent us and send him a photo of what arrived." :* **Wholesaler - Yangon**

Vendors at Thirimingalar market said about one-third of the people operating at the market were brokers who specialised in one crop, particularly tomatoes, and sold to wet market and street stall retailers. These brokers do not take the risk of committing to buy a delivery of vegetables, as wholesalers do. They agree with the broker in the growing area to adjust the price to sell the produce in a day and take 10% of the selling price. In these situations the risk is borne by the broker from the growing area.

One wholesaler explained how he reduced his losses if he had too much produce left at the end of a day. He sells it to the vegetable sellers who do not have the required YCDC permits to operate at the market but set up shops around the Thirimingalar market compound. They pay a reduced price for the produce and also sell it on cheaper to customers (street stall holders, wet market retailers, small restaurants).

3.5 Retailers

Retailers are categorized here as the actors who supply directly to consumers, and includes wet markets, street stalls, supermarkets, restaurants and hotels. Most of the retailer interviews were conducted with market stall and street stall holders as they represent the most active vegetable retail environment. As indicated by Table 2, the wet market is by far the most frequented outlet by household consumers for purchasing vegetables.

Table 2 Main purchase channel for household vegetables (%)[1]

Wet market	85
Kiosk / hawker	11
Traditional store	4
Supermarket / hypermarket	0

Wet market and street stalls

These retailers typically deal with a wider range of vegetables than other actors in the supply chain. The research was not focussed on specialist sellers, like potato and onion sellers, so most of the retail respondents were selling as wide a range of vegetables as the season allowed.

These retailers do tend to have relationships with wholesalers who they trust and they tend to buy from these sellers regularly. Retailers are looking for wholesalers who will reliably provide them with the same quality of vegetable so they can deliver consistent quality to their customers. A detailed discussion on quality appears later in this report under section 3.7.

For those with regular traders, trust and reliability of produce quality is the basis of the business relationship.

> *"There are five kinds of carrots: special size, big size, normal size, small size and reject. I tell the wholesaler what size I want on the phone. I usually order special size, but some suppliers send deliveries that are mixed with other sizes. But some suppliers send only "special" size packages, and I choose to buy from these suppliers." :* **Wet Market Retailer, Taunggyi**

Having a relationship with a regular wholesaler also makes the price negotiation easier.

> *"Because I usually go to the same seller at Thirimingalar Market it is comfortable for me when it comes to the price. Because we know each other he doesn't try and sell me things at an unreasonable price like he might if he did not know you. I know he will not put the bad carrots on the bottom or hide cauliflowers that are going brown, and I know that he is being fair on the price. The price does go up and down. Like when there were floods – it is fair that everything costs a bit more because there is less produce around and with him I feel that he is honest with me and does not put the price too high. Sometimes if he has some produce that is not so fresh he will offer it to me at a reduced price. I sometimes take it and chop it up to sell as a 'ready-to-cook' mix."* : **Street stall retailer - Yangon**

[1] Source: Household consumer study, Q020

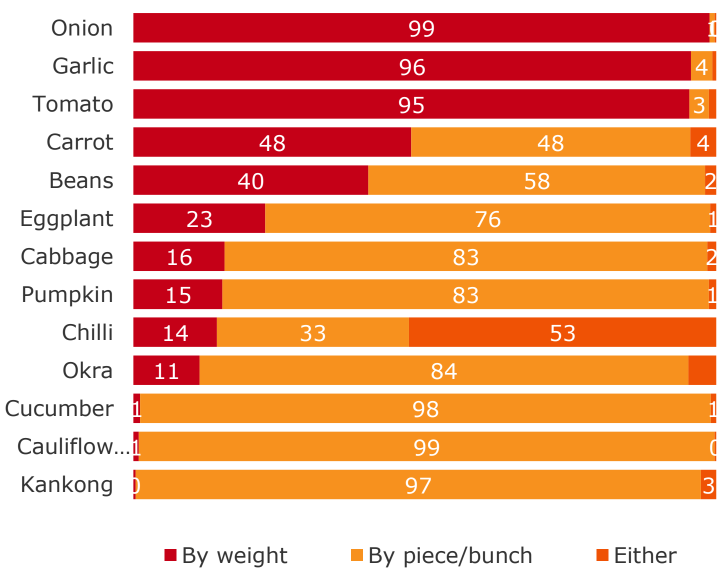
Supply issues are not uncommon and affect cauliflower and pumpkin in particular. Supply chain actors also talked about supply fluctuations caused by seasonality, flooding and other climate related issues, and through a lack of management and communication flow through the supply chain. This flows through to price fluctuation which is one of the greatest concerns for consumers.

Table 3 Supply issues for commonly purchased vegetables (%)[2]

	Sometimes unavailable
Cauliflower	21.63
Pumpkin	20.51
Carrots	7.90
Cabbage	6.07
Okra	5.79
Cucumber	5.14
Eggplant	4.36
Tomato	3.24
Beans	2.77
Chilli	2.04
Kangkong	1.50
Garlic	1.37
Onion	1.12

When shopping for vegetables it is quite common to purchase by piece or bunch (rather than weight), particularly for certain vegetables such as kankong, cauliflower and cucumber. This can influence consumer preferences, particularly for vegetables sold in units such as cauliflowers. Consumers may be attracted to larger sized vegetables at the expense of taste or reject organically harvested produce which tends to be smaller. Working with retailers to shift this trend is advised to encourage openness to variants which may be smaller in size, particularly if they can offer greater benefits either for growers or consumers. See Figure 4 below.

Figure 4 Purchase unit (%)



[2] Source: Household consumers survey, Q033

Restaurants

Trusted relationships with vegetable suppliers were also important to the restaurant owners who took part in the research. Owners of lower-end restaurants who rely on selling food at affordable prices and have many customers tended to value the relationship with suppliers for the ease of price negotiations. These restaurant owners care more about paying a consistent price for their vegetables than they do about receiving consistent quality. Although the relationship is important for regular purchasing these lower-end restaurant owners will also look around for cheaper prices in retail wet markets and buy where the price is lowest sometimes.

> *"Sometimes I have produce left over so I don't need to buy a lot and I just go to the local wet market at the end of the street and buy what I need for my restaurant. I also know people there who understand that I have a restaurant so I am looking for a good price. I think they keep some vegetables at a high price for the housewife who is cooking just a little for her family and they keep other vegetables for us who want to buy a lot at a good price, but can accept a vegetable of a little lower standard."* : **Restaurant Manager - Yangon**

Respondents who owned restaurants of a higher standard were more concerned about being able to purchase a consistent quality of vegetables so they could deliver consistent quality on their menu to their customers. For example, a high-end restaurant owner responsible for purchasing in Yangon only purchases from one trusted wholesaler and one farmer, both of whom he has an established working relationship with and places daily orders.

> *"I like purchasing directly from the farmer because it is fresher. We have a long relationship and I like the produce from this one farmer in Taunggyi so I stick with him. I also use a wholesaler I know well because some vegetables are available closer to Yangon, so it's more convenient to use the wholesaler for some vegetables. But the important thing for me is that I know I can rely on the quality I receive. I want fresh, good looking vegetables because my customers enjoy the food more and keep coming back when the quality is good."*: **Restaurant Manager-Yangon**

Hotels

The buyers at large hotels, like the Shangrila Hotel in Yangon, have strong relationships with up to 7 or 8 vegetable wholesalers. Some of these wholesalers represent farms from where they source the produce directly. Others are buying a wide variety of produce from brokers from all over Myanmar. High-end hotels have high quality standards and will reject produce that does not meet their standard. Wholesalers deliver to these customers and know that the hotel restaurants staff will inspect the produce as it arrives and reject anything that does not meet their standards. Hotels, like restaurants, are also careful about the price and will also reject an offer to supply certain vegetables if the price is too high. Still, wholesalers who are dealing with this end of the market make good enough margins to cover the extra costs in sorting vegetables and delivering them to the hotels and restaurants. The business from these large hotels is good enough that the wholesalers accept being paid monthly.

> *"I buy from the wholesaler and he delivers the vegetables to my restaurant. If the wholesaler doesn't have what I want, the wholesaler goes and gets it from another wholesaler."*: **Restaurant Manager-Yangon**

> *"We have to insist on a certain quality. We also have to have a reasonable price. Of course you pay more for better quality, but the price must still be fair. Our wholesalers know this. They know our standard and we have quite a good working relationship. When we ask for something they will find it for us. It is about trust. We are a good customer, so they know it is worth being fair with us on quality and on price." :* **Hotel Restaurant Manager - Yangon**

<u>Supermarkets</u>

The Yangon supermarket chain, Sein Gar Har, who participated in the research places daily orders with four trusted wholesalers from Thirimingalar market. Volumes ordered depend on what they need to restock shelves. The purchasing officer said they like to buy directly from farmers because the produce is fresher but supply is inconsistent and so farms are not a reliable source. Wholesalers are flexible to varying sizes of orders. If one cannot supply, another can easily be found.

Like high-end hotels the supermarkets make clear demands of their wholesalers regarding price, quality and delivery. They reject produce that is not the quality they need for their customers. They are also very price sensitive. The Sein Gar Har purchasing manager explained that the supermarket's strategy with vegetable pricing was to keep prices low and competitive with the wet market to try and establish new consumer behaviours – to draw consumers away from wet markets and into supermarkets for vegetable purchasing.

> *"The challenge we face with vegetables is that people don't come here for that. They still shop in the wet market near their house for vegetables. We want to start drawing them in here so they feel more comfortable buying cleaner vegetables in an air-conditioned shop. But because we are competing with the wet markets we have to keep the price down. So we negotiate carefully with the wholesaler, but we have good relationships with the ones we use, so it works well."* : **Supermarket purchasing manager - Yangon**

3.5.1. Sorting and altering produce along the supply chain

The retailer level in the supply chain is where most alterations to the produce take place. Some brokers and wholesalers will sort produce into quality grades with different pricing for upper and lower market segments. But it is the retailers who start to trim away dying leaves on vegetables and remove signs of damage or decay to make their produce more appealing to consumers. Most retailers reported taking particular care of cauliflowers, which they thoroughly rinse, prune away dirty or rotten parts, and carefully remove the outer leaves. A few go further, and specifically prepare vegetables for their customers. One street stall owner in Taunggyi told of the considerable work she puts into making her vegetables both aesthetically pleasing and convenient to use, which she insists keeps her customers coming back. For example, her preparation for water cabbages involves rinsing and shaking the vegetables to remove insects and dirt, cutting the ends off and slicing it into one-inch pieces.

> *"I charge no additional service fees because they are my regular customers, but some stall owners charge service fees for cleaning and preparing the vegetables."* : **Street stall vegetable retailer – Taunggyi.**

Conversely, another street stall owner explained that when her produce started to become "faint and yellow", she "mixes them with the better stuff to make it all look pretty."

Another wet market retailer also said that to avoid wasting produce she had bought, when it started to deteriorate she chopped away the dying leaves or "spoilt" parts of the vegetable and combined it with other chopped vegetables that she then sold at a reduced price as a "ready-to-cook" selection.

When supermarkets have produce that is starting to look unappealing they try to sort and rebundle produce so it is more attractive for sale or they use it for cooking staff meals. Both supermarkets interviewed reported they have to throw away wasted produce regularly.

3.5.2. Honesty and consumer loyalty

There are clearly varying attitudes among sellers at the wet market/street stall retail outlets towards customer service. Some sellers value having regular customers and serve them well with price and quality.

> *"I'm not a sweet-talker and I never cheat with weight. I sell with the normal price after adding transportation charges…and I don't steal anything from the bundles…in my opinion, I don't need to make a profit of more than 10,000 kyats a day. I just need to have regular sales and regular customers."* : **Wet market retailer – Taunggyi**

Other retailers say they do not have many regular customers and do not talk or know many of their customers. The household consumer data collected in this research tells the same story – that there are consumers who go to a regular seller who they trust for vegetables, but they are in the minority and most consumers shop around.

Table 4 Household consumer loyalty (%)[3]

I always buy from my regular seller(s)	17
I usually buy from my regular seller(s), and occasionally look around for other options	38
I don t have a regular seller, I look around to find the best option for my needs	45

Figure 5 Level of retailer interaction (%)[4]

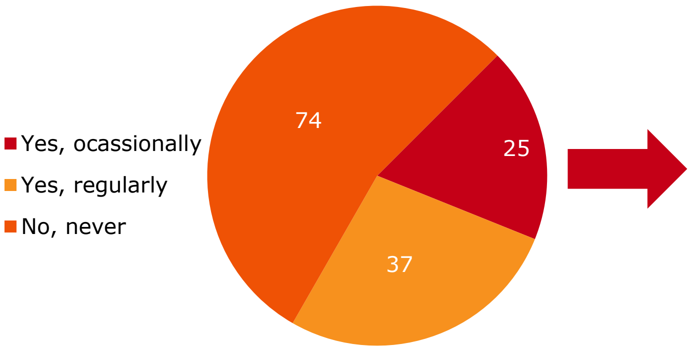


Table 5 Top five retailer enquiries (%)

Information on preparing / cooking vegetables	72
Help in selecting best quality vegetables	39
Information about new vegetables that they are selling	14
Information on which pesticides / chemicals have been used	13
Information on where the vegetables have come from	6

Observed in Figure 5 above, there is little communication between the household consumers and the retailers, so opportunities for them to communicate their needs and priorities are limited. Only two retailers told us that regular customers would ask if the vendor had fresher produce behind their stall that they were not intending to put out until older stock had sold – if so, the consumer asks to buy the fresher produce. Consumers are like silent actors in the chain. They largely accept what the market provides and try to find the best deal in the market for the vegetable they want to buy, only exercising their choice and voice through avoiding buying vegetables that are damaged or not fresh. In this way the vegetable market is very

[3] Source: Household consumer survey, Q023
[4] Source: Q24 household consumer survey

much driven by the considerations of supply rather than demand. There is an opportunity to advise retailers to draw out consumer opinions about perceptions on quality and their fresh produce needs, which could deliver benefits all the way up the chain. This feedback would be valuable for supplier and farmers, enabling them to better tailor inputs and crops to suit and drive market demand. For the retailers themselves, providing goods that are better aligned to customer desires can help them build their own loyalty and sales.

3.5.3. Consumer channel preferences

We saw in Table 2 above, that the wet market is by far the most common place of purchase for household vegetables, and the study confirmed that the majority (66%) visit the wet market on a daily basis. This is a well-established behaviour across the country and the majority of consumers in our research locations say they purchase vegetables most days of the week. The frequency of purchasing vegetables was a little lower in Taunggyi, which may be explained by the vegetables they buy in the market being fresher because they are close to the source and therefore last longer, or perhaps they grow their own vegetables at home.

Vegetables bought in the city have often travelled long distances and deteriorated along the way giving them a shorter shelf life. Many household consumers have adapted to this by purchasing everyday what they will eat as the way to guarantee they are eating food that is as fresh as possible.

The popularity of the wet market, however, is somewhat at odds with what people say they want from a vegetable outlet. Household consumers say that the most important attributes for them when selecting a retail outlet are cleanliness of the outlet, proximity to home, and has a good range of produce at a reasonable price (Table 6).

Table 6 Important attributes when selecting a vegetable outlet (%)

Is clean	82
Close to home	72
Offers a good range of vegetables	71
Is convenient to travel to and from	67
Sells vegetables at a reasonable price	59
Enjoyable shopping experience	58
Has convenient opening hours	36
Provides good customer service	36
Has vegetables available that I cannot buy anywhere else	26
Sellers are knowledgeable about vegetables	23

Wet markets fall short in two of these criteria - cleanliness was the lowest ranking attribute of the wet market, and proximity to home was also defined as a weakness (

Table 7 below). It is clear that range and pricing in the wet market is a key driver for wet market shopping regardless of whether it is clean, or close to home. Visiting wet market or street stall shopping is also clearly an entrenched behaviour in Myanmar society, where consumers do not yet have a wide choice of retail options. While consumers say they would prefer a clean and modern shopping environment they do not consider supermarkets as a regular alternative to their wet market shopping for vegetables at this point.

Still, 20% of household consumers occasionally purchase their vegetables from the supermarket and, as the market evolves, we expect to see this behaviour grow. If the supermarkets are able to address the current barriers of proximity and range of vegetables, it's likely that they'll start to capture much more share of fresh produce buyers as we've seen in other emerging markets around the globe. This is likely to be one of the main factors which will force transition in the market as retailers demand higher quality from growers and distributers, at a reasonable and stable price. They may introduce their own players to the chain, such as collectors and cold chain distributors in order to ensure these factors. Wet markets will also need to evolve to maintain competitive, in particular addressing the weakness in terms of lack of perceived cleanliness, but also they will need to find ways to differentiate themselves as the price and quality gaps close. Working closely with modern trade retailers is recommended since it is expected that they will be the actors who will drive change in the vegetable market going forward.

Table 7 Perceived strengths and weaknesses of vegetable retail channels

	Strengths	Weaknesses
Wet market	Offers a good range of vegetables Sells vegetables at a reasonable price Sellers are knowledgeable about vegetables	Is [less] clean Has [less] convenient opening hours [Less] close to home
Supermarket	Is clean Has convenient opening hours Provides good customer service	Is [less] convenient to travel to and from Sellers are [less] knowledgeable about vegetables [Less] close to home

3.5.4. Purchasing directly from the farmer

Suppliers had mixed feelings about purchasing directly from farmers – and these stemmed from concerns about convenience, cost, quality and the kind of vegetables they want to buy. Wholesalers and retailers who buy direct from farmers tend to have an established relationship with a farmer and often that farmer will be a friend or family member. Unsurprisingly, Taunggyi residents who are surrounded by farming were more likely to be purchasing directly from farmers than consumers in Yangon and Mandalay.

Yangon

Only one of the wholesalers interviewed in Yangon was buying direct from a farmer. However, they all indicated they would like to have direct relationships with farmers because the produce may be fresher, they would have more choice and it may give them a better price margin by avoiding the fees of the traders and brokers. However, it is also clear that wholesalers value the work done by the brokers and traders. Wholesalers discussed that buying direct from the farm would mean they would have to take more responsibility for transport, would need to employ more staff for collection and that these extra costs may negate the cheaper price achieved by buying direct. One of the wholesalers went further to say that it would be difficult to find somebody as "sharp" as the traders, as the traders are believed to have all the necessary contacts and experience to make them experts at their jobs.

> *"If I have to send some staff to the farm and manage the procedure of business the staff charges will be more and the price will be the same. So I just import from brokers."*: **Wholesaler-Yangon**

> *"We don't have the capacity. The brokers are sharp enough to know what farms sell good produce."*: **Wholesaler-Yangon**

The desire to purchase from farmers was echoed by most retailers interviewed in Yangon, although there were a few comments that farmers only wanted to sell in bulk, and that it wouldn't be any cheaper to buy from farmers and therefore wasn't worth the added effort. However, for the most part, retailers were very much in favour of buying from farmers, and some do, or at least have done so, in the past. A good example comes from one wet market owner in Yangon who previously purchased her vegetables from Baukhtaw (an area of farmland close to Yangon that is no longer in use) and lamented that this produce was much fresher and of a higher quality than what she now purchases. She now purchases from farmers in Shan state, where the vegetables are damaged on the long journey to Yangon and are "less durable" because of the chemicals used.

> *"I used to buy from a farmer Bauk Htaw and it was always so fresh, the quality and appearance of the vegetables were so good. The ones coming from Shan state have chemicals on them and they get ruined on the way to Yangon. They arrive older and more damaged than the ones I used to buy close to Yangon."*: **Wet Market Owner-Yangon**

This retailer said buying direct from the farmer had not ended up being any cheaper than using the regular broker/wholesaler channel.

Another wet market owner said she bought some items from farmers because the produce was fresher. But the arrangement was only possible because the farmers came and delivered to her. She would not pursue buying from farms direct if she had to arrange the transport.

> *"I buy watercress, spinach and roselle from the farmer because I don't need to go there to purchase and it is more fresh. The price is the same as if I bought at Thirimingalar."*: **Wet Market Owner-Yangon**

Transport is a major factor in determining wholesalers' and retailers' willingness and ability to purchase directly from a farmer. One restaurant owner in Yangon explained that he had a long-established supply relationship with a farmer in Taunggyi. The restaurant owner purchases directly from the farmer because he believes the produce is "freshest when purchased from the farm". The farmer also delivers directly to the restaurant, meaning the restaurant does not have to hire additional staff, and after initially having a formal contract, the two now have an informal agreement of business.

> *"We choose this supplier because his vegetables are good and because we don't need to send our staff - otherwise we would have to send at least 3 staff and organise a truck."*: **Restaurant Manager-Yangon**

This respondent was the owner of an upper-end restaurant, and it should be noted here that lower-end retailers were often less concerned with vegetable freshness and quality, and were therefore less discerning in who they purchased from.

Taunggyi and Aung Ban

As mentioned previously, due simply to proximity to the farms, the retailers interviewed in Taunggyi and Aung Ban were significantly more likely to be able to purchase directly from farmers. While freshness isn't the prime concern (produce is generally fresher in Shan State than would be found in Yangon), produce is still thought to be cheaper when purchased from a farmer. Convenience remained a factor for some – "if the farm is too far, I won't go there" – however, some farmers meet owners half-way, as in the case of the street stall owner in Taunggyi who always purchases from farmers, but has never visited a farm.

"They bring the vegetables from their village and deliver it to the bus station (Pha Yar Phyu)…we take the vegetables on the pushing-carts from there and lay them in our shops to sell." : **Wet market retailer – Taunggyi**

Retailers say the produce direct from a farm is better because it is fresher, will last longer and they get more per bundle than when they buy from a broker or wholesaler.

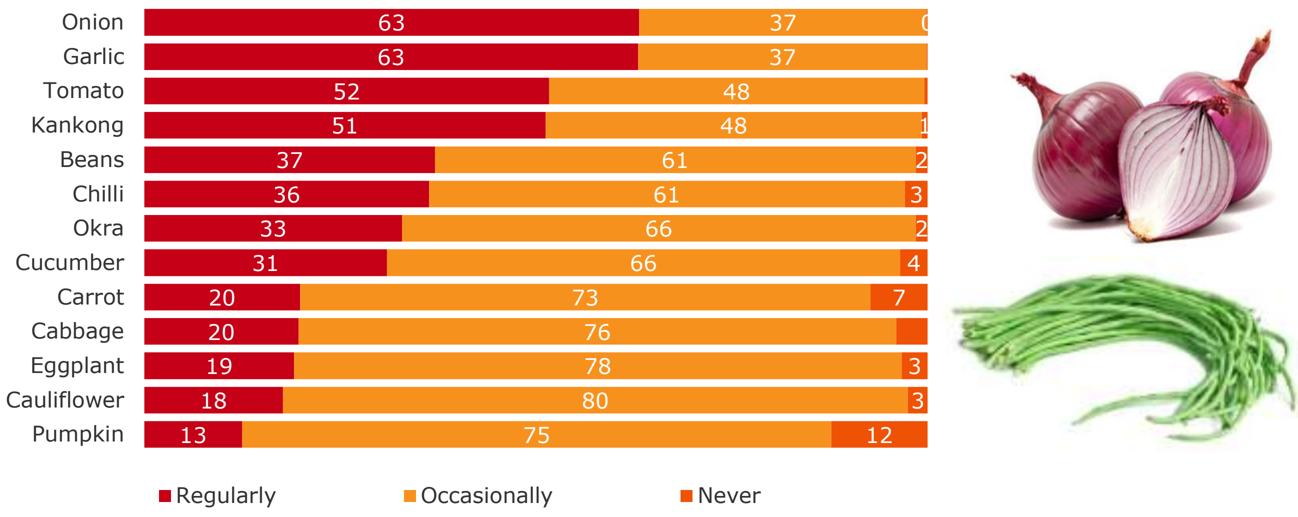
"From the farm I can get many leaves in a bundle. If I buy from a reseller, there are fewer leaves per bundle. And it is so fresh. If I don't sell it today, then it is OK for selling tomorrow." : **Street stall retailer - Taunggyi**

3.6 Household consumers

3.6.1. Vegetable preferences

Onions, garlic and tomatoes are the clear staple vegetable purchases for consumers. Beans and Kankong are also frequently purchased vegetables. There was little difference between the vegetables frequently purchased by higher and lower socio-economic groups or location.

Figure 6 Vegetables commonly purchased (%)



End consumers claim that the main reason why they purchase these vegetables in particular is based on their typical meal repertoire, followed by family taste preferences and then health and nutrition concerns. Purchase of garlic, onion and chilli is very much linked to the recipe requirement, while kankong, beans and cucumber are selected primarily because they are family favourites. Kankong, carrots, beans and okra are also more commonly chosen for their health benefits. This information can help to shape the decision about which variants are likely to be popular here, and can also shape programs to help increase vegetable consumption. For example, we may look for variants of garlic or onion which are more aligned with their functional use (such as a good shape or size for meal preparation) while enhancing taste will be more important for kankong, beans and okra variants.

Table 8 Reasons for purchasing current range of vegetables (%)

Required for the recipes I cook	65.6
Family favourites	52.2
Healthy / nutritious	22.2
Readily available at my place of purchase	11.9
Available at a cheap price	6.9
Easy to prepare / cook	6.1

3.6.2. Household budget

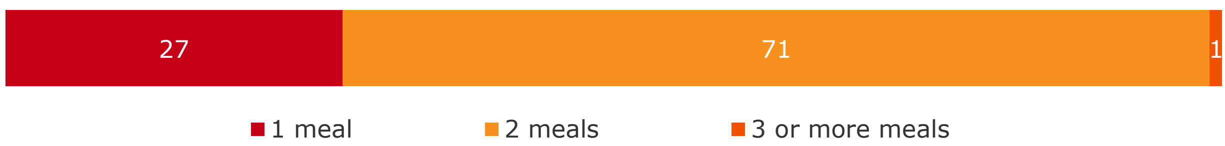
At first glance (see Figure 7 below) the average household consumer appears to have a surprisingly flexible budget with 88% saying their budget is fully flexible according to household needs. This might imply that there is ample scope to develop the market without great consideration on cost, however this needs to be understood in the context of low average household earnings and spend at the household level. Weekly spend on vegetables is very low – with the average weekly budget being 6,600 Kyats[5] for an average household of 4.5 people. Nonetheless, the budget flexibility expressed provides a good indication that there is room for growing the size of the vegetable market in Myanmar.

Figure 7 Flexibility in household vegetable budget (%)

3.6.3. Vegetable usage and storage

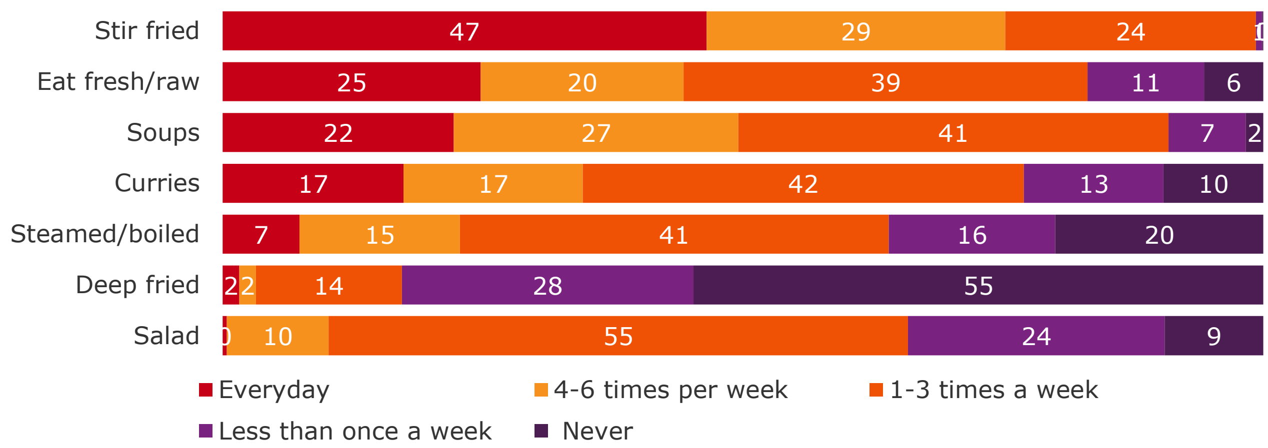
Just under three quarters of households said they cooked vegetables for two out of the three daily meals, however this may not fully align with the number of meals that the household consumes that contain vegetables, since it may be that respondents did not consider meals where only uncooked vegetables were consumed when providing responses. Households consume a range of dishes containing vegetables. Almost half of consumers reported that they stir-fried vegetables daily. Consumption of raw vegetables is common with one-in-four consuming vegetables raw on a daily basis and this underlines the importance of improving vegetable transportation and cold chain services to protect vegetables and keep them fresh, which is particularly important when consuming raw vegetables.

Figure 8 Number of meals including vegetables cooked a day (%)



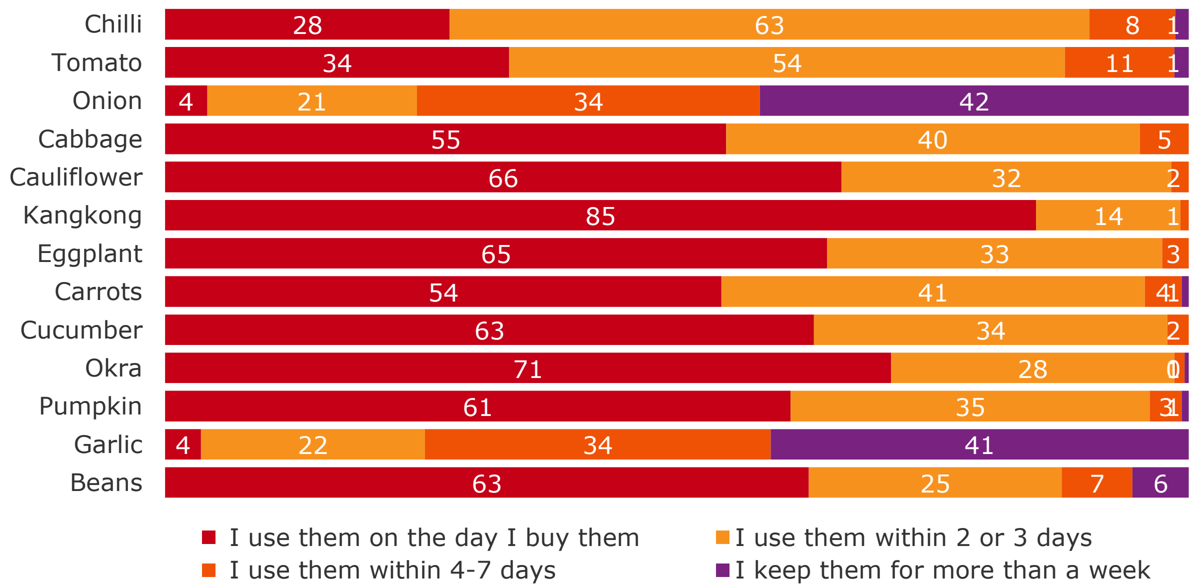
[5] At the time of research, the exchange rate was 1USD = 1,300 MMK, therefore this amounts to a total of 5USD

Figure 9 Main cooking methods (%)



Garlic and onion are almost always stored outside the refrigerator and are commonly kept for a week or more. For other vegetables, storage varies and around 30% of people generally store vegetables in the fridge, with a similar number who store them outside the fridge. The largest proportion (more than 40%) do not store vegetables at all, and instead use them on the same day of purchase. This is the case with leafy greens in particular, and aligns with the fact that most consumers are making daily trips to their vegetable outlet of choice. Refrigeration is still limited and this contributes to the limited shelf-life of vegetables and will continue to be a market barrier to accepting vegetable variants which are more prone to degradation in the heat. The fact that the study was only conducted in urban areas means that refrigeration would be much higher than the national average, as rural electrification is still low in Myanmar.

Figure 10 Timeframe of vegetable usage after purchasing (%)



Just over half of household consumer respondents reported that they wasted no vegetables during the week. Lower SEC consumers demonstrated a lower wastage average than higher SEC consumers. The main reason cited for vegetable wastage is linked to short shelf life, and we can expect this to remain an issue until transportation, cold chain and grid access improves in Myanmar.

Figure 11 Average weekly wastage (%)

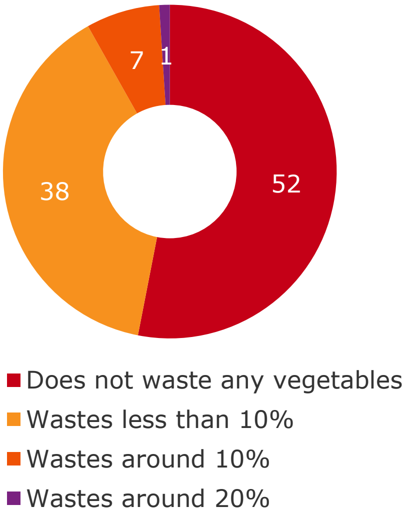


Table 9 Reason for vegetable wastage (%)

The vegetables do not last long	57
I buy too much	36
The vegetables become rotten	27
I cook too much	11

3.7 Quality

Table 10 Considerations when purchasing vegetables (%)[6]

	OVERALL	Chilli	Tomato	Onion	Cabbage	Cauliflower	Kangkong	Eggplant	Carrots	Cucumber	Okra	Pumpkin	Garlic	Beans
Does not have bruises / signs of damage	**61**	63	61	62	66	68	59	66	63	60	61	60	54	55
It is clean	**51**	51	50	44	53	51	59	47	52	50	54	52	47	57
There is no damage from worms / pests	**51**	42	43	31	51	64	48	78	49	49	53	48	41	61
Is not wilted	**39**	43	30	27	38	40	70	35	36	38	41	29	31	44
Is naturally/organically grown	**35**	36	32	32	35	33	41	36	35	36	38	38	30	38
Is grown without using pesticides	**31**	28	29	26	35	33	36	29	30	32	36	33	24	33
Is a regular shape	**31**	31	33	47	28	27	13	31	32	38	33	29	37	16
Is firm enough	**27**	24	24	39	48	40	7	19	25	30	16	24	26	27
Is grown locally	**19**	17	14	22	18	17	19	17	19	18	19	23	21	24
Is a bright colour	**14**	16	19	13	9	9	18	10	22	12	12	23	8	15
Not too big	**12**	18	9	19	13	10	4	9	13	17	13	10	21	4
Not too small	**12**	13	10	21	10	10	4	10	13	11	9	7	27	5
There are no brown spots	**12**	11	8	7	15	20	20	12	9	8	11	8	9	12
Not too soft/over-ripe	**10**	9	57	7	3	3	3	7	3	12	7	17	3	6
Is an even colour	**7**	6	8	6	5	6	7	10	8	7	6	9	5	13
It smells good	**7**	10	5	11	6	6	5	4	5	4	4	5	18	10
Not too hard	**2**	2	4	0	1	1	1	3	3	1	8	2	1	3

[6] Source: Q33 household survey. The numbers on this chart should be read horizontally e.g. cell in row 1, column 2 tells us that 63% say that it's important that chilies do not have signs of damage. Green numbers show results that are high for this attribute compared to other vegetables, yellow numbers are average and red numbers are low.

During the supplier interviews the discussion on quality was introduced early in conversations so the person's parameters and language for quality could be established, and then used, throughout the discussion to examine in detail how the respondents' evaluated quality of vegetables and how it impacted on their purchase decisions and behaviours. The starting point in these conversations was: "we're going to talk about the quality of vegetables – what makes a particular vegetable "good" or "bad" in terms of its quality". Their initial reactions to "quality" were discussed before they moved into discussing specific vegetables and how to assess their quality.

Most players in the supply chain (traders, wholesalers, retailers) are looking for vegetables that will transport well and sell quickly at a good price. This means they are looking for vegetables that are "looking fresh" (indicated by green leaves, firm texture, shininess depending on the vegetable – these parameters of quality and fresh are discussed in detail below) and are undamaged (no bruises or insect damage). These buyers and sellers of vegetables are thinking of how quickly they can sell what they are buying and the best price they can sell for. They are considering what their customers are looking for and are aware that their customers, whether they be retailers or household consumers, will have choice between vendors and will also be looking to buy the freshest produce – assessed mostly by visual appearance (described in detail below). Overall, almost all participants in the qualitative research who were buyers and sellers of vegetables when speaking initially about quality spoke about it in reference to "freshness", which relates directly to shelf-life – "how long will this vegetable still look good if I do not sell it today". Traders and wholesalers tend not to hold produce for long, as they are selling it on quickly, usually within the day. But their retailer customers (wet markets, street stall markets and supermarkets) are more exposed to having to store vegetables over time and keep it looking appealing to customers. For wet market and street stall vendors produce that does not sell on the first day has to be stored (usually without refrigeration, but possibly in cool spaces under soaked damp cloth) and then re-displayed as "fresh" the next day at as high a price as possible. If the vegetable cannot be displayed as "fresh" and compete with the other produce being sold in the market that day it needs to be trimmed or chopped and mixed and sold at a lower price, or discarded. For household consumers, it is very important that vegetables are clean if they are to buy. So, for these on-sellers of vegetables an important consideration when choosing the "good quality" vegetables to buy is "how long will this vegetable last before it starts to lose its fresh visual look and I can't sell it for a good profit anymore". Behind this evaluation is an idea that fresh means a short time since harvest and transport. There is no evidence that traders, wholesalers or retailers know with any accuracy, or discuss, when the actual harvesting was done or how long vegetables have spent in storage or transport. But it is clear from the language people use to describe their views on quality that fresh means "recently from the ground", which results in "time for me to on-sell it without the food losing it's visual cues of freshness" (these cues are described in detail below).

Household consumers also indicated a need for vegetables to last for up to 2-3 days after purchase and this is in their minds when selecting vegetables. Although most of these consumers do visit the wet market everyday for vegetables, they do not necessarily eat all they buy on the same day. For them, the most important factor for assessing quality is signs of damage including bruises / soft spots. This aligns to what the suppliers and retailers talked about in relation to the challenges that they face with maintaining quality during transportation of vegetables. In addition, for household consumers, cleanliness is an important purchase consideration. Indeed wet market sellers take great care in presenting their vegetables and talked about washing and laying out the vegetables, and even spraying them with water to make them look appealing

Very few of these supply chain respondents or household consumers mentioned other factors like taste or smell as being important considerations when evaluating vegetable quality. When supply chain actors were prompted later in the interviews about their knowledge of, and attitudes towards chemicals, many said they were concerned about the possible health risks arising from excessive chemical use in farming. However, this concern did not come up once in the initial discussion on assessing vegetable quality. Household consumers were asked their views on chemicals and were prompted with a showcard. Household consumers indicated that chemicals on vegetables was a concern for the majority and influenced purchase decisions more than shape and texture of the produce.

Lower-end restaurants are more willing than any of the other vegetable consumers to look for and purchase vegetables that are "less fresh" ie: "some bruises, spots I can trim away" because they are looking to purchase their restaurant inputs as cheaply as possible so they can maximise their profit on low-margin meals. Their customers are less likely to see the vegetable in their raw state because they will be prepared into dishes so visual cues of damage or deterioration can be disguised to the end consumer. The exceptions are fresh salad and vegetables like carrots that are carved for ornamental purposes. Wet market and street stall retailers confirm that these lower-end restaurant purchasers are regular customers for the produce that the retailers have had to trim of bad spots, yellowing leaves and are selling at a lower price.

Higher-end restaurants and hotels are more selective of produce. When chefs are involved in vegetable selection a more complex group of parameters are used to evaluate quality - taste, size, smell and signs of correct growing. Purchasing officers interviewed say they attempt to understand and follow chefs' requirements as they do not want conflict with the chefs or the wastage if the chef rejects the produce purchased. However, the purchasing officers also say that chefs' quality demands or demands for particular vegetables cannot always be satisfied because of price or availability.

For **leafy and brassica vegetables**, colour and the strength of leaves and stems were the top priorities. Leaves should be light green. Yellow indicates that they were old, while too dark a green indicates they were likely to go soft and rot. Households primarily specified that such vegetables should not be wilted and also raised issues about colour and brown spots more in relation to leafy vegetables compared to others.

Cauliflower was a vegetable that household consumers all seemed to take particular care of evaluating before buying,, as they are seen to be particularly susceptible to pests and rot (indicated by black spots or "wet" patches on top). Brown spots and damage from pests was also highlighted by household consumers as a more important consideration when buying cauliflower. The Burmese word - "pwa" – was often used to describe signs of poor quality in a vegetable. "Pwa" can be translated as bloated/expanded/empty/limp/splayed/loose. A leafy vegetable becomes "pwa" when it has been left in the ground too long, according to respondents.

When selecting "soft skin" vegetables, like **tomato, eggplant, chilli and capsicum** consumers are assessing size, firmness and "shininess." Many also noted that the skin should have a certain resistance and bounciness – they should be soft enough to depress a little when poked, but firm enough to tighten back into shape. Household consumer interviews confirmed this and they said they considered firmness and size when evaluating chillies, while for eggplant they were more likely to look for signs of pests.

The state of the stalk was also an important indicator for many respondents when assessing a vegetable's time since harvest.

"If the stalk is dry, the body will be rotten tomorrow." : Broker – Aung Ban.

For **tomatoes**, consumers use fruits of different levels of ripeness for different purposes. Softer tomatoes are used in cooking curries and sauces, and firmer, green tomatoes are used in salads. Taste was not a criterion for assessing the quality of the tomato. Assessments are made based on "how rotten already" or "how soft already" and from there consumers assess whether it is appropriate for what they want to prepare and then negotiate a lower price if the tomato is "soft" and only good for curry.

The straight, bright **carrots** imported from China are much preferred for their size, colour and shape than the smaller, odd-shaped and often "woody" local varieties. Only two consumers mentioned taste when assessing carrots, aligning with the fact that carrots tend to be used more for decorative purposes. For this reason, the bigger and more beautiful imports are more suitable, in terms of both how they look and the fact that one carrot goes further.

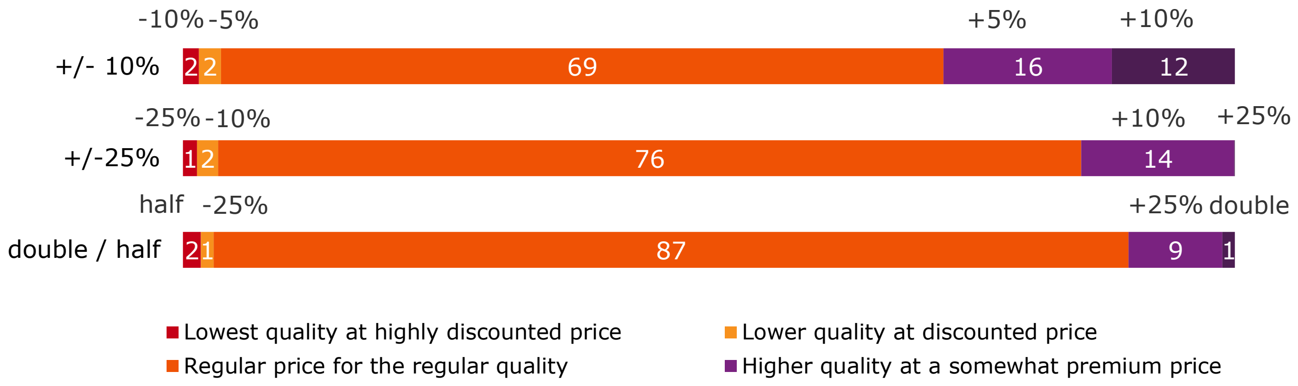
The firmness of the stem was once more a common quality indicator for "**Beans and legumes**", as was colour – beans should be bright, solid green, and will yellow when they age. "Pwa" came up once again in reference to beans – here meaning if a bean was swollen, hollow and empty, that it was no good and that it had been left in the ground for too long. The skin of the beans should be tight and thick, and the peas inside should not be too big, as this indicates age, according to consumers.

Consumers had the least to say about gourds and pumpkins. Gourds shouldn't have scars on the skin, and should sound hollow when knocked. The insides, particularly for pumpkins, should leave a sticky residue on the fingers. Household consumers were more likely to mention that pumpkins should be a bright colour.

3.8 Willingness to pay more for higher quality

We saw in Figure 7 above, the majority of household consumers do claim that there is room to move in their weekly vegetable budget and actually up to 25% of household consumers did demonstrate a willingness to pay higher than regular prices for higher quality vegetable produce. Interestingly the budget variation threshold was not higher among the more wealthy households. However there was a clear limit of how much consumers were willing to pay. The fact that consumers overwhelmingly are not interested in accepting lower quality produce for a discounted price, no matter how great the discount, indicates that there is a sensitivity to the low quality of produce available and a very strong idea of a benchmark price and a benchmark standard of acceptable quality. Encouragingly, these results imply a readiness to evolve the vegetable market and a certain willingness to pay a price premium for that.

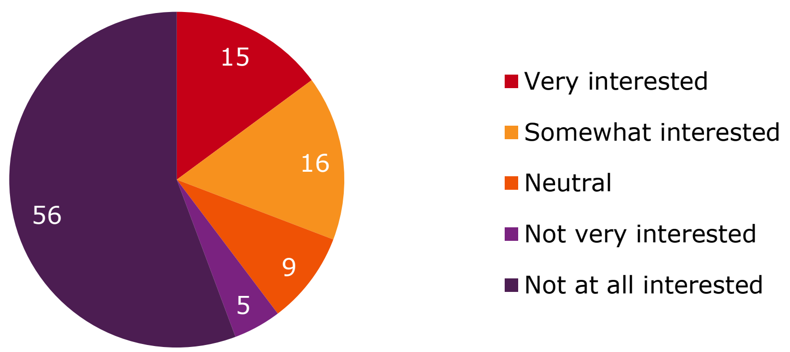
Figure 12 Willingness to trade off quality and price (%)



3.9 Willingness to try new vegetables

Household consumers did not show particularly high levels of interest in trying new varieties of vegetables. In fact, only half of the household consumers actually reported ever seeing new vegetables in the outlets they frequented. Of those, only around a third registered interest in wanting to try new vegetables when they came across them, while a much larger portion said they had no interest at all.

Figure 13 Interest in trying new vegetables (%)

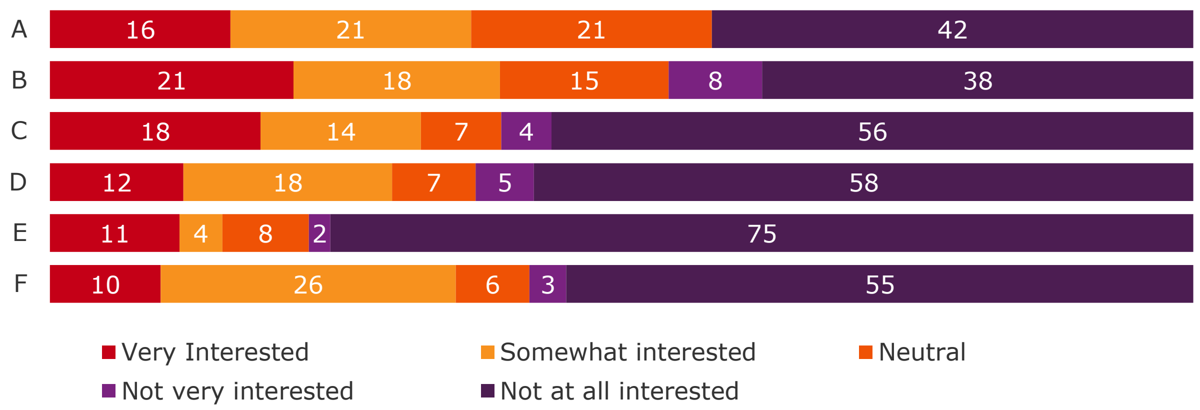


This aligns with the fact that consumers also overwhelmingly answered that their prime reason for purchasing the vegetables that what they most frequently buy is for specific recipes (refer to Table 8), indicating that when it comes to vegetable consumption, Myanmar consumers are largely creatures of habit. While nearly 25% of the household consumers indicating an openness to trying new vegetables appears promising, this figure is *small* when compared to market research figures for willingness to try new varieties of other consumer goods in the Fast Moving Consumer Goods (FMCG) sector and indicates that while consumers may be more open to trying variations on existing vegetables, they will likely be less open to trying brand new, unfamiliar vegetable types.

Retailers, wholesalers and brokers were also asked about their willingness to try new vegetables. The concept of "new vegetables" was best understood at the Broker Sales Centre where traders are close to farmers and try to provide different seed inputs to farms to help them grow better produce. However, in the wholesale and retail markets respondents struggled to think of a "new" vegetable they had come across indicating that consumers and vendors have not had much experience with new varietals or new vegetable types entering the market.

Furthermore, it is clear that an unwillingness to purchase new vegetables isn't just an attitude concentrated to the lower SEC levels. While higher SEC levels do show a higher tendency to be open to purchasing new vegetables, nearly 50% of the top two SEC levels still register little to no interest in purchasing new vegetables.

Figure 24. Willingness to try new vegetables VS SEC (%)



The unwillingness at the consumer level was echoed in several discussions with suppliers.

> *"I don't want to sell something I have never sold before because I won't know how to sell it."* : **Wet market vendor – Taunggyi.**

> *"If the new vegetable is pretty, some people might buy, but some people won't dare to buy something they don't know."* : **Wet market vendor – Yangon**

A restaurant owner in Taunggyi said she had never even seen new vegetables in the market, and this was supported by a wet market owner in Taunggyi, who said that even if there were new vegetables, she wasn't interested in buying them as her customers would not be interested in them. A Yangon restaurant owner also said he wasn't interested in new vegetables, as he didn't have the time or interest to figure out new menu items and portioning systems. Suppliers' rejection of new vegetables was thus largely based on their understanding of the consumer, as well as a desire to stick with what they knew.

One wet market retailer said she was interested in trying new vegetables. She was one of the few retailers who described having regular conversations with her customers. She said she would try something new, encourage people to try and then seek their feedback.

> *"People these days are interested in new things. I sell a type of mustard leaf that is new – it came from China. People like it."* : **Wet market owner – Taunggyi**.

Some actors higher in the supply chain, and thus closer to the input and growing level, are able to introduce new produce to the market, such as the BSC Trader from Aung Ban who regularly provides his counterpart farmers with new tomato seeds from Thailand, and gives sample products out to gauge interest in the Yangon retail market. Aside from sending samples, the increase in mobile technology means that traders and brokers can send photographs of new kinds of produce to the wholesalers and retailers to see whether or not they are interested, as was the case of the broker in Aung Ban who told us how he sends pictures of new pumpkins to his wholesalers, who have readily accepted the new produce.

Therefore, while interest in selling new produce does seem low, and the drivers for purchasing on the consumer side are largely habit, suppliers do show a willingness to take a risk on a new vegetable, and there seems to be an element within the consumer segment who are willing to try new kinds of produce.

3.10 Concerns

Unprompted questioning revealed that household consumers' primary concerns about quality were price-related. Unstable price is more of an issue than high price.

Figure 14 Main concerns when buying vegetables (%)

When traders, brokers and wholesalers talk about price it is clear that the price of vegetables changes throughout the day depending on demand coming from wholesalers and the supply coming from famers at the Broker Sales Centre and at wholesale markets.

> *"If we have floods like we did this year then there is less supply and the price goes up because the people in Yangon still want to have their regular vegetables. The price goes down when all the farmers turn up with cabbages all*

at once or the opposite happens and a pest or disease affects the crops and no one has cabbages – then the price goes up again for cabbages. It's the way it works." : **Trader – Aung Ban**

There seems to be more tolerance of price fluctuation at this end of the supply chain where the price is being set and the conditions of supply are well understood. Where price fluctuations are less tolerated is in the urban markets where consumers are sensitive to increasing prices – 58% of household consumers said fluctuating prices were their main concern when purchasing vegetables.

3.11 Chemicals

The pervasive use of chemicals in agricultural production is known to be a relatively new phenomenon, with one broker commenting: "Our elders say that in their time they could eat tomatoes as they like, maybe raw or without washing it. But nowadays we can't because of insecticides. It's dangerous."

As indicated by the charts below, a significant proportion of consumers are concerned by the use of chemicals. This concern is more widespread in Yangon and amongst household consumers from higher SEC, who have achieved higher education levels. Concern about chemical residues on vegetables is also higher in Taunggyi, where people are closer to the farms and have more knowledge about agricultural processes.

Figure 15 Concerns about chemicals used in vegetable harvest (%)

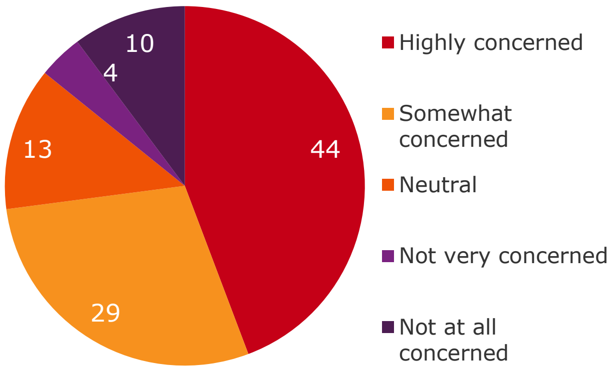
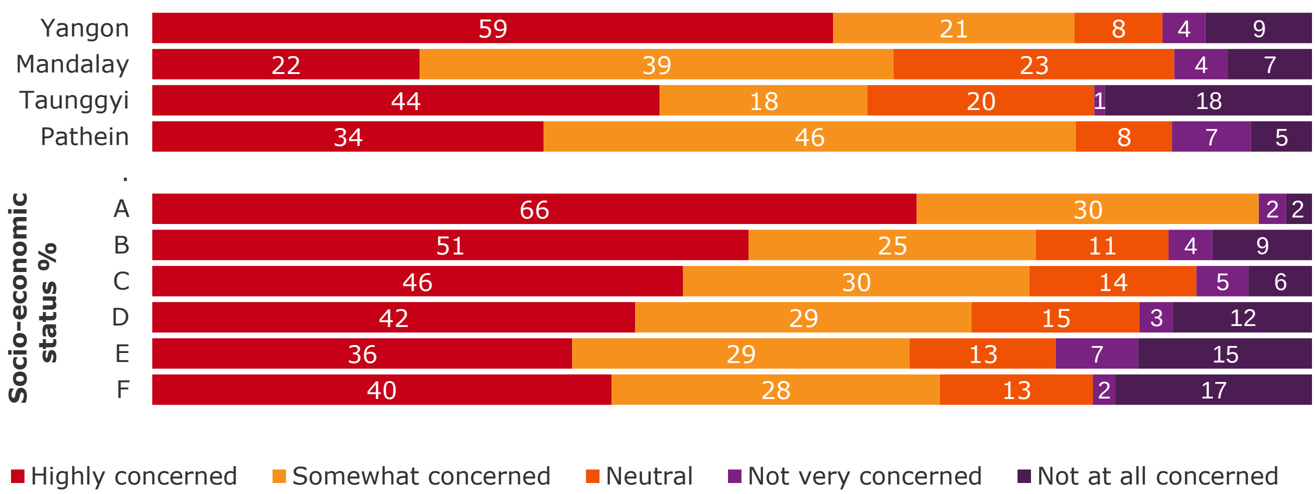


Figure 16 Concern by locations and SEC (%)



The widespread concerns regarding chemical usage in vegetable production were reflected in the conversations had with suppliers. However, the overwhelming sentiment underpinning these anxieties was that buying chemical-free produce was practically unavoidable in the current market, and that the use of chemicals was a necessary and desirable factor for driving profit and sales.

Supply chain actors who operate more directly with the farmers, like the Aung Ban brokers and traders, talked about the necessity of chemical fertilizers and pesticides in achieving crop yields. For example, when explaining his input relationship with the farmer from whom he buys, one broker in Taunggyi explained that when purchasing seeds from input suppliers, the package includes supplies of the recommended chemical fertilizers and pesticides. When asked what would happen if they didn't use it, he answered:

> *"We can't do that (farm without chemical fertilisers and pesticides). If we do that we won't make a profit. We never stop using the chemicals provided, because stopping might affect the crop. We are scared that the growth process will fail ... so everybody uses chemicals."* : **Broker – Taunggyi**

Similarly, a broker from the BSC in Aung Ban explained how there were fewer birds to eat the insects, meaning pesticides had become essential to control insect damage – and that in turn, the presence of pesticides poisoned the soil, necessitating the use of chemical fertilizers. Shifting the focus from production to sales, another broker-trader in Aung Ban stated that crops do not grow fast enough without chemical fertilizers, meaning farmers would be unable to meet the market demand for quantity, and that chemical-free vegetables would not grow big enough or be beautiful enough to be accepted by consumers.

> *"Organic means fruits grown naturally. We can't plant that kind of species here. We need more knowledge about plantations and farming. Nowadays there aren't many birds that eat insects from the plants because of humans or the weather. So, we need insecticide. It's it impossible to grow organic fruits."*: **Trader-Aung Ban**

> *"Vitamin sprays make vegetables bigger but if over use then it can become toxic for the customers. So farmers have to spray. Without spray the vegetables are not growing fast."*: **Broker-Aung Ban**

These concerns about vegetable size and appearance were echoed further down the chain, where many wholesalers and retailers noted that chemically-grown vegetables sold better because they were larger in size, grew faster and were more beautiful. For example, both wet market owners and street stall owners in Taunggyi believed it would be impossible to grow and sell vegetables without chemicals, and that such produce would never make it to the market because people don't demand it.

"They're not as beautiful. So customers won't like them or buy them.": **Wet Market Owner**

"The customers don't like this kind – with small holes - because they don't know about using pesticides and they just want vegetables without any holes.": **Street Stall Owner-Taunggyi**

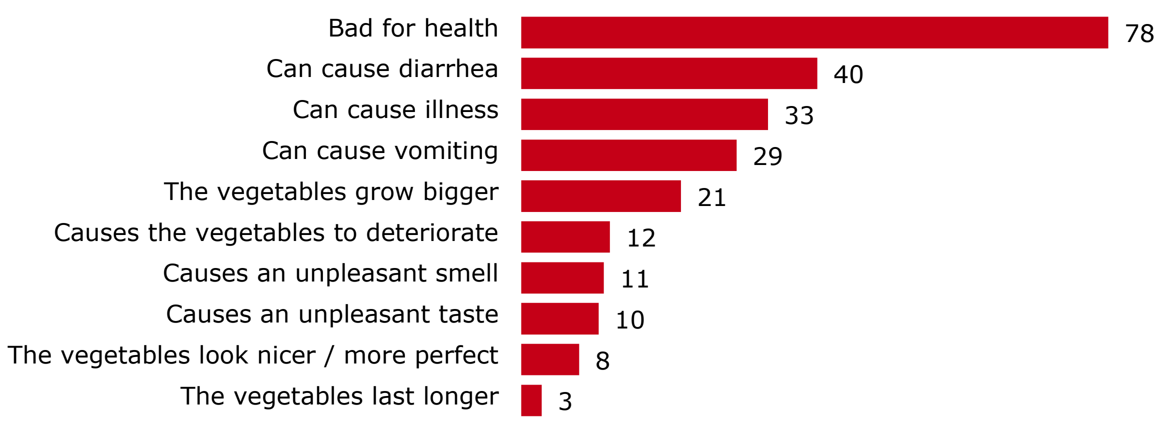
This opinion was shared by many in Yangon, like the street stall owner who suggested that it was "*impossible for chemical free produce to exist*" – and that regardless, organic produce would be "shrivelled" whereas customers demand "big and shiny vegetables". Further supporting this attitude, when asked to comment on organically-produced vegetables, a wet market owner in Taunggyi stated: "*They're not as beautiful. So customers won't like them or buy them."*

Household consumers find the idea of organic vegetables very appealing however it is not clear exactly what they understand from this or whether they appreciate the trade-offs that may be necessary in terms of appearance and price. When asked to identify what impact chemicals have on vegetables, they were much more likely to highlight negatives than positives, compared to those further up the supply chain.

Figure 17 Appeal of chemical-free vegetables (%)

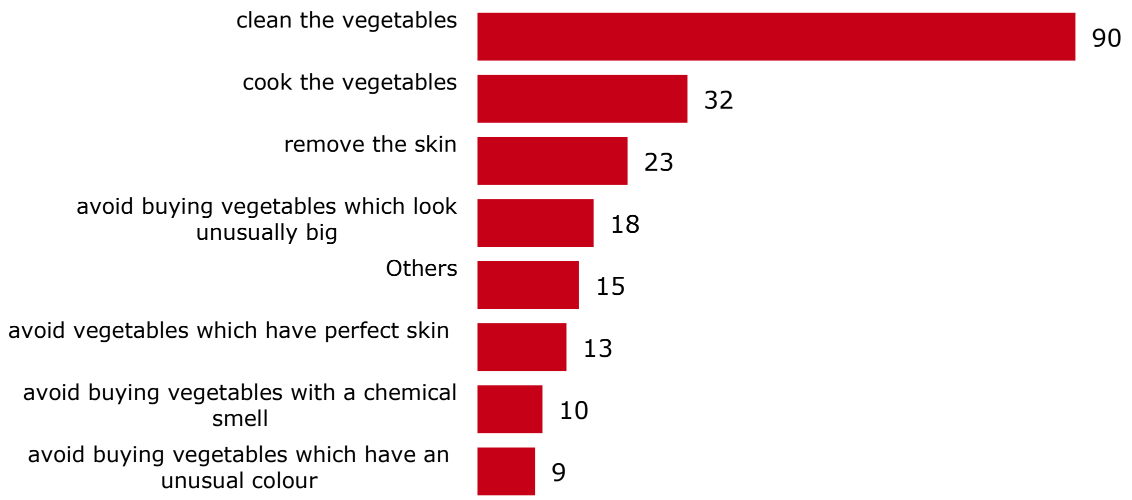
So while eating organically-grown vegetables holds strong appeal for consumers there is doubt among producers and traders that consumers would accept the look and shape of organically-grown vegetables. There is also doubt that farmers could produce adequate yields growing produce organically. There is also no evidence that consumers or traders along the supply chain would be prepared to pay more for organic produce. In fact, some retailers, consumers and supply chain actors indicate they would expect to pay less because the vegetables would not look as good as those grown with fertilizers and pesticides.

Figure 18 Perceived impact of chemicals (%)



Across the consumer and supplier levels, many respondents reported undertaking specific measures to purchase or prepare vegetables so they are "safe" for consumption. However in most circumstances these strategies reveal a flawed understanding of the nature of chemical uptake by the produce they are consuming. Most people are of the assumption that simply washing vegetables will render their purchases safe for consumption – the general attitude being summed up by the Aung Ban based trader who suggested: "if they wash thoroughly, nothing will happen." Most use plain water (warm and cold), and some suggest using salt. One Yangon-based restaurant owner insists on purchasing directly from a farmer who does not spray pesticides or fertilizers, and only uses chemicals in the soil, as he believes it to be safer. The same respondent also suggested that because he purchases from far away, the chemicals will "wear off" on the journey down to Yangon.

Figure 19 Measures to avoid/remove chemicals among household consumers (%)



3.11.1. Selling organic produce

The concerns of the consumer about chemicals are taken into account by a select few wholesalers and retailers who have tried to trade in chemical-free vegetables.

One Taunggyi restaurant owner said he was prepared to pay more for organic produce and had a supplier of chemical-free tomatoes.

> *"They (the tomatoes) tend to smell bad after awhile and become coarse and sticky. Buy one with chemicals and another without, leave them overnight together, the next day you'll see which one becomes bad fast and smell bad fast. Those are the ones with chemicals." :* **Taunggyi restaurant owner.**

A street stall seller in Taunggyi reported that some customers deliberately bought spinach and mustard leaves with holes in it, as the presence of insect damage was thought to indicate the absence of pesticides. However, she said that the number of people who wanted flawless produce was much higher than those who would accept organic produce. She also voiced her interest in increased availability of organic produce, after recounting how quickly her she sold 20 bundles of organic Napa cabbages that she purchased on a whim.

A hotel owner in Yangon also noted how her restaurant used to purchase vegetables from a nearby organic market, and while she thought the vegetables were of much higher quality, she stopped purchasing there because it was too expensive.

3.11.2. Certifying health and safety standards in the vegetable sector

Suppliers were also asked their opinions on the formation of a body to certify quality and ensure health standards were upheld in the agricultural industry. For many, the question was met with confusion. While most believed it was a good idea, it was frequently dismissed as being unfeasible in Myanmar for two key reasons:

- habits were too hard to change
- the country lacked an educated and trustworthy taskforce

One wholesaler in Yangon explained that people were only interested in making a profit, and that they would not be willing or interested to take the time to change their habits. Echoing the sentiment that time was a barrier to ensuring higher quality standards, one wet market owner stated:

> "*I'm running two shops, I don't have time to ask about the health and safety of the vegetables and very few customers demand it anyway*".

Regarding whose responsibility such a task should be, one restaurant owner in Taunggyi suggested that:

> "*The government should do this service rather than another organization…the government should lead this matter*."

However, an expectation of responsibility does not always align with trust.

> *"In our country many people don't believe in the government. They'd need to double check tests with an NGO,"* one Broker said, adding, *"Giving advice or training is much better than checking up on goods."*

Those who were more receptive to the idea, largely distrusted the government's capacity to single-handedly undertake the task of certifying health and safety standards, but it was generally recognized that the government would be necessary for proper regulations and law to be imposed. The best solution seemed to be to respondents to appoint an NGO to which the government gave support and aid.

One broker emphasized that blame for chemical use should lie with the farmers and that other members in the supply chain shouldn't face recourse:

> *"Let's say I bought some vegetables because I think it looks nice. And people can complain over my choice. If government comes in and checks properly and they think the vegetables I bought are not healthy…the dealers should not pay. Only farmers use chemicals. Because for us dealers, we don't have time to think about adding chemicals as we have to make sure that all the orders are filled."* :
> **Broker - Aung Ban**

3.12 Imports

Consumers clearly prefer locally-grown produce to imported produce. Exceptions were for items like Chinese carrots that consumers and suppliers find more attractive than local-grown produce.

Figure 20 Preference of locally grown Vs. imported vegetables (%)

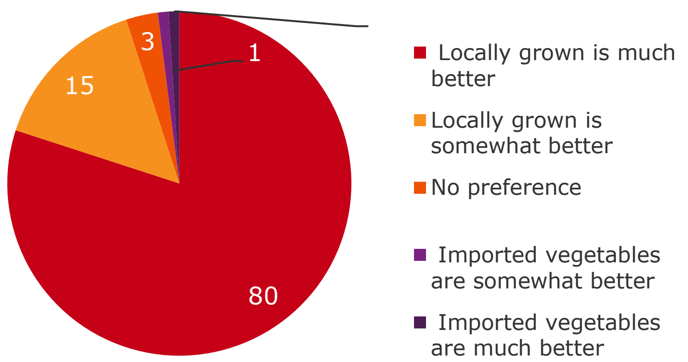
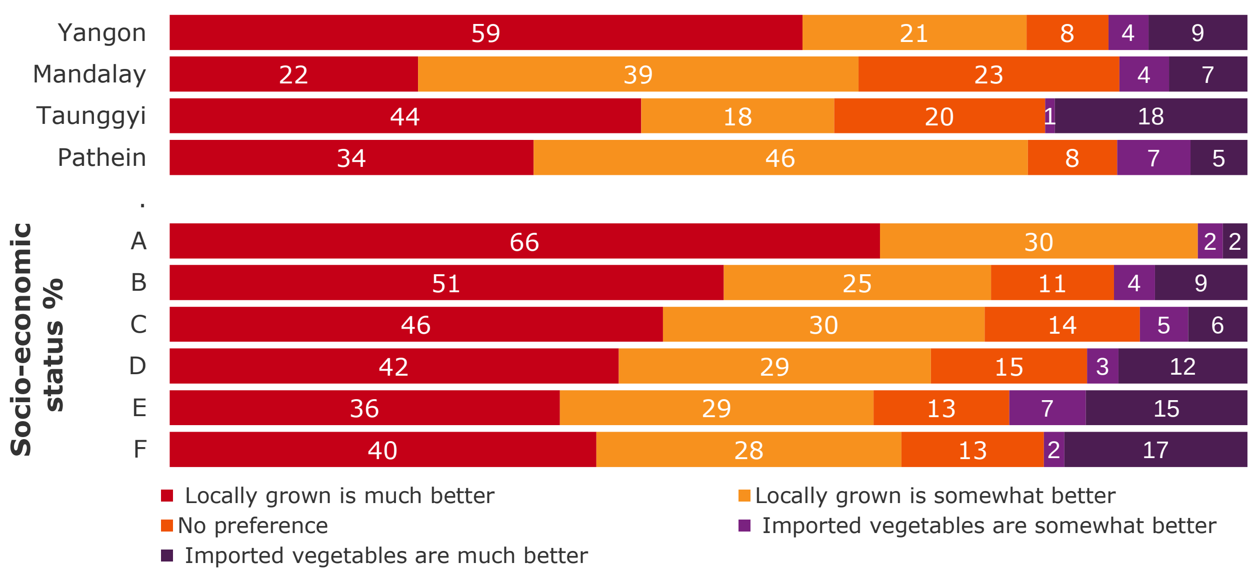


Figure 21 Local v imported by locations and SEC (%)



Appendices

3.13 Appendix 1: Sampling Methodology

Townships will be purposively selected in Yangon and Mandalay to give good geographic spread across the city. At least 6 townships will be selected in Yangon and 4 in Mandalay. In Taunggyi, there is only one main township where the urban wards are located.

A random probability proportionate to size (PPS) approach is suggested for selecting the wards within each township. PPS means that the larger wards are proportionately more likely to be selected for interview. In order to offset the bias that is created by the higher likelihood for larger wards being sampled, exactly the same number of individuals will be selected per ward. In this way, individuals in large wards have smaller probability of being sampled than individuals in the smaller wards. A target of maximum 20 respondents per ward will be interviewed.

In each randomly selected ward a maximum of four start points will be selected and a maximum of five respondents will interviewed per start point. We suggest that the start points should be purposively selected by the team on the ground to ensure that there is good coverage across the ward. From the start point, households will be contacted based on a predetermined interval. The interval will depend on the density of the area and is usually 5 in urban areas. The interviewers will move from the starting point in a random walk based on the right hand rule (RHR).

RHR: Once the starting point is determined, the interviewer will have to place his or her back to the (main) entrance of the HH structure and move to the right (rule: always go to the right). Only those houses on the right side of the street are counted. When the interviewer comes to the end of the village or outer ring, he/she turns around and counts the houses on the right side which were on his/her left previously.

3.14 Appendix 2: Quantitative questionnaire

001: Introduction	Begin block

Q001: Location	**Single coded**
	Not back
Location	
	Normal

1 ❍ Yangon

2 ❍ Mandalay

3 ❍ Taunggyi

4 ❍ Pathein

Q002: Interviewer name	**Open**
	Not back
Interviewer name	

Q005: Introduction	Text
	Not back

Hello, I am …….[insert interviewer name], an interviewer of TNS, an independent market research company in Myanmar. We are carrying out a study to find out about consumer attitude and behavior on vegetables. We would be grateful if you could spare about 45 minutes of your time to assist us in our research. Your personal information will not be provided to any third party and will be used for research purposes only.

B001: Introduction	End block

B002: Screener	Begin block

Q006: Industry of employment	**Multi coded**

Not back

Please indicate if you, or any member of your household, are employed by ANY of the following industries.

SHOWCARD

Random

1	❑	Grower of vegetable	
	⇘	GO TO SCREEN OUT	
2	❑	Wholesaler / distributor of vegetable	
	⇘	GO TO SCREEN OUT	
3	❑	Retailer selling vegetable	
	⇘	GO TO SCREEN OUT	
4	❑	Hotel / restaurant	
	⇘	GO TO SCREEN OUT	
5	❑	Market research company	
	⇘	GO TO SCREEN OUT	
6	❑	Newspaper / TV company	
	⇘	GO TO SCREEN OUT	
7	❑	Advertising agency	
	⇘	GO TO SCREEN OUT	
8	❑	Mass Media (TV/ Radio/ Newspaper/ Magazine)	
	⇘	GO TO SCREEN OUT	
98	❍	None of the above	**Position fixed *Exclusive*

Q007: Participation in MR	**Single coded**
	Not back

Have you participated in a market research study in the past 6 months, by this I mean have you participated in any type of
discussion or interview regarding products, brands or attitudes? This could include face to face interview, telephone survey, group discussion and any other kind of research?

Normal

1	❍	Yes
	↳	GO TO SCREEN OUT
2	❍	No

Q008: Gender	**Single coded**
	Not back

Record gender

Normal

1	❍	Male
2	❍	Female

Q009: Actual age	**Numeric**
	Not back | Min = 1 | Max = 99

May I know your age at your last birthday?

Q010: AGE RANGE	**Single coded**
	Not back
AUTO CODE INTO AGE RANGE	
	Normal

2	❍	18 – 25 years old
3	❍	26 – 30 years old
4	❍	31 – 35 years old
5	❍	36 – 40 years old
6	❍	41 – 45 years old
7	❍	46 – 50 years old
8	❍	51 – 55 years old
9	❍	56 - 60 years old
10	❍	61 – 65 years old

Q011: Position in household			**Single coded**
			Not back
What is your position in this household?			
SHOWCARD			
			Normal
1	❍	Head of household / main income earner	
2	❍	Spouse of head of household	
3	❍	Daughter of head of household	
4	❍	Son of head of household	
5	❍	Mother of head of household	
6	❍	Father of head of household	
7	❍	Housekeeper / domestic staff	
96	❍	Other (specify):	**Open *Position fixed*

Q012: Household Income	**Single coded**
	Not back

What is the average monthly income of your household from all sources including social benefits and / or remittances /gifts?

SHOWCARD

Normal

1	❍	Less than 125,000	
2	❍	125,001 – 250,000	
3	❍	250,001 – 375,000	
4	❍	375,001 – 625,000	
5	❍	625,001- 999,000	
6	❍	Above 1,000,000	
97	❍	No answer	*Position fixed *Exclusive
99	❍	Don't know	*Position fixed *Exclusive

Q013: Education	**Single coded**

Not back

What is the highest level of education you have completed?

SHOWCARD

Normal

1	❍	Illiterate (NOT ON SHOWCARD)	
2	❍	Literate but no formal / school education	
3	❍	Primary incomplete	
4	❍	Primary complete	
5	❍	Junior / middle school incomplete	
6	❍	Junior / middle school complete	
7	❍	Secondary / senior / high school incomplete	
8	❍	Secondary / senior / high school complete	
9	❍	College / university incomplete	
10	❍	College / university complete (graduate)	
11	❍	Post graduate studies incomplete (no post graduate degree)	
12	❍	Post graduate studies complete (post graduate degree)	
97	❍	No answer	**Position fixed *Exclusive*

Q014: Number of rooms	**Single coded**
	Not back

How many rooms do you have in your home? Please include bathrooms, toilets and kitchens in the count, but exclude attics and basements, unless used for living accommodation?

Normal

1	❍	1 room
2	❍	2 rooms
3	❍	3 rooms
4	❍	4 rooms
5	❍	5 rooms
6	❍	6 rooms
7	❍	7 rooms
8	❍	8 rooms
9	❍	9 rooms
10	❍	10 rooms
11	❍	11 rooms
12	❍	12 or more rooms

Q015: Household durables	**Multi coded**

Not back

Which of these items do you have in working order in your home?

SHOWCARD

Random

1	❑	Kitchen sink
2	❑	Dining table
3	❑	Primus (paraffin stove) / cylinder based gas stove
4	❑	Refrigerator (Stand alone - this may have ice box but NOT separate freezer section with its own door)
5	❑	Fridge freezer (i.e. the freezer section has its own door, separate from the refrigerator door)
6	❑	Separate deep freezer
7	❑	Cooker (i.e. oven & hob appliance)
8	❑	Vacuum cleaner
9	❑	Electric kettle
10	❑	Microwave oven
11	❑	Washing machine
12	❑	Tumble dryer
13	❑	Dish washing machine
14	❑	Electric deep flat fryer
15	❑	Electric mixer
16	❑	Electric iron
17	❑	Water filtering device
18	❑	Telephone (landline)

19	❑	Fax machine	
20	❑	Hi-Fi / stereo system (cassette, CD or vinyl)	
21	❑	Video player/recorder (VCR)	
22	❑	DVD recorder (i.e. not just a DVD player)	
23	❑	Electronic car navigation system ('Sat Nav') / GPS system	
24	❑	Docking station (for MP3 / iPod)	
25	❑	Home cinema/theatre / entertainment centre / HDD multimedia player	
98	❍	None of the above	*Position fixed *Exclusive

Q016: Ownership of personal phone / phablet — **Multi coded**

Not back

Do you have a mobile phone / phablet?

SHOWCARD

Random

1	❑	Yes, I have a smartphone	
2	❑	Yes I have a keypad phone	
3	❑	Yes I have a phablet	
4	❑	No I do not have one	*Position fixed

Q017: Buying decision maker	**Single coded**
	Not back

Which of the following statements best describe your involvement when buying vegetables?

SHOWCARD

Normal

1 ❍ I am one of the main decision makers and one of the main buyers of vegetables for the household

2 ❍ I am one of the main decision makers but I am not one of the main buyers of vegetables for the household

GO TO SCREEN OUT

4 ❍ I am not one of the main decision maker but I am one of the main buyers of vegetables for the household

3 ❍ I am not a main decision maker or buyer for vegetables in the household

GO TO SCREEN OUT

Q018: Responsibility for cooking	**Single coded**
	Not back

What is your responsibility for cooking in the household?

SHOWCARD

Normal

1 ❍ I am the main person responsible for cooking for the household

2 ❍ I share the responsibility for cooking equally with another/other member(s) of the household

3 ❍ I am not one of the main cooks for the household

GO TO SCREEN OUT

B002: Screener	End block

B003: Purchase channels	Begin block

Q019: Purchase frequency	**Single coded**
	Not back

How frequently do you buy vegetables?

SHOWCARD

Normal

1	❍	Every day or almost everyday
2	❍	4-5 times/ week
3	❍	Three times a week
4	❍	Twice a week
5	❍	Once a week
6	❍	Less often than once a week

Q020: Purchase channels	**Matrix**

Not back

From which channels do you purchase vegetables?
a. Most often
b. Regularly
c. Occasionally
d. Never

SHOWCARD. SINGLE RESPONSE PER ROW

Normal

	Most often	Regularly	Occasionally	Never
Wet market	❍	❍	❍	❍
Kiosk / hawker	❍	❍	❍	❍
Traditional store	❍	❍	❍	❍
Supermarket / hypermarket	❍	❍	❍	❍
Other	❍	❍	❍	❍

Q021: Important attributes for purchase channels	**Multi coded**

Not back

Which of the following do you consider important for an outlet that sells vegetables?

SHOWCARD

Random

1	❑	Enjoyable shopping experience	
2	❑	Offers a good range of vegetables	
3	❑	Sells vegetables at a reasonable price	
4	❑	Close to home	
5	❑	Has vegetables available that I cannot buy anywhere else	
6	❑	Sellers are knowledgeable about vegetables	
7	❑	Provides good customer service	
8	❑	Is convenient to travel to and from	
9	❑	Is clean	
10	❑	Has convenient opening hours	
98	❍	None of the above	**Position fixed *Exclusive*

Q022: Attributes of purchase channels	**Matrix**

Not back

Please select the statements that you feel apply to each of these purchase channels.

SHOWCARD. MA PER ROW POSSIBLE.

Random

	Wet market	Kiosk / hawker	Traditional store	Supermarket / hypermarket
Enjoyable shopping experience	❑	❑	❑	❑
Offers a good range of vegetables	❑	❑	❑	❑
Sells vegetables at a reasonable price	❑	❑	❑	❑
Close to home	❑	❑	❑	❑
Has products available that I cannot buy anywhere else	❑	❑	❑	❑
Sellers are knowledgeable about vegetables	❑	❑	❑	❑
Provides good customer service	❑	❑	❑	❑
Is convenient to travel to and from	❑	❑	❑	❑
Is clean	❑	❑	❑	❑
Has convenient opening hours	❑	❑	❑	❑

Ask only if NOT **Q020** ST=1 & SC=4

Q023: Regular seller	**Single coded**

Not back

When shopping at the wet market, do you have use a regular seller or do you shop around?

Normal

1	❍	I always buy from my regular seller(s)
2	❍	I usually buy from my regular seller(s), and occasionally shop around
3	❍	I don't have a regular seller, I look around to find the best option for my needs

Q024: Role of seller	**Single coded**

Not back

When making a vegetable purchase at [MENTION MOST OFTEN VISITED CHANNEL AT VRSEL], do you ever ask information / advice from the seller?

Normal

1	❍	Yes, occasionally
2	❍	Yes, regularly
3	❍	No, never
	↳	GO TO **B004**

Q025: Advice sought from seller	**Multi coded**

Not back

What type of advice / information do you seek?

UNPROMPTED / DO NOT SHOW SCREEN. PROBE: ANYTHING ELSE?

Random

1	❑	Help in selecting best quality vegetables	
2	❑	Information on the origin of the vegetables	
3	❑	Information on which pesticides / chemicals have been used	
4	❑	Advice on vegetable supply (e.g. when vegetables will become available)	
5	❑	Information on where the vegetables have come from	
6	❑	Information on storing vegetables	
7	❑	Information on preparing / cooking vegetables	
8	❑	Information about new vegetables that they are selling	
96	❑	Other (specify):	**Open *Position fixed*

Q026: Trust on vegetable sellers	**Left-Right Matrix**

Not back

Do you trust the information given by the seller?

Normal

Trust highly	❑❑❑❑❑	Distrust highly

B003: Purchase channels	End block

B004: PURCHASING BEHAVIORS	Begin block

Q027: Person responsible for setting budget	**Single coded**
	Not back
Who is the main person responsible for deciding the budget for household vegetables?	
SHOWCARD	
	Normal

1	❍	Head of household / main income earner	
2	❍	Spouse of head of household	
3	❍	Daughter of head of household	
4	❍	Son of head of household	
5	❍	Mother of head of household	
6	❍	Father of head of household	
7	❍	Housekeeper / domestic staff	
96	❍	Other (specify):	**Open *Position fixed*

Q028: Budget constraints	**Single coded**
	Not back
Do you have a fixed or flexible weekly budget for vegetables?	
	Normal

1	❍	Fully fixed
2	❍	Somewhat fixed
3	❍	Somewhat flexible according to household needs
4	❍	Fully flexible according to household needs

Q029: Weekly vegetable budget	**Single coded**

Not back

What is your weekly budget for vegetables?

SHOWCARD

Normal

1	❍	1,000 or less	
2	❍	1,001-2,500	
3	❍	2,501 - 5,000	
4	❍	5,001-7,500	
5	❍	7,501-10,000	
6	❍	10,001 - 15,000	
7	❍	15,001-20,000	
8	❍	20,001-30,000	
9	❍	30,001-40,000	
10	❍	40,001-50,000	
11	❍	More than 50,000	
99	❍	Don't remember	**Position fixed *Exclusive*

Q030: Vegetables purchased	**Matrix**

Not back

Which of the following vegetables do you buy?
a. Regularly
b. Occasionally
c. never

SHOWCARD. SINGLE RESPONSE PER ROW.

Random

	a. Regularly	b. Occasionally	c. Never
Chilli	❍	❍	❍
Tomato	❍	❍	❍
Onion	❍	❍	❍
Cabbage	❍	❍	❍
Kankong	❍	❍	❍
Cauliflower	❍	❍	❍
Eggplant	❍	❍	❍
Okra	❍	❍	❍
Cucumber	❍	❍	❍
Garlic	❍	❍	❍
Pumpkin	❍	❍	❍
Carrot	❍	❍	❍
Beans	❍	❍	❍

Q031: Reason for purchasing those vegetables	**Matrix**

Not back

Why do you purchase those vegetables in particular?

SHOWCARD. MULTI RESPONSE PER ROW POSSIBLE.

Random

	Healthy / nutritious	Family favourites	Required for the recipes I cook	They are readily available at my place of purchase	They are available at a cheap price	They are easy to prepare / cook
Chilli	❑	❑	❑	❑	❑	❑
Tomato	❑	❑	❑	❑	❑	❑
Onion	❑	❑	❑	❑	❑	❑
Cabbage	❑	❑	❑	❑	❑	❑
Cauliflower	❑	❑	❑	❑	❑	❑
Kangkong	❑	❑	❑	❑	❑	❑
Eggplant	❑	❑	❑	❑	❑	❑
Carrots	❑	❑	❑	❑	❑	❑
Cucumber	❑	❑	❑	❑	❑	❑
Okra	❑	❑	❑	❑	❑	❑
Pumpkin	❑	❑	❑	❑	❑	❑
Garlic	❑	❑	❑	❑	❑	❑
Beans	❑	❑	❑	❑	❑	❑

Q032: Ranking of important vegetable buying considerations	**Matrix**

Not back

For each vegetable, please rank the top-5 important factors you consider when assessing the quality of this vegetables for purchase?

RANK IN ORDER OF IMPORTANCE 1 TO 5 FOR EACH TYPE OF VEGETABLE

Random

	Not too big	Not too small	Not too hard	Not too soft/ over -ripe	Is firm enough	Is not wilted	Does not have bruises	There is no damage from worms / pests	Is naturally/ organically grown	Is grown without using pesticides	Is grown locally	Is a regular shape	Is a bright colour	Is an even colour	There are no brown spots	It is clean	It smells good
Chilli	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Tomato	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Onion	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Cabbage	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Cauliflower	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Kangkong	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Eggplant	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑

Carrots	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Cucumber	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Okra	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Pumpkin	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Garlic	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Beans	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑

Q033: Regularity of supply	**Matrix**

Not back

Do you ever have difficulty buying the vegetables that you want?

SHOWCARD. SINGLE RESPONSE PER ROW.

Random

	I can always find this vegetable	I can usually find this vegetable	This vegetable is often not available, according to seasonality	This vegetable is often not available, I never know whether I will find it or not
Chilli	❍	❍	❍	❍
Tomato	❍	❍	❍	❍
Onion	❍	❍	❍	❍
Cabbage	❍	❍	❍	❍
Cauliflower	❍	❍	❍	❍
Kangkong	❍	❍	❍	❍
Eggplant	❍	❍	❍	❍
Carrots	❍	❍	❍	❍
Cucumber	❍	❍	❍	❍
Okra	❍	❍	❍	❍
Pumpkin	❍	❍	❍	❍
Garlic	❍	❍	❍	❍
Beans	❍	❍	❍	❍

Q034: purchase by piece or by weight	**Matrix**

Not back

Do you prefer to buy by weight or by piece?

SHOWCARD. SINGLE RESPONSE PER ROW.

Random

	By weight	By piece	I have no particular preference
Chilli	❍	❍	❍
Tomato	❍	❍	❍
Onion	❍	❍	❍
Cabbage	❍	❍	❍
Kankong	❍	❍	❍
Cauliflower	❍	❍	❍
Eggplant	❍	❍	❍
Okra	❍	❍	❍
Cucumber	❍	❍	❍
Garlic	❍	❍	❍
Pumpkin	❍	❍	❍
Carrot	❍	❍	❍
Beans	❍	❍	❍

Q035: Quality price scale 1 | **Matrix**

Not back

Imagine you can buy a range of vegetable qualities, with the option of buying better quality at a higher price than usual, or reduced quality at a lower price than usual. Please indicate which option you would select.

SHOWCARD

Normal

	I would accept low quality vegetables for a 10% discount on the regular price	I would accept less than average quality vegetables for a 5% discount on the regular price	I would pay the regular price for the regular quality	I would pay 5% more for a better than average quality vegetables	I would pay 10% more for high quality vegetables
+/- 10% discount	❍	❍	❍	❍	❍

Q036: Quality price scale 2 | **Matrix**

Not back

SHOWCARD

Normal

	I would accept low quality vegetables for a 25% discount on the regular price	I would accept less than average quality vegetables for a 10% discount on the regular price	I would pay the regular price for the regular quality	I would pay 10% more for a better than average quality vegetables	I would pay 25% more for high quality vegetables
+/- 25% discount	❍	❍	❍	❍	❍

Q037: Quality price scale 3					**Matrix**
					Not back
SHOWCARD					
					Normal
	I would accept low quality vegetables for half the regular price	I would accept less than average quality vegetables for a 25% discount on the regular price	I would pay the regular price for the regular quality	I would pay 25% more for a better than average quality vegetables	I would pay double the price for high quality vegetables
double / half price	❍	❍	❍	❍	❍

Q038: Do you ever see new types of vegetables for sale at your regular place of purchase?		**Single coded**
		Not back
		Normal
1	❍	Yes
2	❍	No

Q039: Interest in buying new vegetables		**Left-Right Matrix**
		Not back
If you do see them, how interested are you in trying new vegetables that you see?		
		Normal
Very interested, I am always open to trying new vegetables	❑❑❑❑❑	Not at all interested, I prefer to stick to what I know and like

Q040: Triggers for purchasing new vegetables	**Multi coded**

Not back

In the past, what has triggered you to try new types of vegetables?

UNPROMPTED / DO NOT SHOW SCREEN. PROBE: ANYTHING ELSE?

Random

1	❑	When I noticed it for sale, I was just interested to try it	
2	❑	I tried it when I was eating out at a restaurant / friend / family house and liked it	
3	❑	The vegetable seller recommended it to me	
4	❑	A friend family member recommended it to me	
5	❑	Someone in the household had tried it and asked me to buy it	
96	❑	Other (specify):	**Open *Position fixed*

B004: PURCHASING BEHAVIORS	End block

B005: Concerns	Begin block

Q041: Concerns when buying vegetables			**Multi coded**
			Not back
What are the main concerns that you have when buying vegetables?			
			Random
1	❑	I can't find the vegetables I need	
2	❑	The price is high	
3	❑	The quality is low	
4	❑	Lack of variation in available vegetables	
5	❑	The price is unstable	
6	❑	I worry about the use of pesticides / chemicals	
7	❑	I worry about the country of origin	
96	❑	Other (specify):	**Open *Position fixed*
98	❍	None of the above	**Position fixed *Exclusive*

Q042: Impact of chemicals	**Multi coded**

Not back

What impact do you think chemicals / pesticides used during the farming process have on the vegetables you buy?

UNPROMPTED / DO NOT SHOW SCREEN. SAY: "IMPACTS CAN BE POSITIVE OR NEGATIVE" PROBE: ANYTHING ELSE?

Random

1	❑	Causes the vegetables to deteriorate	
2	❑	Causes an unpleasant smell	
3	❑	Causes an unpleasant taste	
4	❑	Bad for health	
5	❑	The vegetables grow bigger	
6	❑	The vegetables look nicer / more perfect	
7	❑	The vegetables last longer	
8	❑	Can cause illness	
9	❑	Can cause diarrhoea	
10	❑	Can cause vomiting	
99	❍	Don't know	**Position fixed *Exclusive*

Q043: Concern about pesticides	**Left-Right Matrix**

Not back

How concerned are you about pesticides / chemicals used during the farming process?

Normal

I worry a lot about pesticides used in farming vegetables	❑❑❑❑❑	It's not something I think about at all

Q044: Appeal of organically grown	**Left-Right Matrix**
	Not back
Do you find the idea about organically grown vegetables appealing?	
	Normal
I very much like to buy organic vegetables ❑❑❑❑❑	It's not something I think about at all

Q045: Measures to avoid/remove chemicals			**Multi coded**
			Not back
What measures do you take to avoid / remove chemicals on vegetables?			
			Random
1	❑	I clean the vegetables	
2	❑	I cook the vegetables	
3	❑	I avoid buying vegetables with a chemical smell	
4	❑	I avoid buying vegetables which look unusually big	
5	❑	I avoid buying vegetables which have an unusual colour e.g. very bright / strong colour	
6	❑	I avoid vegetables which have perfect skin e.g. no small holes or spots	
7	❑	I remove the skin	
8	❑	I don't do anything to avoid / remove chemicals	**Position fixed*

Q046: Country of origin	**Left-Right Matrix**

Not back

Do you prefer locally grown or imported vegetables?

Normal

Locally grown is much better	❑❑❑❑❑	Imported vegetables are much better

Q047: Reason for origin preference	**Open**

Not back

Why do you prefer [LOCALLY GROWN / IMPORTED]?

MENTION THE PREFERENCE THEY STATED IN PREVIOUS QUESTION

B005: Concerns	End block

B006: Vegetable Usage	Begin block

Q048: Vegetable storage	**Matrix**
	Not back
How do you normally store your vegetables at home?	
SHOW CARD. SINGLE RESPONSE PER ROW.	
	Normal

	Chilli	Tomato	Onion	Cabbage	Cauliflower	Kangkong	Eggplant	Carrots	Cucumber	Okra	Pumpkin	Garlic	Beans
In the fridge	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
In the kitchen	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
In another room in the house	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
I do not store, I use them straight away	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑

Q049: Length of storage	**Matrix**

Not back

On average, how long do you keep the vegetables that you buy?

SHOWCARD. SINGLE RESPONSE PER ROW.

Random

	I use them on the day I buy them	I use them within 2 or 3 days	I use them within 4-7 days	I keep them for more than a week
Chilli	❍	❍	❍	❍
Tomato	❍	❍	❍	❍
Onion	❍	❍	❍	❍
Cabbage	❍	❍	❍	❍
Cauliflower	❍	❍	❍	❍
Kangkong	❍	❍	❍	❍
Eggplant	❍	❍	❍	❍
Carrots	❍	❍	❍	❍
Cucumber	❍	❍	❍	❍
Okra	❍	❍	❍	❍
Pumpkin	❍	❍	❍	❍
Garlic	❍	❍	❍	❍
Beans	❍	❍	❍	❍

Q050: Frequency of cooking veggies	**Single coded**
	Not back

How often do you cook vegetables for your household?

Normal

1 ❍ More than once a day

2 ❍ 4-6 times a week

3 ❍ 1-3 times a week

4 ❍ Less than once a week

5 ❍ Never - rarely

Ask only if **Q050**,1

Q051: Number of meals with veggies per day	**Single coded**
	Not back

On Average how many meals do cook with vegetable a day?

Normal

1 ❍ 1 meal

2 ❍ 2 meals

3 ❍ 3 or more meals

Q052: Vegetable dishes cooked	**Matrix**

Not back

Which types of dishes do you cook with vegetables?

SHOW CARD. SINGLE RESPONSE PER ROW ONLY.

Random

	Everyday	4-6 times per week	1-3 times a week	Less than once a week	Never
Stir fried	❍	❍	❍	❍	❍
Deep fried	❍	❍	❍	❍	❍
Steamed/boiled	❍	❍	❍	❍	❍
Salad	❍	❍	❍	❍	❍
Curries	❍	❍	❍	❍	❍
Soups	❍	❍	❍	❍	❍
Eat fresh/raw	❍	❍	❍	❍	❍

Q053: Frequency of washing vegetables	**Matrix**

Not back

Do you wash your vegetables before using them?

Normal

	Always	Sometimes	Occasionally	Never
Frequency of washing vegetables	❍	❍	❍	❍

Q054: Washing vegetables	**Single coded**
	Not back

What do you usually wash your vegetables with?

Random

1	❍	Water	
2	❍	Salty water	
3	❍	Soapy water	
96	❍	Other (specify):	**Open *Position fixed*

Q055: Vegetable wastage	**Single coded**
	Not back

On average, what proportion of your vegetables do you waste / throw away every week?

Normal

1	❍	I don't waste any vegetables
		GO TO **B007**
2	❍	I waste less than 10% of the vegetables
3	❍	I waste around 10% of the vegetables I buy
4	❍	I waste around 20% of the vegetables I buy
5	❍	I waste 25% or more of the vegetables I buy

Q056: Reason for wastage	**Multi coded**
	Not back
What is the main reason for vegetable wastage?	
	Random

1	❑	I buy too much	
2	❑	The vegetables do not last long	
3	❑	The vegetables I buy become rotten	
4	❑	I cook too much	
96	❑	Other (specify):	**Open *Position fixed*

B006: Vegetable Usage	End block

B007: Demographics	Begin block

Q057: What is your marital status?			**Single coded**
			Not back
			Random
1	❍	Married	
2	❍	Single / never married	
3	❍	Separated / Divorced	
4	❍	Widowed	

Q058: Occupation			**Single coded**
			Not back
Which of these best describes your main occupation?			
			Random
1	❍	Housewife	
2	❍	Helping with family business	
3	❍	Student	
4	❍	Senior Manager	
5	❍	Business owner	
6	❍	Professional / supervisory level	
7	❍	Junior level / Admin	
8	❍	Hawker/casual worker/daily wages labour	
9	❍	Unemployed	
96	❍	Other (specify):	**Open *Position fixed*

Q059: Main income earner's highest education

What's the highest education of your household's main income earner's highest education?

1	❍	Illiterate (NOT ON SHOWCARD)	
2	❍	Literate but no formal / school education	
3	❍	Primary incomplete	
4	❍	Primary complete	
5	❍	Junior / middle school incomplete	
6	❍	Junior / middle school complete	
7	❍	Secondary / senior / high school incomplete	
8	❍	Secondary / senior / high school complete	
9	❍	College / university incomplete	
10	❍	College / university complete (graduate)	
11	❍	Post graduate studies incomplete (no post graduate degree)	
12	❍	Post graduate studies complete (post graduate degree)	
97	❍	No answer	**Position fixed *Exclusive*

B007: Demographics	End block

3.15 Appendix 3 – Qualitative respondent profiles

RESPONDENTS PROFILE - Project : Eat your veg (2015-113)

No.	Respondent's name	Type of business (respondent)	Location	Age	Gender	Education	Position
1	Ma Thein Myint	Retailer (Street Stall)	Yangon	31	Female	Middle school	Owner
2	Hlaing Soe Tun	Restaurant (Low End)	Yangon	28	Male	University Student	Chef
3	Ko Ka Yin	Wholesaler (Thirimingalar)	Yangon	32	Male	Middle school	In-charge
4	Daw Saw Saw Nyein	Retailer (Street Stall)	Yangon	49	Female	Middle school	Owner
5	Ma Khin Moe Lwin	Retailer (Wet Market)	Yangon	42	Female	Middle school	Owner
6	Ko Yin Han	Restaurant (High End)	Yangon	29	Male	Graduate	Manager
7	Ma Kyay Hmone Min Thu	Hotel (Airport Inn)	Yangon	25	Femae	Graduate	Purchasing
8	Ko Ka Yin	Wholesaler (Thirimingalar)	Yangon	32	Male	10 Standard	In-charge
9	Daw Thein Than Sint	Retailer (Wet Market)	Yangon	45	Female	Middle school	Owner
10	Ma Zar Chi	Supermarket (Capital)	Yangon	28	Female	Graduate	Purchasing Manager
11	Daw Khin Mya	Wet Market	Yangon	50	Female	University	Owner
12	Aung Kyaw Htoo	Wholesaler (Thirimingalar)	Yangon	39	Male	10 Standard	In-charge

13	Ko Sint	Trader (To Thirimingalar)	Yangon	47	Male	University Student	Owner
14	Ko Aung Kyaw Phyo Lwin	Supermarket (Sein Gay Har)	Yangon	33	Male	University Student	Purchasing Manager
15	Moe Moe Thu/ Ko Naing	Sule Shangri-la/ apartment Hotel	Yangon	40	Female/ Male	Graduates	Purchasing-Service Manager/ Receiving
16	Nan Aye Shan	Restaurant	Taunggyi	50	Female	Primary school	Owner and purchaser
17	Ko Khaing Zaw	Restaurant	Taunggyi	25	Male	Primary school	Chef
18	Nan Khin Kyi	Street Stall	Taunggyi	26	Female	Middle school	Retailer
19	Nan Sein Pan	Wet Market	Taunggyi	37	Female	University Student	Retailer
20	Ma Wine	Street Stall	Taunggyi	32	Female	Middle school	Retailer
21	Ma Cherry San	Wet Market	Taunggyi	33	Female	Middle school	Retailer
22	Ma Thiri	Wet Market	Taunggyi	30	Female	Primary school	Retailer
23	Ko Khin Mg Myint	Broker (Trader)	Aung Ban	40	Male	University Student	Broker
24	Sai Ko Ko	Broker sale centre (Tomato)	Aung Ban	36	Male	High school	Buyer and seller
25	Ko San Doe	Broker (Trader)	Aung Ban	25	Male	3rd Year	Buyer and seller
26	Ko Phoe Ni	Broker sale center	Aung Ban	33	Male	10 Standard	Buyer and seller
27	Ko Hla Win Thein	Broker (Trader)	Aung Ban	37	Male	10 Standard	Broker

28	U Thein Oo	Broker sale centre	Aung Ban	45	Male	Graduate	Broker

3.16 Appendix 4: Discussion guide for retailer/ restaurant/ supermarket managers

Research Objectives:

- Maps the current retail market outlets or other consumer access points for vegetables in the country's major cities and details out the specific characteristics of these market channels.
- Provide a more comprehensive understanding of current market trends in terms of market share of the different outlets (high-end retail and wholesale, specialized shops, open/wet markets, restaurants, hotels and other industrial/commercial consumers).
- Provide a more comprehensive understanding of consumer preferences for vegetables to include aspects such as quality perceptions, buying patterns, eating habits, trade offs between quantity-quality-pricing, and other related aspects of consumer preference.
- Recommendations for increasing vegetable consumption in Myanmar through innovative public and private sector marketing efforts.

Flow of discussion:

- Section 1: INTRODUCTION/ WARM UP (5 mins)
- Section 2: Exploration on shop (10 mins)
- Section 3: Understanding of the quality vegetables (5 mins)
- Section 4: Exploration on purchasing behaviour (15 mins)
- Section 5: Exploration on selling behaviour (40 mins)
- Section 6: Future expectation (5 mins)
- WARM UP/ CLOSE

Section 1: **INTRODUCTION/** **WARM-UP** *→ To break ice and make respondent feel comfortable before starting the main discussion* *(5 mins)*	▪ Interviewer self-introduction ▪ Thank respondent for him/her participation ▪ Quick introduction about the purpose of market research and the interview ▪ No right or wrong, good or bad opinion, honest thoughts are appreciated ▪ Inform audio/ video recording and observation ▪ Respondent's introduction – name, age, occupation, family, kids, etc.
Section 2: **EXPLORATION ON SHOP** *→ To understand the general information about the shop* *(10 mins)*	Today we are talking about the vegetables and first, please tell me- ▪ What kinds of vegetables do you sell at your shop? ▪ (For market/stall owners only) How many shops sell vegetables at this market? ▪ How did you start your business at this market? (Probe the reasons – eg. More customers, wide space, easy for travel, cheap place, many regular customers etc.) ▪ How long have you been here? ▪ What time do you open? What time do you close the shop? Do you open your shop daily? Do you have any off days? How many off days do you have in a month? ▪ How many customers do you have daily? How about one month?
Section 3: **UNDERSTANDING OF THE QUALITY VEGETABLES** *→ To understand the general information about the quality* *(5 mins)*	Let's talk about vegetables about how you define good and bad quality. ▪ What factors do you think are most important in determining the quality of vegetables? Probe (how the farmer cultivates, packaging and transport, chemical/pesticide usage) MODERATOR NEEDS TO ASK WITH THE SHOW-CARDS FOR QUALITY SECTION. ▪ When determining the quality of THESE KINDS OF VEGETABLES **(show card)** what indicates good quality to you? What indicates bad quality to you? **MODERATOR SHOWS AND ASK ANOTHER (n=X) SHOW-CARD**
Section 4: **EXPLORATION ON PURCHASING BEHAVIOR** *→ To understand the purchasing habits* *(15 mins)*	I would like to ask about your purchasing habits of vegetables. **Purchasing logistics and business relationships** ▪ Where do you buy your vegetables? From anywhere else? ▪ Who do you buy your vegetables from? Please explain your relationship with the supplier of your vegetables. **Probe deeply** *–probe questions below will differ depending on the nature of the wholesaler's trader relationship.* ***MODERATOR DRAW DIAGRAM IF REQUIRED***

	→Do you have an established relationship with one trader or do you source your vegetables from different traders? →What informs the decision about who you buy from? (Trusted relationship with one farmer? Pre-paid system with a farmer? Whoever has the cheapest price?) →How often do you buy vegetables? →Do you place orders with the supplier? If so, how often? →What influences how often you order? What informs the quantity that you order? (ie influence of client demand) →Do you have the opportunity to check the quality of the vegetables produced by the supplier before purchasing? What do you look for when checking? →How do you ensure the produce you are buying is good quality? →Do you normally face price fluctuation in the vegetables market? Why does it happen? (Probe the reasons – eg. Flood, heavy rain, bridge broken, war etc.) What do you do when it is happened? →How frequently do you face such problems? (Monthly basis? One time a year? Etc.) ▪ (FOR THOSE WHO USE BROKERS) If you could purchase **DIRECTLY** from the farmer, would you? Why/why not? Why do you use the brokers? Is it easier? More expensive? Would you be trusting to buy from a collection centre managed by farmers instead of buying from brokers? **Quality and willingness to bear risk** ▪ How do you normally keep the vegetable in your shop? (In fridge/freezer, room temperature, spray the water, cover with wet textile etc.) Why do you keep like that? ▪ Have you ever had a problem where the vegetables provided by the supplier did not meet your standards of quality? ▪ How willing would you be to buy a new variety of vegetable from your supplier? Why? ▪ How willing would you be to buy vegetables of higher quality if it was more expensive than what you normally purchase? Why? Specifically what would need to be improved about the vegetable for you to consider it higher quality, and worth paying more for? (Size, taste, freshness etc.) **For Restaurant, Hotel and Supermarket Managers** ▪ Do your buying habits reflect the number of customers you have, or do you buy a set amount every time? Does this change? If yes, on which situation or day? ▪ Do you buy the vegetables from refined wholesalers? Why do you buy? (Probe-customers' demand, caring hygiene, ready-to-go etc.) ▪ What are the differences between that shop and other shops from markets about the vegetables? (Probe-price, quality, hygiene, availability etc.)

	▪ (FOR THOSE WHO USE BROKERS) If you could purchase **DIRECTLY** from the farmer, would you? Why/why not? Why do you use the brokers? Is it easier? More expensive? Would you be trusting to buy from a collection centre managed by farmers instead of buying from brokers?
Section 5: **EXPLORATION ON SELLING BEHAVIOR** → *To understand selling practice* (40 mins)	Well now we are going to discuss about your selling behaviour. **Selling logistics and business relationships** ▪ What kind of vegetables do you sell regularly? (Record the item) ▪ On average, how many customers do you have each day? ▪ What kinds of customers are they? (ie. individual, retailer from market/ street, hotel, restaurant, food centre, for donation etc.) ▪ How many **regular** customers do you have? ▪ Where are they coming from? (Probe clearly whether they are from the region or any other places, far away town → to ask clearly) ▪ Why are they coming to buy here? (Probe about the reasons to buy in this shop such as cheap price, many options, easy to travel etc.) ▪ How do you decide on the price that you sell the vegetables for? What influences this decision? ▪ Is there any occasion that the product is not enough for the demand? In what occasion? How many times do you meet with this occasion? Which product/ vegetables? ▪ How do you transport the produce to the place of sale? How do you ensure quality is maintained on the journey? What do you store the vegetables in? ▪ How do you package and present the vegetables in your shop before selling? Why do you choose to do it this way? Does it affect how much your customers purchase? ▪ Do you alter the product before on-selling? How do you decide what alterations to make? **(Probe)** → Cleaning, cutting off the ends, cutting off the dirty parts? →Processing? →Grading? →Chemical ripening agent to improve appearance? Which one? How do you use it? →WHY do you make these alterations? Are customers more likely to purchase from you if you make these changes? Is the produce more attractive? ▪ How do you package the vegetables in your shop before selling? Why do you choose to do it this way? Does it affect how much your customers purchase? ▪ What happens to the vegetables that you are unable to sell? (Probe about whether throwing or selling with cheap price etc.)

	Quality and consumer's willingness to try new things ORGANIC PRODUCE →How do you understand the term "organic"? Please explain the difference between organic and non-organic. →Does "organic" produce mean better quality? Why/why not? →Would you/do you ever buy/sell organic produce? Do your customers ever demand organic produce? What kinds of customers want organic vegetables? →Where are they available from? Does the availability meet the demand? ▪ →Where is good organic produce grown? Who do you trust to grow it and be assured of its quality and why? ▪ Do your customers demand a certain standard of quality, or do they just buy what you have? What defines their understanding of quality? How do they communicate this to you? How do you ensure that the produce you sell meets their demands? ▪ Do you think that your customers will be willing to buy high quality vegetables for a higher price? Specifically what would need to be improved about the vegetable for them to consider it higher quality, and for them to pay more for it? (Size, taste, freshness etc.) ▪ Do you think that your customers would be willing to try new kinds of vegetables? Why/why not? What would be needed to encourage them to try a new kind of vegetable? **For Restaurant, Hotel Manager** Now we are going to talk about your selling food and vegetables in your shop. ▪ How many dishes with meat, fish and vegetables do you normally sell? (Probe about the number of dishes on meat, fish and vegetables) Do you sell something special dishes? Which dishes? ▪ How much do you sell for each day? How about one month? ▪ From that amount, how much goes for vegetables? (If you cannot say exactly, please tell us in average percentage) ▪ Which dish is more demand at this shop-meat or vegetables? (Please give me the example for each dishes on a table-meat and vegetables) ▪ Which kinds of vegetables do the customers normally eat? Why they eat? ▪ What will be the difference of vegetables consumption comparing with previous? (Probe-eat less, eat more vegetables, choose hygiene or without chemicals etc.) When? Why do you think so? **Health and safety concerns**

	▪ Are you aware of the health and safety practices of the farmers/traders from whom you buy your vegetables? ▪ Do your customers trust the health and safety standards in the produce that you sell? (ie. Do they think it is healthy to eat?) How do you know this? How do they communicate this to you? ▪ Have you/your customers ever been concerned about health or safety in regards to the produce you buy? How do you treat these concerns? Do you ever ask the trader? →Chemical fertilizer? →Pesticides? →Imported produce? ▪ What do you think can be done to ensure that the vegetables are safe to eat? In other countries, governments and organisations test that vegetables reach good health and safety standards before they are sold. Do you think this would work in Myanmar? Why/why not? **Knowledge** ▪ From any sources (media), do you or your customers know about how to eat vegetables, how to eat vegetables, how much to eat?
Section 6: **FUTURE EXPECTATION** *(5 mins)*	Let's think about the vegetables consumption in future. ▪ Over your time working, have the **types/varieties of vegetables** available changed? Do you think it will change? If so, why? ▪ Have you seen changes in the **quality of vegetables** available? Has it become better or worse? Do you think this will change? Why/why not? Over your time working here, have you seen any changes in your **customers' expectations regarding the quality** of vegetables? Do you think this will change? Why/why not?
WRAP UP/ CLOSE	▪ Before I leave, is there anything else that you want to ask or add? ▪ *Give incentives to respondents*

