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Chapter 8
From Value Chain Analysis to Global Value Chain Analysis: Fresh Orange Export Sector in Mediterranean Partner Countries

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8.1 Introduction

Preceding chapters outlined some of the challenges facing Mediterranean Partner Countries (MPCs), from stubborn rural poverty to a crisis in its rapidly changing demographics. The region is facing a predicament over agricultural policy and competitiveness in its agri-food sector. MPCs and the wider region of the Middle

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East and North African (MENA) are failing to meet the challenge of averting heavy rural-urban migration and the current policy strategy has not brought the economic growth to the region that it desperately needs (Baldacci et al. 2008). Poor economic opportunities are pushing rural households into the city where instead of finding new prospects, poverty is merely concentrated in urban slums and unemployment continues to be a looming threat for the region (Nabli 2004). The population in MPCs that depend on agriculture coupled with a job crisis that must be confronted over the next decade suggests that the agri-food sector is, at least in the short term, the only realistic sector to bring economic improvements to rural areas in MENA. Yet growth in value-added agriculture in MENA is on par with sub-Saharan Africa and is significantly less than all other developing regions (Binswanger-Mkhize and McCalla 2010). Agricultural policies in the region continue to link competitiveness, with volume being the overarching aim (Lindberg et al. 2006). All of this suggests that the region presents fertile ground to test a new value-orientated tool that goes beyond 'conventional industry studies' (Kaplinsky and Morris 2002).

The present chapter contrasts with other chapters in this book. Rather than an analysis from the subject area of economics, a method that is more aligned with the business management discipline is presented.

Using a methodology adapted from the work of Taylor (2005) and taken from the Supply Chain Management (SCM) literature, this chapter applies a Global Value Chain Analysis (GVCA) which identifies where value is created in the eyes of the end consumer and highlights bottlenecks based on the flow of materials, the flow of information and the strength of relationships between actors, from spot market and opportunistic to integrated and trusting relations. The contribution is primarily methodological in that it is an attempt to link process tracing and consumer-orientated demand pull concepts in the SCM literature (Collins 2009; Fearne 2009) with creating policy recommendations within the context of export competitiveness.

The chapter begins with a literature review of value chain thinking concepts and a review of past methodological approaches in the SCM literature to value chain analysis, leading to our justification for contributing to the literature with a sectoral level of analysis and combining it with qualitative key informant information to create policy recommendations. Then an overview of the fresh orange sector in the region is described and justification for using MPCs as a context is offered. Based on the methodology we adapt from Taylor (2005) which provides a multi-faceted view of the global value chain, a set of insights are gathered about the nature of value creation and where constraints exist. Resulting policy recommendations provide examples of how a value-chain-centric approach could be used to highlight innovative policy solutions to MPCs' agri-food export sector, for instance, disseminating consumer information to relevant stakeholders and incentivising investment in supply chain activities that add value for European consumers. A broad aim of our chapter is to generate a discussion over how value chain thinking can be used as a tool to inform policy debate.

8.2 From Value Chain Analysis to Global Value Chain Analysis

The concept of a value chain was first introduced by David and Goldberg (1957) and popularised by Porter (1990). The value chain presents the input-output structure of supply chains as one which is composed of particular value-adding activities. Value chain thinking starts from the basic and widely held assumption that the value of a finished product is decided by the final consumer and thus, the value chain is defined as the activities that add value to a product from basic raw materials to the final consumer (Lindic and da Silva 2011; Slywotzky and Morrison 1997; Soosay et al. 2012; Walters and Lancaster 2000). It therefore advocates a *demand pull* strategy where consumer value dictates the value attributed to activities along the chain rather than a supply-push approach (Walters and Lancaster 2000). The end result from this line of thinking is that all components of the value chain play a role in formulating and creating consumer value; therefore a weakness with one component has an adverse effect on the creation of value for the whole value chain.

Value chain thinking requires this broad analysis because constraints or opportunities can exist in any part of the chain (Campbell 2008), rather than just focusing on a single actor which only tells a fraction of the story. Effective chain practises, built on holistic concepts of strong strategic partnerships founded on inter-firm trust and a high degree of quantity and quality in information sharing between firms, create a competitive advantage that, in turn, improves organizational performance, and conversely, a spot market relationship where little information is shared and relations are opportunistic and could have a detrimental impact on performance (Carson et al. 2003; Delbufalo 2012; Dyer and Singhe 1998; Handfeld and Bechtel 2002; Kannana and Tanb 2005; Li et al. 2006; Zaheer et al. 1998). This presents a strong argument against firms acting in 'functional silos' (Christopher 2011). The implication is that competition is moving away from 'between firms' to 'between value chains' where it is the entire chain which becomes the vehicle for adding value and eliminating waste and not the individual organization in isolation (McGuffog and Wadsley 1999). This holistic, multi-dimensional view of agri-food chains sets the conceptual basis for Value Chain Analysis (VCA).

There is a variety of different approaches and conceptions of what constitutes a VCA, each stemming from different sub-disciplines in the literature.[1] One such approach is from SCM where VCA finds its origins in Value Stream Mapping (VSM) (Womack and Jones 1994). VSM is a lean manufacturing method, based on the work by Hines and Rich (1997), to analyse the efficiency of material and information flows between segments in the value chain with the aim of eliminating waste through the facilitation of efficient flows. This kind of technique to eliminate waste has a strong record of revealing and eliminating waste along the value chain

[1]Trienekens (2011) outlines four distinct theoretical models for VCA; Global Value Chains, SCM, New Institutional Economics and the Network Approach.

(Francis 2000; Jones and Simons 2000). VCA borrows from this but with the added dimension of relationships between chain members which relates to the organisation, management and control of the chain (Taylor 2005) and has a significant impact on supply chain outcomes (Christopher and Juttner 2000; Cousins and Menguc 2006; Li et al. 2006). In line with Porter's (1990) notion of value addition and based on the idea that consumers have the final say on what constitutes value (Slater and Narver 1992), a number of studies have incorporated consumer research into the methodology (Adhikari et al. 2012; Bonney et al. 2007, 2008; Soosay et al. 2012).

Therefore, in accordance to its evolution in the SCM literature, VCA is a diagnostic tool to assess the strengths and weaknesses within a value chain based on three constructs: (1) the material flow, judged based on where value lies *in the eyes of final consumers*, identifying where investment should be targeted and what activities should be eliminated; (2) the dynamics of information flow between actors; and (3) the strength of relationships, constructed from notions of trust and commitment between actors. VCA looks at the stages a product goes through, all the way from raw materials to final consumption (Rieple and Singh 2010). While VCA has had a strong presence in the motor and I.T. sectors, the agricultural sector presents a more challenging picture of transactional, arms-length relationships between partners (Simons et al. 2003).

A number of studies have built on the VCA tool to analyse different dimensions of agricultural value chains and competitiveness, demonstrating the versatility of VCA to tackle a variety of concepts and issues. Bonney et al. (2007) use VCA to identify the processes and key factors for co-innovation between value chain stakeholders. Expanding the scope of VCA to environmental sustainability, Soosay et al. (2012) modify the methodology into Sustainable Value Chain Analysis (SVCA) by quantifying the environmental impacts of activities in the value chain. Focusing on the notion of consumer value, Adhikari et al. (2012) demonstrates how segmentation could be a powerful tool for reforming the tomato value chain in Nepal.

While the applications of VCA have varied, to date it has tended to be utilized as an in-depth tool bounded by an inter-/intra-firm unit of analysis (Fearne et al. 2012). However because current methods choose contextual depth over generalizability, a single chain method restricts the ability to make the broader generalizations necessary to inform agricultural policy. The findings from VCA studies within the SCM literature have been mostly restricted to the chain in question. In the past, research on agricultural policy has been informed by conventional industry studies from the economics profession based on a focus on size and growth, especially in terms of gross output rather than value addition (Kaplinsky and Morris 2002). The necessary step to bring VCA into relevance for policy makers would be to make a move towards a sectoral level of analysis (Schmitz 2005).

To reflect a change in the unit of analysis, we shift terms from 'value chain' to a 'Global Value Chain' (GVC) defined as value-adding activities that typify an industry and go beyond borders, typically from developing country suppliers to developed country consumers, and representing a multitude of stakeholders bound

by their participation in the same sector (Gereffi 1999; Gereffi et al. 2005; Kaplinsky 2000; Kaplinsky and Morris 2002). Mirroring the change in the unit of analysis, we also redefine the method of VCA to Global Value Chain Analysis (GVCA). It is important to note that we use this term not for the same purposes as in the framework offered by Gereffi et al. (2005) and Humphrey and Schmitz (2002). These authors' framework is more in line with the governance paradigm of power relationships and lead firm coordination, rather than the lean concepts contained in SCM. Therefore, while there have been policy implications drawn from the GVC governance framework (Kaplinsky and Morris 2002; Schmitz 2005), these implications have not been fully considered in a SCM approach to policy problems.

The novelty of our contribution is the combination of a methodology developed by Taylor (2005) with a GVC aggregated view of the fresh orange sector, placed within the context of sustainable development in the Middle East. There is scope for making a methodological contribution to the literature by demonstrating the lessons learnt in adapting VCA from a single value chain with a low number of participants and a narrowly defined value stream, reflecting current VCA methods in SCM, towards a more aggregated level that involves a larger sample of participants. At the same time, we also wish to demonstrate how value chain thinking can be utilized as a lens to view policy.

8.3 Research Methods

8.3.1 Data Collection

As noted in the review of the literature, the research methods used in the study are different to those used in previous VCA in that we take process tracing from the SCM literature and aggregate it to the industry level as a means to generate broad policy recommendations. As a result, the research was expanded from a small number of participants to a larger sample. Participants included:

- Citrus input suppliers who provide fertilizer and pesticides to growers
- Orange growers
- Extension services that, despite not participating in the flow of materials, provide advice and training to growers
- Orange packers
- Citrus exporters
- Citrus buyers from UK, France, Germany, Spain and Russia
- Consumers from UK, France, Germany and Russia

European countries were chosen based on their prominence as destination markets for oranges coming from the region. The data that makes up the GVCA comes from both quantitative and qualitative sources through survey and interview methods. Two areas are examined as part of the methodology: consumer value and global value chain dynamics (material flow, information flow and relationships).

Consumer value was constructed through three exploratory focus groups in the UK, with eight participants in each, and segmented by place of shop, to build a basic understanding of shoppers' attitudes towards oranges. From this, formalized surveys were implemented in France, Germany, UK and Russia using consumer panels. Consumer surveys were completed by 1031 participants in total, out of which 266 were from the UK, 248 from France, 258 from Germany and 259 from Russia. The whole sample had a gender split of 50/50 and a one third split across three age groups: 18–34 years; 35–64 years; and 65+ years. All survey respondents were responsible for most of the household food shopping and were themselves a consumer of oranges. To enhance the consumer element of the GVCA, the study incorporated Dunnhumby's UK consumer data using two years of Tesco supermarket transactions from the period 23rd February 2009 to 14th February 2011.

A European buyers' survey was also implemented and completed by 27 participants. Out of the sample respondents, there were: three from the UK; 19 from France; two from Germany; and one from Russia. To enhance the data, secondary data was used from a study on Spanish orange buyers (Mili and Martínez 2012), even though Spanish consumers were not analysed in the consumer value construct.

In addition to the above data sources associated with consumer value and European buyers, surveys were distributed to stakeholders along the fresh orange value chain for all five case study countries:

- Egypt—surveys from stakeholders completed by: 10 input suppliers; 1 extension/agronomy service; 31 citrus growers; 9 citrus packers; 10 exporters; 3 logistic companies; and 27 European buyers.
- Morocco—surveys from stakeholders completed by: 7 input suppliers; 4 extension/agronomy services; 45 citrus growers; 7 citrus packers; 12 exporters; 5 logistic companies; and 27 buyers.
- Syria—surveys from stakeholders completed by: 9 input suppliers; 14 extension/agronomy services; 113 citrus growers; 15 citrus packers; 12 exporters; 11 logistic companies; and 27 European buyers. Interviews were also carried out with: one fertilizer and pesticide input supplier; one agent; and a chamber of commerce meeting, including one farmer/packing house/export owner who became a principle informant.
- Tunisia—surveys from stakeholders completed by: 20 input suppliers; 9 extension/agronomy services; 89 citrus growers; 11 citrus packers; 12 exporters; 6 logistic companies; and 27 buyers.
- Turkey—surveys from stakeholders completed by: 10 input suppliers; 10 extension/agronomy services; 107 citrus growers; 50 citrus packers; 30 exporters; 10 logistic companies; and 27 buyers. Interviews were also carried out with: one fertilizer and pesticide input supplier; two growers; two packaging/exporting firms; and one logistics firm.

Surveys distributed to stakeholders were concerned with information flow and relationship constructs throughout the chain. Interviews with Syrian and Turkish stakeholders also sought to qualitatively measure these constructs, as well as setting the basis for mapping the material flow. To augment the data gained from these

interviews, key informant information compiled from local experts were utilized to better understand how materials flowed through the chain and to generate policy implications from the research.

8.3.2 Data Analysis

Findings from focus groups were thematically organized into a list of potential attributes that informed the survey tool for consumer panels. From our consumer panel surveys, orange attributes were ranked based on a mean average of our 5-point Likert scale, from 'not at all important' = 1 to 'very important' = 5, such that a framework could be developed where activities in the value chain are judged based on their contribution (or lack of contribution) towards attributes regarded as important to European consumers. In addition, a comparison of means using independent t-tests and one-way ANOVA tests were undertaken to determine how gender, age group and country of residence impacted on attitudes towards fresh oranges. We also analyzed promotional data to understand the impact on orange sales using a multiple regression model developed by Felgate et al. (2011). The model used to measure the effect of promotions was specified as follows:

$$\begin{aligned} \text{SALESit} = {} & \beta 0 + \beta 1\text{PCit1} + \beta 2\text{YXit2} + \beta 3\text{BOGOFit3} + \beta 4\text{EXFit4} \\ & + \beta 4\text{MBit5} + \beta 4\text{SPit6} + \text{eit} \end{aligned}$$

In the model, SALES represents the dependant variable sales value per store for a given product sub-group, *i*, in a given time period, *t*. Sales value per store was used rather than total sales, since it takes into account fluctuations in distribution over the time period and growth in the total number of Tesco stores. The parameters of the model are β0, which represents a fixed unknown parameter, and a series of 0–1 dummy variables representing the different types of price promotion for product sub-group *i* in the time period *t*. The types of promotion incorporated in the model were price cuts (PC), Y for £X offers (YX), buy one-get-one-free (BOGOF), extra free promotions (EXF), 3-for-2 multi-buy promotions (MB) and special promotional packs (SP). The error term, e, incorporates all the immeasurable factors which may also be influencing sales aside from promotions.

The material flow was thematically analysed from qualitative interviews and key informant information. A 'map of the chain' was created which shows all the activities along the chain (Fig. 9.1). The efficiency and effectiveness of the material flow in the fresh orange global value chain is judged based on:

- Timeliness in allowing continuous, efficient flow through processing, while avoiding unnecessary inventory and product movements;
- Minimising waste caused by unnecessary processing or by production of unusable raw material or by-products; and
- Maximising areas for adding value.

From the classification of consumer attributes and the evaluation of whether activities were necessary to bring the product to market from qualitative interviews and key informants, we labelled activities along the chain as: value adding (V); non-value adding but necessary (N); or wasteful (W).In addition to the material flow, mean averages were taken from stakeholder surveys based on a 5-point Likert scale, ranging from 'strongly disagree' = 1 to 'strongly agree' = 5, with a set of statements reflecting information flows and strength of relationships. Qualitative interviews supplemented survey data such that triangulation could take place and a more in-depth understanding of potential barriers and enablers could be implemented. Using our GVCA findings, key informants proposed policy recommendations.

8.4 The Fresh Orange Export Sector in Mediterranean Partner Countries

The Food and Agriculture Organization (FAO) data (2013) shows that the value of global orange exports increased significantly during the period of 2000–2008, although a small decline took place between 2004 and 2005. From 2000 to 2008, the value of global orange exports doubled with an increase of 122.1 %. Spain, US and South Africa are the three largest orange exporters with respect to value. Spain dominates the European market with over 50 % of its export quantity and value for fresh oranges going to Germany and France alone (FAO 2013).

Within the region, fresh fruit is the third largest crop and citrus dominates fresh fruit production (Montgomery 2009). The quantity of exported oranges from case study countries varies significantly, from 821,812 tonnes exported from Egypt in 2009 compared to 18,016 tonnes exported by Syria (FAO 2013). Egypt represents a unique case where the growth in exports has exponentially risen by 1343 % between 2000–2008; between 2007 and 2008 alone, export value rose by 141 % (FAO 2013). In 2008, Egypt overtook Morocco to become the highest orange exporter (by value) within the selected case study countries. Case study countries have in general seen growth in the value of fresh orange exports since 2005, although Morocco and Tunisia reached a peak in 2008 and then fell slightly in 2009.

As Table 8.1 shows, the fresh orange export price per tonne for MPCs and globally has risen substantially since 2005, reflecting wider global food inflation figures (World Bank 2012). In 2011, only Turkey and Morocco have a higher export price than the world average and other MPCs are substantially lower. Indeed from the FAO data (2013), the leading exporters in the world market such as Spain and the US are able to capture significantly higher prices for their exported oranges than MPCs.

Many countries in the MPCs have initiated programs that directly have an impact on orange production. The Egyptian government has implemented the 'Sustainable Agriculture Development Program' to improve irrigation systems and

Table 8.1 Fresh orange export price per tonne (2001–2011)

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Egypt	$196	$209	$235	$298	$350	$231	$365	$526	$602	$625	$516
Morocco	$331	$365	$416	$471	$450	$448	$413	$664	$631	$653	$720
Syria	$535	$399	$525	$235	$442	$217	$327	$365	$397	$377	$487
Tunisia	$358	$371	$536	$633	$618	$542	$654	$689	$655	$574	$541
Turkey	$325	$301	$333	$385	$392	$326	$382	$592	$621	$674	$718
World	$383	$439	$491	$556	$521	$516	$602	$675	$657	$694	$698

Source FAO (2013)

water resource management, and put into practise a modernization programme to improve the production of its fruit and vegetable exports by incentivising the adoption of new production techniques. The Morocco Green Plan, a state-implemented rural development strategy by the Moroccan government, is seeking to generate 30,000–35,000 ha of new citrus plantations over the next several years through extensive projects and financial incentives for farmers. Other MPCs offer similar support mechanisms to the citrus sector.

Although fresh orange production in MPCs is being supported through government programs and projects, where it is to position itself relative to its strengths and weaknesses has not been sufficiently addressed. Exports to the European market are immediately impeded by the quota and entry price system set up by the EU, although arguably this is less of a barrier with trade liberalization between MPCs and the EU such as the case of Morocco. Despite liberalization, trade barriers are still an issue for MPCs. MPCs export their fresh oranges to different markets in Europe. For example, the Russian market is important for Morocco and Turkey with 37 and 32 % of total export value respectively, whereas for Tunisia the French market is critical to the industry with a sizeable 91 % share of total export value (FAO 2013). This data also reflects differences in diverse versus concentrated export markets. Morocco exports its oranges all across Europe (as well as the world) but Tunisia is almost completely dependent on the French market with the Tunisian Maltese—a half-blood orange variety. For Syria, the European market is inconsequential compared to its neighbouring Middle East market. Table 8.2 lists the main destination markets for fresh orange exports of MPCs.

Table 8.2 Main destination markets and percentage of total export value for fresh orange exports of MPCs (2007, 2010)

	Main destination market and % of total fresh orange export value
Egypt	Russia (24 %)
Morocco	Russia (37 %)
Syrian Arab Republic	Iraq (78 %)
Tunisia	France (92 %)
Turkey	Russia (32 %)

Source FAO (2013)

The trade system facing orange exporters, coupled with large-scale competitor countries in the US and South America, goes against a strategy where cost disadvantages may push agri-food stakeholders out of the chain if they do not switch to the *creation of value* for their respective end consumers (Drucker 1999). It has been argued that previous agricultural policy in the region has not brought the gains that the agri-food sector desperately needs (Baldacci et al. 2008). In the past, agricultural policy in the region has focused mainly on market liberalization (although still protective of some agricultural sectors) and linked competitiveness exclusively to volume and production yields (Lindberg et al. 2006). Although policy based on maximising productivity has merit and is certainly not dismissed here, there is room for introducing a new approach to competitiveness.

8.5 Findings

8.5.1 Consumer Value

Research from the three UK-based focus groups revealed a number of attributes that were in the forefront of consumers' minds when purchasing oranges which informed the attributes in the consumer survey data. In the focus groups, participants regularly identified 'juiciness' and 'sweetness' as words that came up when thinking about what the best thing about oranges were. This matched the consumer data from consumer panel surveys that showed these two attributes to be the most important attributes for consumers across all four countries (Table 8.3).

When segmenting for consumers' country of residence from consumer panel surveys, peel ability was regarded as being more important for Russian consumers

Table 8.3 Important versus less important orange attributes from consumer panel surveys

Attributes judged quite important or more (>5*)	Attributes judged less than quite important (<5*)
Juiciness	Organic
Sweetness	Variety
Free from pesticide residues	Country of origin
Peelability**	Size of orange
Cost	Promotion
Blemishes	Enough in a pack
Colour	Fair trade
Perishability	Packaging

*1 = not at all important, 3 = not very important, 5 = quite important, 7 = extremely important

**Peelability was statistically more significant in importance for Russian consumers than other countries

than the other three European countries. When segmenting for age and gender, female consumers and those which were considered older attached greater importance to attributes considered generally important by the whole sample, suggesting that these segments are more sensitive to orange characteristics during the purchasing decision than other consumer types. This corresponded with the UK loyalty card data which showed that the main consumers of oranges are pensioners; older families and affluent households were the most dominant purchasers of oranges. Organic oranges appeared to accentuate the effect of affluence where up-market consumers were almost twice as likely to purchase organic than the average consumer.

Using the model developed by Felgate et al. (2011), the effect of promotions on orange sales indicated that, in general, promotions do not have a particularly strong effect on sales and that in some cases it actually had a negative impact. When looking at the impact of promotions on sales of oranges in total, at an aggregated level, only price cuts and buy-one-get-one-free promotions were found to have a significant impact. Promotions were found in total to account for 16.7 % of the change in sales of oranges at the aggregated level. Price cuts were found on average to increase sales per store by £113 per week, while buy-one-get-one-free promotions increased sales by £158 per week, per store. This paralleled with the consumer panel surveys that showed that oranges on promotion was not an attribute consumers found to be particularly important during the purchasing decision.

8.5.2 Perceptions of European Buyers

The buyers' research showed that when deciding whom they source their oranges from, participant buyers look for a large range of characteristics—9 out of 13 characteristics were rated more than 'quite important'. Of the 27 buyers who were interviewed, few judged case study country suppliers in terms of how they compared to their best suppliers. In the case of Syria, nothing could be concluded because no buyers interviewed sourced their oranges from Syria and therefore were not able to be judged. This outcome indicates that Syrian oranges are not well known in the European market, mirroring export data that shows that Syrian fresh orange exports do not primarily go to European consumers (FAO 2013).

Where European buyers judged the supply of fresh oranges from individual case study countries, results were mixed. Egypt has a good rating for volume and cost but rated poorly for the willingness of suppliers to collaborate with buyers for mutual advantage. Turkey failed in its quality of oranges in the eyes of European buyers, an attribute that buyers identified as important in their sourcing decisions. The open-ended answers indicated that one of the principle barriers behind why European buyers do not source more oranges from case study countries is a lack of contacts with exporters, suggesting that it is not necessarily the quality of relationships between exporters and importers in the value chain that is the

principal bottleneck, but rather the existence of relationships at all. This has implications for policy in terms of promotional activity as a common good for the GVC, an issue further discussed in Sect. 8.6.

For Spanish buyers, the attributes they consider to be important to consumers and the characteristics of suppliers that are important to themselves mirror many of those identified by other European buyers. Moroccan suppliers are the dominant supplier of Spanish oranges and the reasons provided for this were based on the low cost of oranges they supply, although the quality of oranges was brought up as a concern. Other MPC suppliers were stated as having deficiencies based on post-harvest handling and cultural differences, particularly concerning conflicts in delivery times where suppliers injected a level 'flexibility' in this regard compared to the tighter schedule required by Spanish buyers. In addition, pre-payment represented a barrier to sourcing from case study countries. Logistics was also identified as being a problem where the poor quality of transportation led to perished and wasted produce when received by Spanish buyers, correlating with findings from the 'mapping the chain' stage where transportation is identified as a value-adding activity. Related to this was the idea of reputation 'contagion', where because a Spanish buyer received wasted oranges from an Egyptian supplier, the buyer then cut off future dealings with all Egyptian suppliers rather than just the single exporter.

8.5.3 Flow of Materials

Using consumer value as the framework for measuring value in the fresh orange chain, activities along the chain are classified as: "value adding" (V) which contribute to the attributes considered at least "quite important" to consumers; "necessary but non value- adding" (N) for activities that do not contribute to attributes important to consumers but are necessary for bringing the product to market; and "wasteful" (W) for activities that are not important to consumers and are unnecessary to bringing the product to market. The classification of activities is presented in Fig. 8.1.

Input suppliers supply fertilizer and pesticide chemicals to growers. Fertilizers, particularly major elements such as potassium, were identified as a value adding activity because they contribute towards the juiciness and sweetness, and negate against blemishes, all of which are deemed as important by European consumers. Pesticide use however does not contribute towards these attributes and could even potentially destroy value because consumers consider 'free from pesticide residues' as an important consideration during the purchasing decision. Strict standards are also imposed by European markets on the level of pesticide use for fruit and vegetable imports, for instance the Ecophyto plan 2018, which seeks to reduce the use of pesticides in France by 50 % which gives some indication of how attitudes are changing. However, pesticide inputs prevent disease and insect infiltration which can destroy the fruit and, as a result, are classified non-value adding but

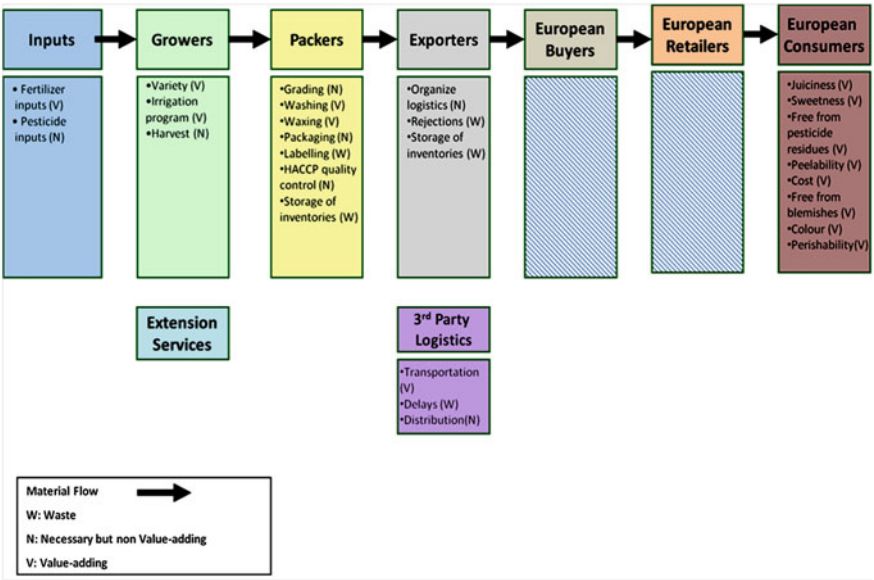

Fig. 8.1 Material flow in the MPCs' fresh orange chain

necessary rather than waste. It is suggested here that there is a tight rope that growers must walk between negating against harmful diseases and destroying consumer value (as well as failing export/import standards).

It was suggested by key informants that varieties grown by producers embody particular attributes, such as sweetness and juiciness, and therefore the variety grown is a value-adding activity. However, according to stakeholder interviews, it typically takes up to 25 years for a seedling to reach maximum yield, meaning that growers cannot easily move between varieties without initial losses in productivity. The irrigation program implemented by growers, and typically advised upon by input and equipment suppliers, is also a value-added activity in that it boosts the juiciness of oranges which is valued by European consumers. The oranges are then harvested according to the harvest calendar organized by packers and informed by the export program coordinated by exporters and European buyers, an activity which is not value-adding in the eyes of consumers but necessary to move the product along the chain while minimising inventories throughout. From the stakeholder interviews, it appeared that inventories are not held at this point in the chain because buyers bring the oranges straight from the orchards to the packing house rather than growers storing oranges prior to purchase.

During the packing stage, oranges are washed to remove dirt and pesticide residue. This is deemed as a value-adding activity because European consumers place value on the lack of pesticide residue on the orange. Waxing is also understood as value-adding because it reduces the perishability of the fruit. Packaging,

although not considered value-adding by European consumers, is still a necessary process because it prevents damage to the fruit during transit and is typically a requirement set by buyers.

The oranges are then labelled, mostly for the purposes of identifying the country of origin for consumers. However, although where an orange comes from is not something that consumers regard as particularly important during the purchasing decision, displaying country of origin is necessary for retailers to follow. Citrus packaging houses must also conform to a traceability system and implement an HACCP quality control process (Hazard Analysis and Critical Control Point) that must be certified by an accredited body or a product quality system control, based on the target importing market to be certified by an accredited body. Prior to despatch, oranges are kept as inventories, meaning that coordination with exporters is key to minimising these costs.

Exporters organize transportation for fresh oranges with logistics firms to move the products to export markets. Oranges are held by the exporter prior to transportation. The principle obstacle that exporters face is meeting the standards and regulatory requirements for international markets. If these standards are not met, then rejections occur either at the EU border (with the exception of Russia) or from buyers' own private standards. Where these rejections occur, exporters must incur the cost which represents a waste in the material flow. In this regard, the need for exporters to coordinate upstream is fundamental to meeting the required standards for export markets.

Logistics is typically organized by exporters to move products to the export market. The quality of transportation affects the perishability and reduces blemishes which consumers value and therefore transportation is considered a value-adding activity. Planning shipping times and coordinating with exporters and buyers over time delivery is essential for avoiding delays at ports which can lead to oranges going to waste. Logistic firms then distribute goods to the importer and buyer which is necessary to bring the product to market.

8.5.4 Information Flow and Relationships

In general, the survey data showed that the information flow and strength of relationships between actors were in most part strong. Tunisia was demonstrated as having particularly strong information flow and relationships along the chain. However there were some relatively weak (but not weak in absolute terms) areas of the chain. The information flows between input supplier-grower, extension service-grower and grower-packers were not very strong in the case of Egypt. Turkey, in a similar fashion, had partial flows between growers-packers and logistics-exporters. What was most notable from these findings was that there was no particular pattern of bottlenecks in the information flows and business relationships, with each country facing a different challenge in its global value chain.

Interviews with Syrian stakeholders indicated that the information flow between actors in the chain was poor, particularly between exporters (or agents) and importers. Commitment and the strength of relationships between packers/exporters and farmers were also signalled as being limited in the interviews. There were suggestions that institutional structures, such as the Syrian chamber of commerce and Turkey's export union, were not particularly effective in bringing actors together to cooperate. The relationship between the interviewed Turkish exporter and the EU policy-setting body was signalled as being particularly problematic.

It was suggested in interviews and from key informant data that cultural norms and behaviour set the boundaries around the degree that actors cooperate and share information, as one farmer said when rationalizing why he didn't ask buyers where his oranges were going: "*it's none of our business*". Building on this concept of culture as a driver/barrier to value chain relationships, Spanish buyers identified that a problem in sourcing oranges from MPCs was attributed to a different cultural understanding of "time" where MPCs' fresh orange suppliers did not keep to strict delivery times that are required by Spanish buyers.

8.6 Discussion: Policy Implications

The above findings provide some key implications for maximizing the competitiveness of the fresh orange export industry of MPCs based on the adopted approach. A broad finding in the consumer research was that the price of an orange is not as important to European consumers as certain quality attributes. The implication of this is that agricultural policies that seek to drive down production costs with little concern about what the impact on *consumer value* could be doing harm the competitiveness of the value chain. Modernization plans in MPCs should be put within the context of maximizing value—driving down production costs and increasing output should not be the only indicator of competitiveness. Farm production capabilities have historically been the focus of agricultural research, especially considering the dominance of traditional theories of rural development over the past century (Cruickshank 2009; Marsden et al. 2001), and MPCs are no exception.

Findings from the GVCA suggest that market information, when made available to growers, technicians, packers and exporters, could contribute towards the competitiveness of the fresh orange export sector. The creation of information networks can be an important component of value chain competitiveness (Asem-Bansah et al. 2012); for instance the creation of a national database or training workshops with relevant organizations can be utilized so that market information is disseminated to stakeholders. This would allow the kind of findings generated from the consumer research in the GVCA to be capitalized on and actors along the chain would have a better understanding of their target market values, thereby negating misconceptions brought up in stakeholder interviews (such as the idea that European consumers attach importance to the country of origin during the purchasing decision).

Consumer value identified key areas for improving main quality attributes considered by consumers: variety selection; rootstock selection; irrigation technology; pest and disease control, that are consistent with ensuring juiciness, sweetness, and reducing perishability. Main actions and programs could:

- assess varieties and rootstock combinations against their ability to create the attributes that European consumers regard as important,
- breed and test the species, and
- incentivise the substitution of old orchards with new varieties that maximize the attributes valued by European consumers.

Extension actions should include adequate training programs on irrigation methods to improve citrus quality. For example, improving irrigation scheduling, especially during sensitive periods of fruit growth, is an important key for guaranteeing juiciness and facilitating peel ability. While modernization programs in MPCs appear to be mainly concerned with boosting volume (Lindberg et al. 2006), there is also some overlap with the value-adding activities identified in the present research. For example, the Sustainable Agriculture Development Program in Egypt is placed within a context of critically scarce water resources in the region, yet its development of irrigation systems is also associated with improving product attributes important to European consumers. In addition, the subsidization of inputs (e.g. fertilizers), a common practise in most MPCs (World Bank 2008), may also be beneficial from this point of view if it encourages producers to improve important quality attributes. While the continuation of these programs from the perspective of value addition would be recommended, there also needs to be reflection over the extent this conflicts with broader institutional reforms under the EU Common Agricultural Policy reform.

Relevant to agricultural policy is the substitution of orchards to new varieties that are in line with the target market. As noted at the beginning of this chapter, MPCs do not export fresh oranges to a uniform European consumer. Even those MPCs which share borders and cultures have diverse destination markets—Tunisia sells 91 % of its exported fresh oranges to the French market whereas Morocco is very much diversified, with Russia consuming the largest share of 37 %. Taking these two examples and linking back to the consumer research, the rationale for the Moroccan export industry (or at least those fresh oranges which are destined for the Russian market) would be to incentivize substitution towards varieties that maximize peel ability whereas the Tunisian market should focus on those that are aligned with the tastes of French consumers. Syria presents a more unique case where regional neighbours that import the majority of its fresh oranges are likely to present a diverse set of tastes compared to potential European consumers (although given the political situation at the time of writing, inroads into the European market are unlikely for the foreseeable future). Since there are a multitude of citrus varieties with different characteristics (Hodgson 1967), a debate over which varieties match the tastes of target consumers while at the same time considering a complexity of trade-offs (e.g. climatic suitability) is needed to shape where policy incentives should be placed.

Production represents a fruitful area for policy. However post-harvest operations are also key, including post-harvest disease control techniques that are important for improving quality of fruits and preserving shelf-life (negating perishability):

- Quality control technology
- Preservation treatments
- Controlled environment storage technology, and
- Incentives for purchasing quality cold-controlled transportation.

Activities that did not add value but were judged necessary to bring the product to market include those which ensure import standards for the European market. Policy makers could assist citrus sector enterprises in improving quality and safety systems, especially those stages that lead up to and including HACCP quality control. Given that a barrier to adoption is the fixed costs involved, credit facilitation could act as a strong enabler. In addition, pesticide usage was revealed as a 'tightrope' where, although it is necessary to negate against disease, it can also destroy value because European consumers have concern over pesticide residues according to the consumer research. Facilitating training could be an important policy tool to ensure stakeholders walk this tightrope successfully. Stages and activities of the chain where intervention could be effective are:

Level 1. Farm: Use of certified rootstocks and fertilization, training in the type of chemicals used, management of irrigation water resources, soil management and plant protection against pests and diseases.
Level 2. Post-harvest Treatment and Packing: Sizing technology, quality control technology, cleaning technology, preservation treatments, controlled environment storage technology, raw materials.
Level 3. Transport and Distribution: Vehicles used, used pallets or containers, temperature and humidity control technologies.
Level 4. Marketing and Export: Transport conditions, insurance programs, etc.

As noted, a lack of known exporters was a significant barrier for buyers in sourcing oranges from MPCs. This suggests that promotion and networking could be areas for policy such that relationships are established between European buyers and exporters. Incentivising the use of trade fairs for exporters could be a start to this process.

The material flow indicated that many of the wasteful activities were a direct result of poor coordination between actors which could be tackled through collective organizations, directing the flow of goods in a timely and cost-efficient manner. The interviews supported these findings where a lack of information flow and poor relationships were concurrent with the lack of effective horizontal organization. Fragmented farms also make it difficult to apply quality systems and disseminate market information (Roy and Thorat 2008).

Based on a New Institutional Economics perspective (North 1990), it is generally understood that horizontal cooperation in developing countries reduces the transaction costs between suppliers and buyers. A supportive policy structure that incentivizes the development and effective management of collective organizations

was recommended by key informants such that coordination problems which cause wasteful activities along the value chain can be tackled. External costs are also incurred to the sector as a whole when one firm fails in this regard. Spanish buyers suggested that there is a 'contagion effect' such that all the exporters from respective countries were tarred with the same brush when just one exporter failed. In Morocco, the Autonomous Establishment of Export Control and Coordination represents a public institution dedicated to regulatory compliance for food exports and plays a role in coordinating export activity (EACCE 2011). This kind of public sector support in the Moroccan context could at least provide a model which other MPCs can follow.

8.7 Conclusion

In this chapter, we have demonstrated how GVCA can make an important contribution when it comes to the issues facing MPCs and the wider agricultural policy-making in the region. Previous ideas on competitiveness in the agri-food sector of MPCs have primarily been approached through a neo-classical lens, based on liberalizing markets and productivity (Lindberg et al. 2006). While we do not dismiss this as a perspective, particularly given the multitude and sometimes conflicting objectives for agricultural policy, a strategy of driving down costs may not be beneficial from a value creation point of view, particularly given the poor state of its value-added agriculture compared to other developing countries (Binswanger-Mkhize and McCalla 2010). It appears evident that up until now, agricultural policy has had little success in tackling the serious economic challenges facing the region (Baldacci et al. 2008).

Prior to this chapter, using a value-stream method such as that proposed by Taylor (2005) was confined to the SCM literature and had not been used to inform policy at the macro-level, arguably because it was restricted to a single-chain case study methodology. Furthermore, using comparable value chain concepts from the SCM literature have only more recently been transferred to a developing country context (Adhikari et al. 2012). To achieve the end of informing policy, the methodology was adapted from a single case study chain method with a small number of participants and a narrowly defined value stream to a sectoral level of analysis analogous to the Global Value Chain literature but conceptually closer to the SCM stream, such that broader generalizations could be made about the fresh orange industry. Policy recommendations resulting from the GVCA and key informant data can be summarized as follows:

- It facilitates the dissemination of market information made available to value chain stakeholders. The creation of information networks such as a national database or training workshops would allow consumer research to be capitalized on and negate misconceived ideas of what European consumers regard as important;

- Given that the main barrier of European buyers in sourcing from MPCs was the lack of known contacts, policy contributes through investing in export promotional campaigns and facilitating networking opportunities, for example funding participation in international trade fairs.
- It provides incentives for investment in those activities that add value to the final consumer, namely: variety selection and substitution where necessary, irrigation systems and methods, and quality cold-controlled transportation.
- Activities that do not add value but are necessary to bring fresh oranges to market are fundamental to enabling access to European markets. Most notably, this includes quality and safety systems along the chain. Stages and activities where policy support could intervene and thereby provide access to the market for stakeholders are: certified rootstocks and fertilization, quality control during post-harvest treatment, and controlled environment storage technology. Not only are these elements necessary, but they were also brought up by European buyers as being a barrier to sourcing from MPCs.
- The elimination of wasteful activities was identified as a problem of poor coordination along the chain. This could be tackled through policy that provides greater support to collective organizations, therefore enabling better coordination along the chain.

While the methodology proposed here has enabled policy recommendations that are value-centric, it also comes with limitations. This was the first time that the single chain method, where the target market can be identified easily, has been shifted to an aggregated sector-level chain. With this methodological shift it was difficult to identify the target market because different individual chains serve different markets (high income vs. low income, price vs. quality, pensioners vs. single mother families, university education vs. school leavers etc.).

The heterogeneity of chain structures, not just between case study countries but within them as well, provides a challenge to aggregating the results into a single map of the chain. The basic problem that emerges from this is one of comparing ‘apples and oranges’, where a global map is constructed with vertically integrated and highly fragmented chains. Within the survey, stakeholders were asked to identify who their customers are. From this a diversity of structures emerged. For instance, in the Moroccan sample, the customer base of growers were almost evenly split between citrus packers, citrus exporters, citrus grower-packers, citrus packer-exporters, fully integrated citrus grower-packer-exporters and non-citrus specific customers.

In addition to the above methodological limitations, the policy recommendations proposed here are broad and do not go into specific policy initiatives in significant detail. What was touched upon however was the way that current initiatives such as Morocco’s Green Plan and Egypt’s Sustainable Agriculture Development Program may have an impact on consumer value, although not intentionally, especially with regard to the development of irrigation infrastructure. Further research that assesses individual policy initiatives based on their ability to contribute towards creating consumer value would be beneficial in furthering value chain thinking as a framework for evaluating policy.

Appendix 1

See Fig. 8.2.

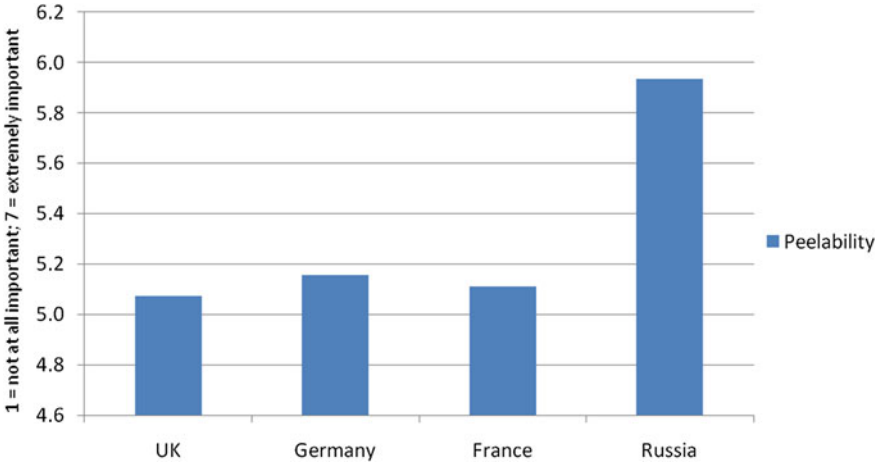

Fig. 8.2 Differences in importance attached to orange attributes based on consumers' country of residence. Attributes presented passed test of significance (2-tailed) if below 0.05, and test of homogeneity of variance

Appendix 2

See Fig. 8.3.

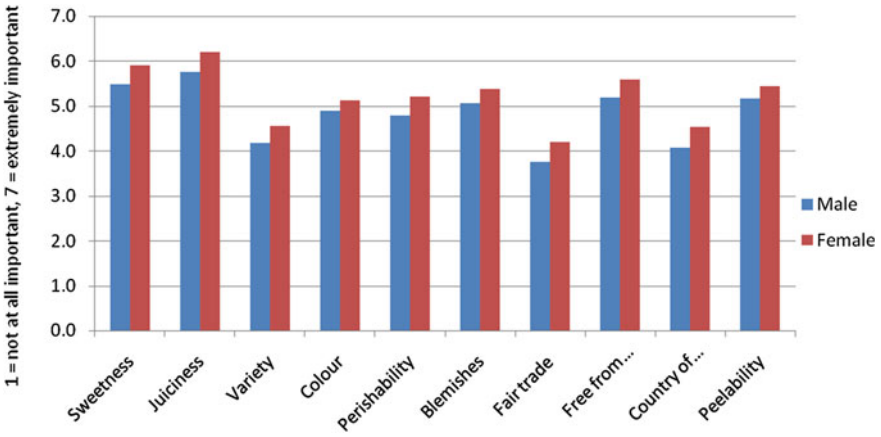

Fig. 8.3 Impact of gender on the importance attached to orange attributes. Attributes presented passed test of significance (2-tailed) if below 0.05

Appendix 3

See Fig. 8.4.

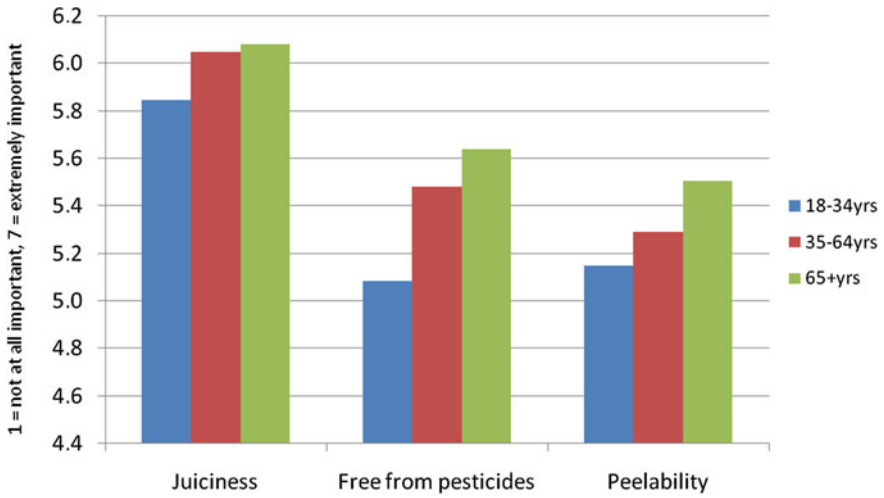

Fig. 8.4 Impact of age on the importance attached to orange attributes. Attributes presented passed test of significance (2-tailed) if below 0.05

Appendix 4

See Table 8.4.

Table 8.4 Strength of information flow and relationships in Egypt's fresh orange global value chain (mean score percentages[a])

Citrus input supplier	
Information flow	47 %
Customer relationships	65 %
Relationship average (downstream)	67 %
Extension services	
Information flow	40 %
Customer relationships	63 %
Relationship average (downstream)	63 %
Growers	
Information flow	52 %
Supplier relationships	70 %
Customer relationships	69 %
Relationship average (downstream)	76 %
Packers	
Information flow	71 %
Supplier relationships	82 %
Customer relationships	82 %
Relationship average (downstream)	85 %
Logistics	
Information flow	81 %
Customer relationships	85 %
Relationship average (downstream)	85 %
Exporters	
Information flow	80 %
Supplier relationships	89 %
Customer relationships	90 %
Relationship average (downstream)	90 %

[a]0–33 % = weak, 34–66 % = partial/basic, 67–100 % = strong

Appendix 5

See Table 8.5.

Table 8.5 Strength of information flow and relationships in Morocco's fresh orange global value chain (mean score percentages[a])

Citrus input supplier	
Information flow	90 %
Customer relationships	88 %
Relationship average (downstream)	81 %
Extension services	
Information flow	88 %
Customer relationships	65 %
Relationship average (downstream)	65 %
Growers	
Information flow	80 %
Supplier relationships	74 %
Customer relationships	75 %
Relationship average (downstream)	80 %
Packers	
Information flow	94 %
Supplier relationships	85 %
Customer relationships	85 %
Relationship average (downstream)	88 %
Logistics	
Information flow	82 %
Customer relationships	85 %
Relationship average (downstream)	85 %
Exporters	
Information flow	87 %
Supplier relationships	92 %
Customer relationships	89 %
Relationship average (downstream)	89 %

[a]0–33 % = weak, 34–66 % = partial/basic, 67–100 % = strong

Appendix 6

See Table 8.6.

Table 8.6 Strength of information flow and relationships in Syria's fresh orange global value chain (mean score percentages[a])

Citrus input supplier	
information flow	80 %
customer relationships	73 %
relationship average (downstream)	73 %
Extension services	
Information flow	85 %
Customer relationships	77 %
Relationship average (downstream)	77 %
Growers	
Information flow	70 %
Supplier relationships	73 %
Customer relationships	69 %
Relationship average (downstream)	74 %
Packers	
Information flow	87 %
Supplier relationships	79 %
Customer relationships	78 %
Relationship average (downstream)	80 %
Logistics	
Information flow	72 %
Customer relationships	66 %
Relationship average (downstream)	66 %
Exporters	
Information flow	85 %
Supplier relationships	82 %
Customer relationships	77 %
Relationship average (downstream)	77 %

[a]0–33 % = weak, 34–66 % = partial/basic, 67–100 % = strong

Appendix 7

See Table 8.7.

Table 8.7 Strength of information flow and relationships in Tunisia's fresh orange global value chain (mean score percentages[a])

Citrus input supplier	
Information flow	74 %
Customer relationships	76 %
Relationship average (downstream)	75 %
Extension services	
Information flow	79 %
Customer relationships	83 %
Relationship average (downstream)	83 %
Growers	
Information flow	77 %
Supplier relationships	73 %
Customer relationships	72 %
Relationship average (downstream)	80 %
Packers	
Information flow	100 %
Supplier relationships	88 %
Customer relationships	88 %
Relationship average (downstream)	80 %
Logistics	
Information flow	80 %
Customer relationships	88 %
Relationship average (downstream)	88 %
Exporters	
Information flow	91 %
Supplier relationships	72 %
Customer relationships	82 %
Relationship average (downstream)	82 %

[a]0–33 % = weak, 34–66 % = partial/basic, 67–100 % = strong

Appendix 8

See Table 8.8.

Table 8.8 Strength of information flow and relationships in Turkey's fresh orange global value chain (mean score percentages[a])

Citrus input supplier	
Information flow	68 %
Customer relationships	64 %
Relationship average (downstream)	66 %
Extension services	
Information flow	80 %
Customer relationships	73 %
Relationship average (downstream)	73 %
Growers	
Information flow	62 %
Supplier relationships	68 %
Customer relationships	67 %
Relationship average (downstream)	68 %
Packers	
Information flow	73 %
Supplier relationships	68 %
Customer relationships	72 %
Relationship average (downstream)	70 %
Logistics	
Information flow	68 %
Customer relationships	69 %
Relationship average (downstream)	69 %
Exporters	
Information flow	74 %
Supplier relationships	69 %
Customer relationships	72 %
Relationship average (downstream)	72 %

[a]0–33 % = weak, 34–66 % = partial/basic, 67–100 % = strong

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