GRAPHICAL REPRESENTATION OF TRANSACTION ARRANGEMENTS[1]

Representação gráfica de arranjos de transação

José Márcio Carvalho[2]

ABSTRACT

With this article the intention is to add to the Transaction Cost Analysis empirical discussions. It introduces a model that aims to graphically represent transaction arrangements. The proposed model was empirically tested in the Brazilian fruit export sector. Six different fruit were used as the basis for the investigation: melons, grapes, mangoes, papayas, oranges and apples. These are the six most exported fruit produced in Brazil. Two distinct research techniques were used in the investigation: secondary data analysis and interviews. The focal aim of the secondary data research was the characterisation and comparison of the production and export sequences of the six most exported Brazilian fruit types. The content of the semi-structured interview questions was determined based on the literature review of Transaction Cost Analysis and the international fruit trade. The questions were carefully chosen to reveal the factors which are determinant for the configuration of transaction arrangements in the fruit trade. The Graphical Representation of Transactions successfully disclosed the three main types of arrangements used by Brazilian fruit exporters. These arrangements are: Integrated Production-Export Transaction Arrangement, Export Agents Transaction Arrangement and the Integrated Multinational Transaction Arrangement. The graphical model makes the process of categorising organisations according to their behaviour more precise. By clearly describing the technical activities performed by an organisation it is possible to assess its role in a specific sector.

Key words*:* transaction costs, fruit trade, graphical representation.

RESUMO

Com este artigo, procura-se contribuir com as discussões sobre análise de custos de transação, introduzindo um modelo que tem por objetivo representar graficamente arranjos de transação. O modelo proposto foi testado empiricamente junto a organizações brasileiras exportadoras de frutas. Seis tipos diferentes de frutas foram usados como base para a pesquisa: melão, uva, manga, mamão papaya, laranja e maçã. Estas são as frutas mais exportadas pelo Brasil. Foram utilizadas duas técnicas principais de pesquisa para a coleta de dados: análise de dados secundários e entrevistas semi-estruturadas. Com a coleta de dados secundários, objetivou-se principalmente caracterizar e comparar as seqüências de produção e exportação dessas frutas. As questões das entrevistas semi-estruturadas foram escolhidas para revelar os fatores que são determinantes nas configurações dos arranjos de transação do comércio de frutas. Na pesquisa, mostrou-se com sucesso que os principais arranjos comerciais para exportar frutas são: Empresas Integradas de Produção-Exportação, Agentes de Exportação e Multinacional Integrada. O modelo de representação gráfica de arranjos de transação tem a propriedade de tornar mais preciso o processo de categorização de organizações de acordo com a sua função em uma cadeia comercial. Ao se descrever as atividades técnicas executadas por uma organização, torna-se possível entender o seu papel em um segmento econômico específico.

Palavras-chave: custo de transação, comércio de frutas, representação gráfica.

1. INTRODUCTION

There are a variety of theories that can be used to investigate commerce in agricultural products. Transaction Cost Analysis (TCA) is one of them. It is a construct capable of dealing with complex issues such as vertical integration, market transactions and international trade. The problem with TCA is that it is based on highly subjective concepts that are difficult to put into context. To overcome this limitation it is proposed a graphical model capable to represent transaction arrangements. The methodology capable of linking the graphical model with a specific sector is also presented. The final section of the article is about how the proposed graphical representation model is realised in a particular sector: the Brazilian fruit export trade.

TCA is a scientific construct which has been developed by a great number of scholars with varying backgrounds and aims. Some of these researchers have contributed to the enrichment of the theory with the creation and use of new constructs capable of analysing the complexity of economic transactions. Coase has achieved considerable merit in the development of the

[1]This paper is a result of a research conducted at The University of Reading (UK) and supported by CNPq.

[2]José Márcio Carvalho studied Agronomy at Federal University of Lavras/UFLA, and also obtained the Master Degree in Management at the same university in 1996. The PhD title was conquered by him at the University of Reading/England in 2003. At the same year he became lecturer at the Federal University of Tocantins/UFT – Campus Universitário de Gurupi – Caixa Postal 66 – Tocantins, Brazil – 77.402-970 – jmcarvalho59@hotmail.com

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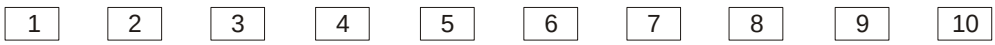
theory because of his early proposal to see markets and firms as alternative governance structures. Coase pointed out that there are costs involved in transactions in the market and when the market transactions are costly, institutions matter. The most common market transaction costs are: the cost of finding the relevant prices, the costs of writing transaction contracts and the costs of reaching agreement. If the sum of all these costs is high, the alternative may be keeping the transaction within a single organisation. In this case all the problems of the price system are replaced by the co-ordination mechanism of a firm. Conversely if the co-ordination mechanism is too costly the transactions will be executed at lower cost in market type negotiations (Coase, 1937; Douma & Schreuder, 1998; North, 1990).

According to Coase (1937) and Williamson (1975) the organisations trading with a product or a group of products can use different transaction arrangements to carry out their commerce. It is important to characterize how diverse these arrangements are in order to understand trade patterns. It is important to clarify that a **Transaction Arrangement** (TA) is a pattern of relationships established by a group of organisations to trade a product. It is an informal agreement where the responsibilities of each commercial partner are clearly defined according to the sequence of production and trade in a good. In other words, a transaction arrangement is related to the way that commercial organisations interact among themselves to overcome market and internal problems.

2. GRAPHICAL REPRESENTATION OFTRANSACTION ARRANGEMENTS

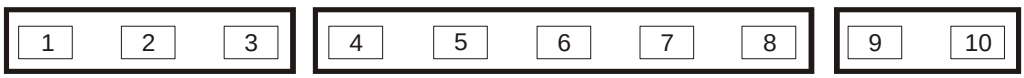
Graphical illustrations or representations almost always have the advantage of simplifying and better focusing the discussion of a specific topic. They create a visual representation of a concept or phenomenon making the learning process easier for those who want to understand the subject under analysis. In this research a method of representing transaction arrangements graphically was developed. The four steps of this method are presented here using a hypothetical example as illustration.

The first step in the graphical representation is to illustrate each main technical activity present in the product processing sequence by a number inside a box. Using this system, a (hypothetical) product that needed ten distinct activities in order to be produced and traded would be represented by the figure:



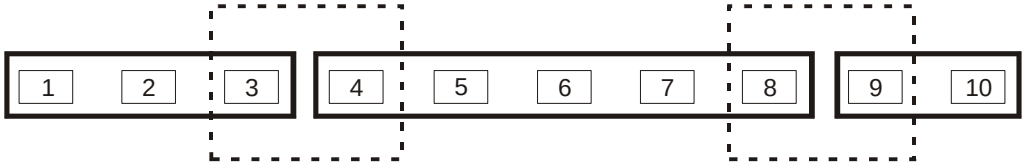
The order of the numbers gives the idea of the progression of events. The number 1 represents the early stage of production and the number 10 represents the final stage of distribution.

The second step is to represent the organisations that are making or trading a product. One can say that organisations are executing some of the technical activities of the product cycle. It is possible then to represent each organisation by a rectangle circumscribing a group of technical activities, exactly those activities executed by the organisation. In our hypothetical example it is possible to have the configuration below:



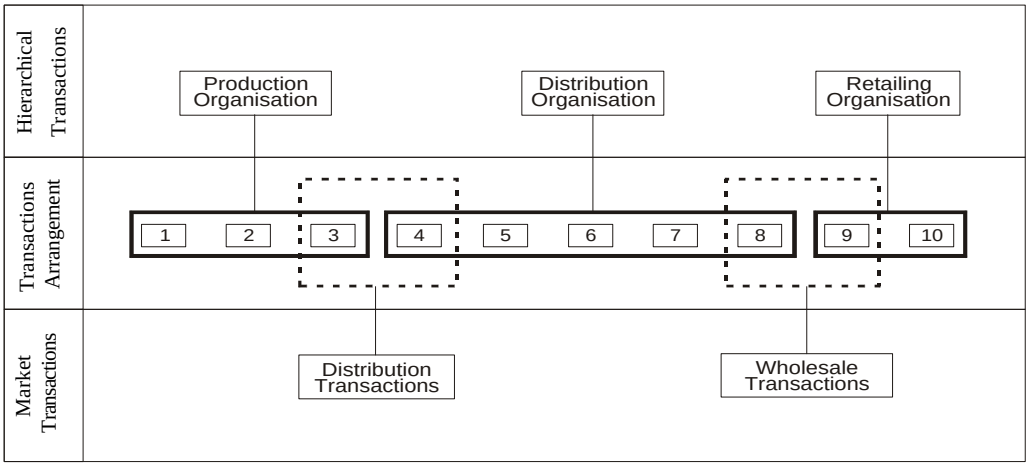
In this hypothetical example the organisation represented by the rectangle on the extreme left gives the idea that it is related to the production stages. The rectangle in the middle of the picture is giving the idea of a company performing the products' logistics and distribution. Finally, the rectangle on the right side of the figure gives the impression that the organisation is responsible for the final stages of the product distribution or retailing.

The third step of the graphical representation is the illustration of the market type transactions or more precisely the trade operations in the product cycle. Here buying and selling operations are represented by a dashed line square. In the following illustration it is possible to see that there are two market type transactions happening in the product cycle.



The fourth stage of a graphical representation is to create a frame capable of identifying each element of the visual illustration. In this case the frame is divided into three parts, as follows:

The upper section of the frame is a field for the identification of the organisations present in the product trade. The middle section is devoted to the illustration of the transaction arrangement. Finally the lower section creates a space for the identification of the market type transactions. The final graphical representation of the hypothetical example would look as it does below:



This type of graphical representation has the potential to illustrate the transaction arrangements existing in the production/trade cycles of any product.

3. METHOD

An investigation programme was executed in Brazil, the aim of such research being to illustrate the transaction arrangements used by Brazilian fruit exporters. In this research, six different fruit were used as the basis for the investigation: melons, grapes, mangoes, papayas, oranges and apples. These are the six most exported types of fruit produced in Brazil.

Two distinct research techniques were used in the investigation: secondary data analysis and interviews. Both techniques are presented and discussed in the following sections.

3.1. Secondary Data Analysis

The main objective of the secondary data research was the characterisation and comparison of the production and export sequences of the six most exported Brazilian fruit types. In order to achieve this the following steps were observed:

- Technical books and articles about melons, grapes, mangoes, papayas, oranges and apples were examined in order to characterize their production and export sequences.
- The technical activities necessary to produce and export fruit were listed according to their order of execution.
- The lists were then compared. The juxtaposition of the lists allowed the formation of categories of technical activities.

The final aim of the examination of these processes was to describe the technical sequence used in the fruit export business.

3.2. Interviews and Direct Observations

The two most widely used qualitative research techniques are interviews and direct observation. These techniques were combined in this research to disclose the peculiarities of the Brazilian fruit export trade. The qualitative methodologies used in this investigation were based mainly on Drever (1997), Nachmias & Nachmias (1997) and Rubin & Rubin (1995).

The cases described in this research were chosen based on a selection process conducted together with researchers based in six different fruit research institutions in Brazil (EMBRAPA, UEBA, ESAM, EPAGRI and IBRAF).

The three types of questions were used in the interview sessions: main questions, probes and follow up questions. Drever (1997) and Rubin & Rubin (1995) affirmed that:

- **Main Questions** – form the backbone of the interview. They are used to raise discussion of the main topics to be covered. These should be few in number as otherwise it would not be possible to go into the questions in depth.
- **Probe Questions** – "encourage the interviewee to expand on a matter at hand, complete a statement, an example or a narrative, or explain on a statement that the interviewer did not understand" (Rubin & Rubin, 1995, p. 208).
- **Follow-up Questions** – have as their purpose to scrutinise new lines of enquiry raised during the interview and to check new conjectures on the theme under investigation.

The content of the semi-structured interview questions was determined based on the literature review of TCA and the international fruit trade. The questions were carefully chosen so as to reveal the factors which are determinant for the configuration of transaction arrangements in the fruit trade. The topics investigated were:

- The technical activities performed by the organisations operating in the fruit commerce;
- The main types of commercial clients (partners) of the firm; and
- The nature of the market type relations maintained by the firm.

The interviews were arranged by telephone at least one week in advance. The interviewee was given the prerogatives of choosing the day, the time and the place of the interview. In order to better process the data obtained in each interview, the principle was followed of not doing more than one interview per day.

As soon as possible (preferably on the same day) the data obtained in the interview were organised for analysis. This routine was followed because each interview could potentially help to refine the process of data gathering. This strategy for collecting data was developed by Rubin & Rubin (1995) and is called Iterative Design of Research. Box 1 brings its main characteristics.

Box 1 – Iterative Design of Research.

> The iterative design means that each time you repeat the basic process of gathering information, analysing it, winnowing it, and testing it, you come to a convincing model of the phenomenon you are studying. In the early stages of the interviewing, the design emphasizes more the gathering of many themes and ideas, toward the middle of the research you concentrate more on winnowing to limit the number of themes that you explore. In the final stages, you emphasise more the analysis and testing of your understanding as you put them by your interviewees and critical readers in your field.

Source: Rubin & Rubin (1995, p. 46).

At the end of the semi structured interviews the interviewees were asked to show the interviewer the main facilities used for fruit processing. Direct observation of the processing units (machinery, storage facilities and laboratories) helped to clarify the themes touched on in the research.

3.3. Transaction Arrangements Characterization

The characterization of the predominant transaction arrangements present in the Brazilian fruit export trade was based on the results of the interviews obtained in Brazil. Two steps served as the basis for the characterization: data preparation and data analysis (DREVER, 1997). In the data preparation stage the main facts obtained in each interview were transcribed. The information was then coded according to its relation to concepts used as a framework; finally at this stage a summary of the main ideas of each interview was produced.

The data analysis stage was concerned mainly with the development of categories. Categories were developed either for individual organisations or for groups of interrelated organisations.

The categories for organisations took as their point of reference the technical activities performed by each organisation within the product cycle (trading sequence). The development of categories for groups of interrelated organisations observed the types of market transactions they had developed. All the categories developed are presented in the following sections.

3.4. Search for Different Transaction Arrangements

After the full characterization of a TA used by producers and traders to export/import their fruit it is fundamental to assume that there are probably other TA being used in the commerce of fruit. It is therefore necessary to search for and to characterize alternative TAs.

The diversity of TAs present in an economic sector is directly related to the diversity of firms present in the sector. The firms can have differing structures and sizes; they can also make multiple types of alliances. In international fruit commerce this is particularly true.

During the qualitative research fieldwork watch was kept continuously for alternative TAs used to trade fruit. Fruit producers, traders and fruit trade specialists were asked to indicate organisations that are trading fruit in a "different way", or, to be more precise, that are adopting procedures and market alliances different from the ones used by the majority.

The firms indicated were then visited and characterized according to the TA they used. This proactive search allowed the identification of three main types of TA present in the Brazilian fruit export trade. After the description of the main TA present in the Brazilian fruit export trade, they were compared in terms of their transaction advantages/ disadvantages.

3.5. Interview Response

From the total of 26 calls for interview visits in Brazil it was possible to obtain 19 valid interviews. The results of the interviews are presented and commented on sections to follow.

4. THE BRAZILIAN FRUIT EXPORT SECTOR

A sequence can be defined as an arrangement of events in successive order. In most cases sequences are executed aiming a specific result. The fruit trade is no different, producers and traders need to execute a sequence of technical procedures in order to offer a quality product to the final consumer.

The description of a technical sequence may be detailed or general. Detailed descriptions are advantageous only for those who want to examine the specificities of a sequence. On the other hand general descriptions are more useful for those who want to analyse a sequence in its entirety.

One of the objectives of the present scientific research is to analyse the export/import sequences of six different fruits (mangoes, apples, melons, papayas and grapes). The final purpose is to verify whether the trade sequences of the fruits mentioned have any common characteristics or not. This task can be better executed with general descriptions of the production and trade sequences of these six fruit species. Detailed descriptions would only result in excessive information being imputed into the analysis.

The description and analysis of the production and trade sequences of the most exported Brazilian fruit was based on an extensive literature review, which involved the reading of 96 different technical papers on fruit production and trade.

After the description of the individual production and trade sequences of mangoes, apples, melons, papayas, oranges and grapes it was possible to juxtapose and compare them. From this comparison it was possible to affirm that there is a technical sequence of production and trade that is common to the six types of fruit examined. It is important to observe however, that the technical sequence is common only in its general aspects. Each fruit has particularities in terms of processing that are not common to the other fruit.

The production and trade sequences of mangoes, apples, melons, oranges, papayas and grapes observe the following nineteen procedures:

1. Pre-harvest activities – This phase is concerned with the fruit cultivation activities necessary to produce fruit;

2. Harvesting – This is the one of the most critical moments in the whole fruit export chain. Fruit growers need to choose the right moment to harvest the fruit and then gather the fruit trying to cause a minimum of damage possible;

3. Short distance transport – At this stage the fruit is taken from the production fields to the packinghouse;

4. Receiving operations – The fruit is unloaded at the packinghouse platform at this time;

5. Selection and grading – At this point the fruit is separated into various categories according to weight, size or appearance;

6. Treatments – The fruit is submitted to different treatments according to destination. Most of the treatments aim at extending the fruit's shelf life and also to improving appearance;

7. Packing and labelling – At this point the fruit is packed and the packs are labelled.

8. Pallet consolidation – The packed fruit is placed on pallets and arranged according to a previously specified method;

9. Cooling – At this stage the pallets of fruit are placed in the cooling facilities. The objective is to decrease the temperature of the produce to such a point that senescence of the fruit is diminished;

10. Storage – The pallets are disposed in cold storage until the moment of transport. The stores may be near the packinghouses or near ports or airports;

11. Loading the ship or airplane – The fruit is transferred from the storage place to the long distance transport vessel. This is a sensitive stage since the produce can suffer physical injuries or excessive exposure to environmental temperatures;

12. Long distance transport – This is the period when the fruit is inside a transport vessel (ship or airplane). During this time brusque movements of the cargo can damage the produce. Another problem is that during the long distance transport neither the fruit exporters nor the fruit importers have direct control over cargo conditions;

13. Unloading the ship or aeroplane – The pallets of the fruit are removed from the transport vessel and put under the importers' control. Some importers make their first inspections at this point;

14. Transport to the distribution centre – During this phase the cargo is transferred to the importers' facilities;

15. Processing – At this stage the pallets are dismantled and the produce is then inspected. Some importers perform a new selection and grading according to their own criteria;

16. Packing – The produce is packed again, this time in packs specified by the retailers. In most cases the packs bear the retailer's name;

17. Distribution – This practice is related to the dissemination of the produce to the retailers' stores or distribution centres;

18. Retailers shelves – Finally the fruit is arranged on display shelves and made available to the final customer;

19. Final customer – The consumer buys the fruit, making this stage the last in the commercial chain of the fruit.

The interviews with fruit exporters in Brazil confirmed that the above-mentioned activities in the fruit export business are actually performed. These 19 activities were shown to be common to most of the exporters interviewed, however they mentioned having different levels of difficulty with each of them.

4.1. Diversity of Export Arrangements in Brazil

Fruit production and export organisations use a variety of transaction arrangements in order to export their fruit. The semi-structured topical interviews conducted among Brazilian traders revealed that three distinct Transaction Arrangements (TA) are more frequently used by them to export fruit.

The TAs were categorized according to the fruit trade activities that were executed by the fruit exporters. The analysis of the interviews showed that fruit exporters can be placed into three distinct groups:

• Integrated Production-Export Organisations, which execute the following activities in the fruit trade: Pre-harvest; Harvesting; Short distance transport; Receiving operations; Fruit treatment; Selection and grading; Packing

and labelling; Pallet consolidation; Cooling; Storage; Short distance logistics; Contracting long distance transport.

• Export Agents – Differently from Integrated Production-Export Companies, Export Agents do not produce the fruit that they trade. They execute only the following activities in the fruit trade: Receiving operations; Fruit treatment; Selection and grading; Packing and labelling; Pallet consolidation; Cooling; Storage; Short distance logistics; Contracting long distance transport.

• Integrated Multinational – This type of fruit exporter execute all the activities performed by the Integrated Production-Export Companies and also the import operations in the destination market. They integrate the following activities: Pre-harvest; Harvesting; Short distance transport; Receiving operations; Fruit treatment; Selection and grading; Packing and labelling; Pallet consolidation; Cooling; Storage; Short distance logistics; Contracting long distance transport; Port operations at the destination market; Transport to the fruit processing centre; Fruit processing; Storage.

These three types of exporters demonstrated to use three distinct transaction arrangements in their commercial operations. These three transaction arrangements are presented and discussed in the sections below.

4.1.1.Integrated production-export transaction arrangement

The Integrated Production-Export Transaction Arrangement (I-ETA) is composed by one hierarchical transaction type followed by a market transaction type. The hierarchical type of transaction is performed mainly by a category of organisations that can be called Integrated Production-Export Organisations. I-ETA is the most common arrangement adopted by Brazilian fruit exporters. 14 organisations reported to use this transaction arrangement.

In the I-ETA the fruit are traded according to the following order of transactions: Production-Export Companies (hierarchical-transactions type); Export Transactions (market-transaction type); Import Companies (hierarchical-transaction type); Distribution Transaction (market-transactions type); Supermarket Chains (hierarchical-transactions type) and sale to the final consumers (market-transactions type). Figure 1 shows the graphical representation of the Integrated Production-Export Transaction Arrangement.

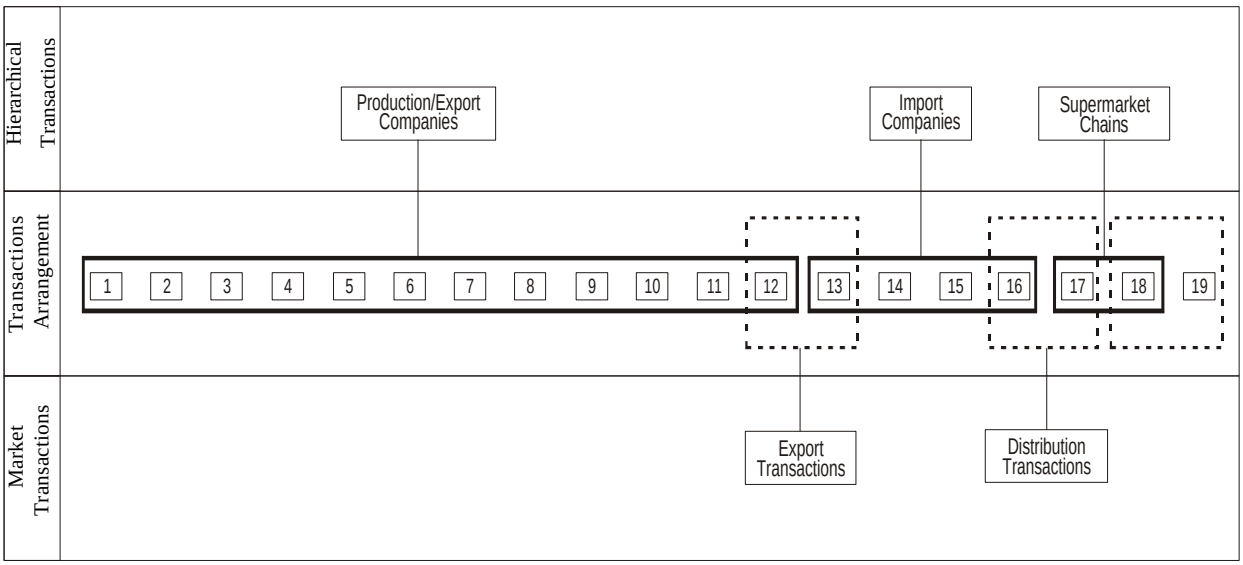


FIGURE 1 – Integrated Production-Export Transaction Arrangement

NOTES:

1. Pre-harvest Activities
2. Harvesting
3. Short Distance Transport
4. Receiving Operations
5. Selection and Grading
6. Treatments
7. Packing and Labelling
8. Pallet Consolidation
9. Cooling
10. Storage
11. Loading: Ship or Aeroplane
12. Long Distance Transport
13. Unloading: Ship or Aeroplane
14. Transport to Distribution Centre
15. Processing
16. Packing
17. Distribution
18. Retailers Shelves
19. Final Customer

4.1.2. The export agent transaction arrangement

The second export arrangement used by Brazilian fruit exporters can be called the Export Agent Transaction Arrangement (E-ATA). In this arrangement the export activities are organised by an agent.

The interviews conducted in Brazil indicate that this is the second most common arrangement adopted by the organisations present in the Brazilian fruit export industry. Four different organisations exporting four different types of fruit (melon, mango, grapes and papaya) reported that they adopt E-ATA as their main scheme to export fruit.

Furthermore, it was found that Integrated Production-Export Companies also adopt E-ATA as an alternative arrangement to export fruit. Executives in five of these organisations declared that their companies also export fruit produced by specialised growers. These five executives also affirmed that E-ATA forms only a small part of their fruit trade, an alternative used only to complement their own fruit production.

Figure 2 gives a graphical representation of the arrangement mentioned. It clearly shows that E-ATA is composed of a hierarchy (fruit producers) followed by a market transaction (fruit gathering activities) followed by a hierarchy (agent exporters) followed by a market transaction (export activities) followed by a hierarchy (import companies) followed by a market transaction (distribution transactions) followed by a hierarchy (supermarket chains) that is finally followed by a market transaction (sale to the final consumers).

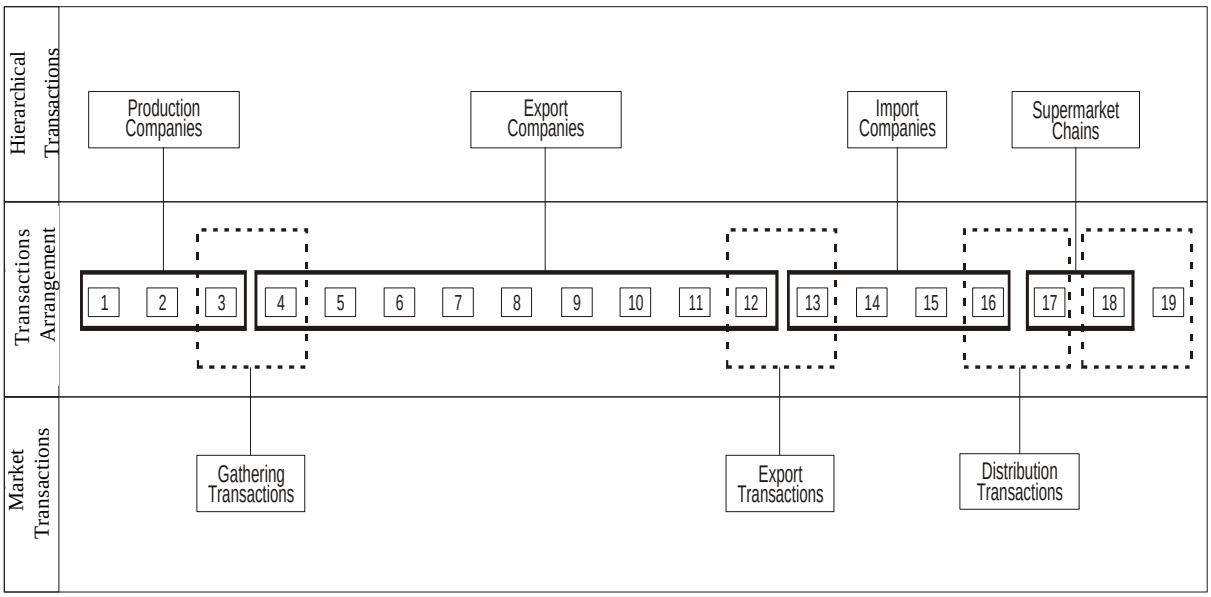


FIGURE 2 – Export Agent Transaction Arrangement

NOTES:

1. Pre-harvest Activities
2. Harvesting
3. Short Distance Transport
4. Receiving Operations
5. Selection and Grading
6. Treatments
7. Packing and Labelling
8. Pallet Consolidation
9. Cooling
10. Storage
11. Loading: Ship or Aeroplane
12. Long Distance Transport
13. Unloading: Ship or Aeroplane
14. Transport to Distribution Centre
15. Processing
16. Packing
17. Distribution
18. Retailers Shelves
19. Final Customer

4.1.3. The integrated multinational transaction arrangement.

The third export arrangement identified in the Brazilian fruit export sector was the Integrated Multinational Transaction Arrangement (I-MTA). This is a name that can be adopted mainly because production, export and import activities are all performed by a multinational organisation. Only one company was identified in Brazil as adopting I-MTA as its predominant form of export arrangement. The following discussions are based on this case only.

A graphical representation of I-MTA is presented in Figure 3. As can be seen the structure of this transaction arrangement is very simple. It is composed of a comprehensive hierarchical transaction (the Integrated Multinational) followed by a market transaction (fruit distribution at the destination market). At the final stages a hierarchy can be found (supermarket chains) that is followed by a market transaction (sale to the final consumers).

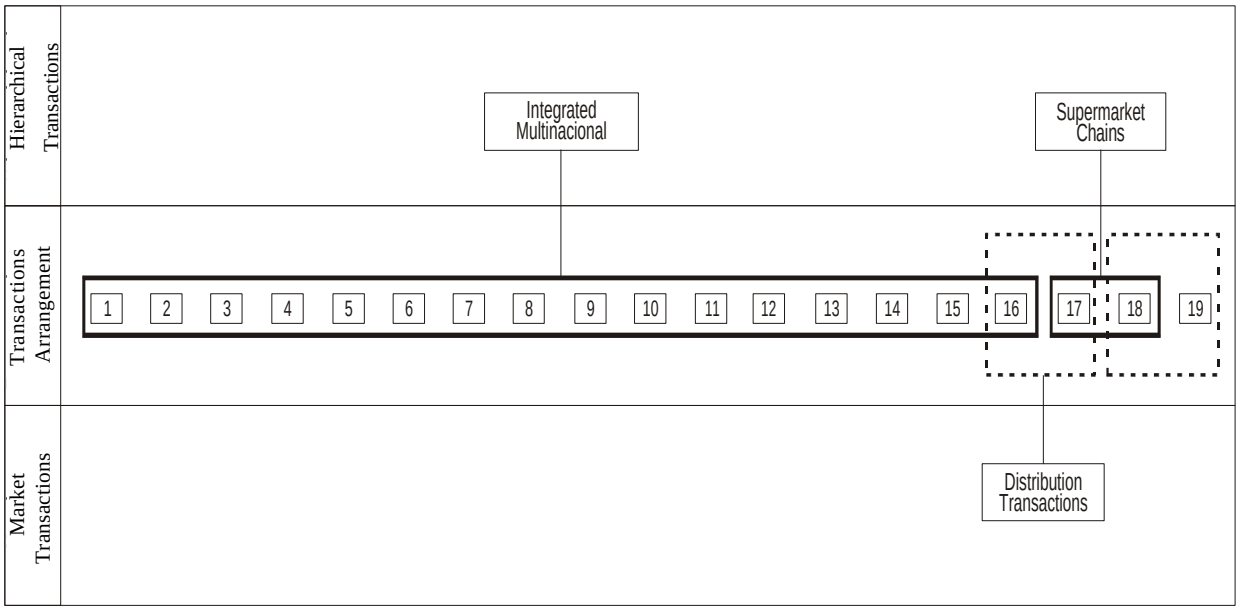


FIGURE 3 – Integrated Multinational Transaction Arrangement

NOTES:

1. Pre-harvest Activities
2. Harvesting
3. Short Distance Transport
4. Receiving Operations
5. Selection and Grading
6. Treatments
7. Packing and Labelling
8. Pallet Consolidation
9. Cooling
10. Storage
11. Loading: Ship or Aeroplane
12. Long Distance Transport
13. Unloading: Ship or Aeroplane
14. Transport to Distribution Centre
15. Processing
16. Packing
17. Distribution
18. Retailers Shelves
19. Final Customer

4.2. Discussions: Comparisons of Transaction Arrangements

The interviews conducted in Brazil indicated that there are three main types of transaction arrangements used in Brazil with the aim of exporting fruit. These arrangements are: Integrated Production-Export Transaction Arrangements, Export Agents Transaction Arrangement and the Integrated Multinational Transaction Arrangement.

The transactions organised by the Integrated Multinationals are predominantly hierarchical- type. In this case there is intensive use of capital and technologies in all stages of the fruit production and trade cycles. The Integrated Multinationals have shown the capacity to use advanced quality management strategies. Those organisations operating in both fruit production regions and fruit consumption markets conquered an expressive share of the fruit international commerce. Since fruit international trading corporations have branches in the consumption markets they do not need to negotiate with fruit import firms.

It should be noted that the transactions organised by the Integrated Multinationals in Brazil are mainly export oriented, and little attention is given to the Brazilian internal fruit market. As a consequence, the Integrated Multinationals have a limited capacity to use the Brazilian potential for fruit consumption to complement export operations.

The commercial operations organised by the Integrated Production-Export firms combine both hierarchical and market type transactions. The preferred trade partners of Production-Export firms are Import Agents operating abroad. These two types of fruit traders demonstrate a capacity to adopt advanced quality management strategies.

Since fruit Import Agents maintain firm commercial relations with supermarket chains (the main institutional fruit buyers) the Integrated Production-Export transaction arrangement tend to involve a low risk level. As a consequence both the exporters and importers are able to maintain all the specialized assets necessary to produce, process, transport and store fresh fruit.

When the Integrated Production-Export transaction arrangement is compared with the Integrated Multinational transaction arrangement, a major advantage of the former becomes apparent. This transaction arrangement allows the Integrated Production-Export firms to sell fruit to the Brazilian internal market and also to export fruit.

The Integrated Production-Export Transaction Arrangement brings a considerable advantage to the Fruit Import Agents. These traders do not need to organise commercial operations abroad (fruit production or packinghouses); an activity that can prove to be costly and complex, since it is necessary to deal with foreign legislation and culture. The Integrated Production-Export Transaction Arrangement also offers a more flexible trading alternative, mainly because exporters and importers can still negotiate with new trade partners at their convenience.

The Export Agent Transaction Arrangement is the most flexible commercial arrangement investigated in this study. It enables Fruit Growers, Export Agents and Import Agents to find the exact volumes of trade that are appropriate to their needs. It is also a business system capable of creating opportunities for fruit growers to sell their produce both to the internal and external markets.

The Export Agent Transaction Arrangement has, however, three disadvantages when compared with the previously mentioned transaction arrangements. First, it is more difficult for the trade partners to harmonise their independent administrative systems (quality management, logistics and marketing). Second, it is a more risky commercial system since any member of the trade chain may fail to perform accordingly, or they may adopt opportunistic strategies. Third, it is possible that as soon as fruit growers reach an appropriate volume of trade they will start to negotiate directly with fruit importers, neglecting the relationship with the Export Agent in consequence.

5. CONCLUSIONS

When the **Graphical Representation of Transaction Arrangements Model** was applied to a specific sector (the Brazilian fruit export trade business) it was shown to have five main positive attributes:

- It gives a clear notion of how transaction arrangements are organised around a product or a group of products since it is possible to clearly represent organisations, market type transactions and their relative position in the cycle (manufacture/trade) of a product;
- It makes easier to compare transaction arrangements. After the description of the distinct transaction arrangements, it is possible to verify how frequently a transaction arrangement is used (the number of organisations that adopt it) and how intensively (the number of transactions) the transaction arrangement is employed;
- It makes the process of categorising organisations according to their behaviour more precise: By clearly describing the technical activities performed by an organisation it will be possible to assess its role in a specific sector;

• It makes it easier to analyse market type transactions – this is probably the most important use of the graphical model since it opens the opportunity to specify the nature of the market transactions (spot or long-term transactions) and their appropriateness; and
• The model is simple, practical and almost self-evident.

Coase (1937), with his article, started an important cycle of discussions for economics. Williamson (1975) based on the ideas of Coase (1937), developed a framework capable of analysing hierarchical type transactions (organisations). More recently Sako (1992) developed a framework capable of analysing market type transactions. It is important to move further and transform the Transaction Cost Economics into a more quantitative framework. The **Graphical Representation of Transaction Arrangements Model** presented in this article can be a step in this direction.

The next stage in the improvement of this graphical model is the development of mathematical modelling based on it. It is especially important to identify and quantify the forces that are determinant of the market type transactions and devise quantitative models capable of describing them. These mathematical models have the potential capacity to allow speculation about the implications of organisational strategies and modifications in the business environment.

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