

**AN ANALYSIS OF FREIGHT FORWARDERS'
PERCEPTIONS ABOUT MULTIMODAL TRANSPORT**

Gül DENKTAŞ ŞAKAR¹

ABSTRACT

Growing international trade, developments in transportation systems, and the mobility of goods have all created new opportunities for multimodal transport, which involves the use of more than one mode to form an integrated transport chain. In this case, multimodal transport has been added to the mode choice decisions/alternatives of decision making parties. Turkey, being advantageously positioned between Middle East, Balkans, Caucasus and Europe, serves as a transfer point between these regions. In the developing stage of multimodal transport in Turkey, it is inevitable that the actors in the supply chain face increasing alternatives and their mode selection criteria may change according to the changing transport environment. In this dynamic environment, the importance of the main factors affecting the decision makers with regards to multimodal transport and their perceptions towards multimodal transport must be investigated. As one of the main decision makers in the logistics system, freight forwarders constitute the main sample of the study. This study, with the use of survey method aims to provide an overall profile of the freight forwarders located in Turkey by mainly focusing on their multimodal transport operations. Moreover, the study attempts to identify the perceptions of freight forwarders about the main characteristics of multimodal transport.

Keywords: *Multimodal transport, perception, freight forwarders, Turkey*

ÖZET

Uluslararası ticaretin artışı, ulaştırma sistemlerindeki artan gelişmeler ve yük gruplarının hareketliliği, entegre olmuş bir ulaştırma ağı oluşturmak adına birden fazla taşımacılık modunun kullanılmasını içeren çoklu taşımacılık için bir çok fırsat yaratmıştır. Bununla birlikte çoklu taşımacılık, karar verici konumunda olan tarafların da mod seçimi alternatifleri arasında yer almıştır. Orta Doğu, Balkanlar, Kafkaslar ve Avrupa arasında oldukça önemli bir konumda bulunan Türkiye, bu bölgeler arasında bir aktarma noktası olarak stratejik bir önem kazanmıştır. Türkiye'de çoklu taşımacılığın gelişme aşamasında, tedarik zincirinde yer alan aktörlerin giderek artan sayıda alternatiflerle karşı karşıya kalması ve taşımacılık modu seçim kriterlerinin değişiklik göstermesi kaçınılmaz olarak görülmektedir. Bu dinamik çevre koşullarında, karar vericileri etkileyen çoklu taşımacılığın iş çevresine yönelik faktörlerin ve karar vericilerin çoklu taşımacılığa yönelik algılarının incelenmesi gerekmektedir. Lojistik sistemde yer alan önemli karar vericilerden olan ulaştırma yüklenicileri, bu çalışmanın ana örneklemi oluşturmaktadır. Bu çalışma, anket

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yöntemi aracılığıyla Türkiye'deki ulaştırma yüklenicilerinin profil özelliklerini çoklu taşımacılığa odaklanarak ortaya çıkarmayı amaçlamaktadır. Ayrıca çalışma, nakliye müteahhitlerinin çoklu taşımacılığın ana özelliklerine yönelik algılarını da ortaya koymaktadır.

Anahtar kelimeler: Çoklu taşımacılık, algılama, ulaştırma yüklenicisi, Türkiye

1. INTRODUCTION

When the literature regarding multimodal transport and its applications in different countries is reviewed, it is seen that mainly developed economies comprising highly integrated supply chain systems constitute a considerable portion of the research. However, a closer look should also be focused on emerging markets such as Turkey in terms of logistical developments. Turkey, being advantageously positioned between Middle East, Balkans, Caucasus and Europe, serves as a transfer point between these regions and increasing trade volumes with its neighbours can be considered as an important opportunity for the implementation of advanced multimodal transport services. As a country having a great potential to build up multimodal solutions engaging different modes of transport to increase its international freight volumes, Turkey needs to promote and maintain emerging multimodal demands through a detailed understanding of the decision-making processes in multimodal transport and perceptions related to it. Since the development of transport infrastructure and the integration between transport modes play an important role in the competitiveness of the country's logistics industry and the future applications in multimodal transport, perceptions of the main actors such as freight forwarders about these possible developments and the current situation in the logistics industry can be considered as an important contribution.

2. LITERATURE REVIEW

2.1. Multimodal Transport and Decision-Making

There are various definitions and terms (such as intermodal, multimodal, combined and through transport) related to the use of more than one mode in freight transportation. They are sometimes used interchangeably and sometimes in different contexts. Multimodal transport is often used loosely and interchangeably with the term 'intermodal transport' because both refer to the transport of goods through several modes of transport from origin to destination (UNESCAP, 2005). Multimodal transport involves the movement of cargo from shipper to consignee using two or more different modes under a single rate, with through billing and through liability (Hayuth, 1987). Gray and Kim (2001) argued that since developing countries are unable to provide the full transport and communications

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infrastructure necessary for a successful intermodal system, a multimodal system, which can be seen as an interim stage on the way to full intermodalism, is a more realistic target.

Mode choice decisions play an important role in multimodal transport operations since the decision regarding which modes of transport to use in the operations determine the success of the overall transportation chain. A detailed evaluation of the transportation modes to be used should be considered by the decision makers. Although the success of multimodal transport operations could be evaluated by objective factors, which are mainly the transit time, distance and cost parameters, the perceptions of the decision makers may also help to understand the way they perceive the over all multimodal transport chain. Behavioural and perceptual approaches are the main concepts utilised in the studies dealing with the mode choice decisions. Development of perceptual approach can be seen in the studies which originated from organisational buyer behaviour theory. A considerable literature on organisational buying has been developed which is mostly derived from the behavioural theory of the firm developed by Cyert and March (1963) and also organisational theory (March and Simon, 1958). This approach suggests that a company has a number of different goals undertaken by different members of the organisation so that organisational buyer behaviour is considered as a decision making process undertaken by one or more individuals in buying organisations. In this case, the size of the buying center in the sample of the study was added to the questionnaire in order to understand the main decision making parties in freight forwarding organizations. As Burdger and Daley (1985) mentioned, current understanding of the mode choice process is mainly based on the comprehensive consumer-buyer behaviour theory and organisational buyer behaviour was introduced as one aspect of this theory.

Organisational buying as a part of industrial marketing discipline is closely related to the perceptual approach in terms of its interest in buying behaviour and decision making in a company by a person or by a group. In the light of these, this study mainly focused on the profile of the freight forwarders located in Turkey by focusing on their characteristics in multimodal transport in terms of the services, forms of transport they used and their buying centers.

2.2. Freight Forwarders as Decision-Makers in Multimodal Transport

Freight forwarders are one of the decision-makers employed in choosing the appropriate transportation mode. A freight forwarder organises the safe, efficient movement of goods on behalf of an exporter, importer or another company or person, sometimes including dealing with packing and storage. Gourdin (2006) defined the main task of freight forwarders as combining many small shipments into a single large one by providing less freight rates. The traditional forwarding function can be divided into documentation planning and costing routes, booking

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and coordinating freight, arranging ancillary services such as warehousing and packing, consolidation, paying charges due to carriers, ports, customs etc. advice to shippers and providing information to help prepare quotations (Gray and Kim, 2001).

As the logistics industry developed and the relationship between the buyer and the seller companies became more integrated, there have been modifications in the role of the freight forwarder companies. Instead of only acting as an intermediary, many freight forwarders actually became transport operators and have their own transportation assets. Furthermore, to achieve competitive rates, most of them hold contracts or special arrangements with other transport operators. In mode and carrier choice literature, much of the work focused on shippers' perspectives. Murphy *et al.* (1991) argued that dominance of shipper orientation ignored the role of intermediaries such as brokers, shipper cooperatives, and freight forwarders who may also be actively involved in transportation choice. In their study investigating Norwegian exporters, Pedersen and Gray (1998) indicated that small companies mostly contract out the transportation function completely to freight forwarders. Gourdin (2006) mentioned that from the shipper's point of view, forwarders are engaged in mode and carrier selection, documentation, payment, etc. Forwarders act as a carrier to the shipper and consignee, but they use railroads and sometimes motor carriers for the long haul portion of the carriage. Freight suppliers are either freight forwarders acting as freight supplier intermediaries, or international carriers, or organisations undertaking both forwarding and carriage which are sometimes called forwarder/operators (Matear and Gray, 1993). By considering the ownership concept, Ballou (1999) added that these parties sell transportation services but usually own little or no line-haul movement capability. Lambert and Stock (1993) added that freight forwarders offer shippers lower rates than the shippers could obtain directly from the carrier, because small shipments generally cost more to transport than large shipments. D'este and Meyrick (1992) argued that forwarders attached a much greater importance to the cargo handling technology and to the availability of flexible contracts. Also they have significant investment in cargo handling technology than shippers.

In decision-making regarding multimodal transport, freight forwarders' role may depend on the industry size, the level of complexity in the transport operations and the perceptions of the shippers about their roles and capabilities. Studies of the buying decision-making of organisations such as air freight forwarders are comparatively rare, despite the importance such intermediaries have in the marketplace.

3. METHODOLOGY

3.1. Questionnaire Development

The survey method was utilised to reach a detailed and quantified description related to the research problem(s) and it was considered as a “*precise map and/or a precise measurement of potential*” (Sapsford, 1999). The questionnaire was mainly based on the previous qualitative studies conducted by the researchers and the literature review on the mode choice decisions and multimodal transport. Findings from the Delphi study (Denktas Sakar and Marlow, 2009) provided very useful insights to the researchers in order to construct statements for the questionnaire. After the design and the context of the questionnaire were completed, the opinions of the people from academia were sought. Then a pilot study with freight forwarders and logistics service providers was used to assess the feasibility of the questionnaire, and to test the adequacy of the research instrument. The sample for the pilot survey which included 10 people from the freight forwarding industry was contacted and four participants answered the questionnaire by e-mail and one participant during a telephone conversation which totalled the sample to five participants (50% response rate). A single page was attached to the first page of the questionnaire which included directions and instructions regarding the completion of the questionnaire. It was mentioned in the cover letter that general/deputy managers and branch, marketing, operation managers should complete the questionnaire in order to have robust findings.

The questionnaire was divided into four main sections. The first section referred to the profile questions related to the respondent and the company he/she works for. These can be categorised as the individual and organisational factors. The second section included statements regarding both micro and macro environment factors in terms of multimodal transport in Turkey and the variables mentioned in this section were gathered from the findings of Delphi study (Denktas Sakar and Marlow, 2009). The third section focused on the perceptions of the respondents about the factors related to multimodal transport. This section consisted of fifteen variables which were designed with a five point scale as follows: 1=poor, 2=fair, 3=average, 4=good, 5=excellent. Variables used were taken from the literature review (Jeffs and Hills,1990; Evers *et al.* 1996; Tsamboulas and Kapros, 2000). The last section concerned the buying process regarding the multimodal transport. Since the main scope of this study focused on the profile of the freight forwarders as well as their perceptions about multimodal transport and factors affecting the buying decisions of freight forwarders, last part of the questionnaire was not considered in this study.

3.2. Sampling

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Shippers and freight forwarding companies can be considered as the buyers of multimodal transport services. As a result of common views from different researchers (Bergantino and Bolis 2003; Sommar and Woxenius 2007) it was decided to use freight forwarders in the study due to their expertise and experience. Bergantino and Bolis (2003) had used freight forwarders in their study by explaining that *“choosing freight forwarders has given the possibility to intercept information from a sector of the transport industry which accounts, on average, for more than half of the transport decisions, as outsourcing of transport operations is spreading rapidly.”* By supporting this view, in their survey of freight forwarders, Bird and Gland (1988) explained their reasons for using only freight forwarders rather than shipper organisations as: *“.....such organisations (exporter and importer organisations) are not likely to have experience over a wide range of traffic as the freight forwarders acting as agents for many industries.”* Apart from the justifications mentioned above, the researcher’s own investigations and observations in the semi-structured interviews (Denktas and Marlow, 2008) and the Delphi study (Denktas Sakar and Marlow, 2009) in which shippers were also involved showed that exporter/importer companies do not have adequate information regarding the multimodal transport itself and the applications in Turkey. It was considered that the use of shipper organisations would not provide robust results due to lack of information and expertise.

With regards to this study, the sampling frame employed in this study was mainly considered as the database of the Freight Forwarders and Logistics Service Providers Association in Turkey. Apart from this database, no other reliable and valid information was noticed. In their survey of freight forwarders, Bird and Gland (1988) argued that it was not easy to estimate the number of freight forwarders in the European countries because there is a floating population due to frequent entry and exit from the industry by very small operators. Although this survey by Bird and Gland (1988) reflects the European application, it can be stated that the situation is almost the same in the Turkish transportation industry where there are too many small or medium-sized freight forwarding companies and their entry and exit to the market is so frequent that keeping a record of these companies is very difficult. Although the database of this association represents most of the freight forwarders in Turkey, it is a fact that not all freight forwarding companies are members of this organisation so it cannot be described as the whole population. In terms of the sampling technique, this directed the researchers to apply non-probability sampling techniques in order to reach most of the population and the researchers also used their own contacts to increase the response rate. In the light of this, purposive and convenience sampling were used in the study.

The total number of members of Freight Forwarders and Logistics Service Providers Association was mentioned as 335 as of February 2009 and the questionnaires were sent to the e-mail list of the companies. Since 18 companies were not involved in multimodal transport operations and 6 companies reported

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that they were shipping agencies mostly specialized in bulk shipping, they were omitted. After two weeks period of follow-up e-mail survey, questionnaires were sent by facsimile to 311 companies in order to increase response rate. It was reported that 44 companies did not have phone or fax signals which reduced the sample size to 267. Due to low response rate, follow up phone calls were made to the remaining of the sample and it was seen that some of the companies were involved in the management of the same company. After investigation of this situation, it was seen that 9 companies were under the same management or branch of the main company. This further reduced the actual sample size to 258 and the response rate for the survey of members was 19.3 %. There were also six additional responses by the use of personal delivery and collection method which increased, the total number of responses to 56.

3.3. Data Collection and Analysis

After the pilot survey was conducted, the structure and content of the questions were revised and necessary changes were made. Questionnaires were sent firstly by e-mail and after a follow-up again by e-mail, questionnaires were also sent by facsimile. Since the responses to the e-mail survey were considered low, the use of facsimile method was helpful in increasing the response rate. Although e-mail administered surveys might have some drawbacks, other factors may have an impact on the low response rate such as respondents companies' organisational and operational characteristics. As in the current study, Bird and Gland (1988) conducted a survey study for freight forwarders and explained the reason for a low response rate as:

“Freight forwarders are relatively small organisations, certainly very rarely large enough to have public relations departments. More cooperation was certainly forthcoming from the multi-branch freight forwarders, many of the smaller firms are simply too busy trying to survive to bother with questionnaires and interviews.”

Descriptive statistics were employed in order to get a clear view of the profile of the sample and their opinions about factors affecting the buying decisions of freight forwarders in the questionnaire. Data processing was conducted via the SPSS (Statistical Package for the Social Sciences). The reliability of the questions in the questionnaire was evaluated by using Cronbach's Alpha. The acceptable value for Cronbach's alpha is 0.70 (Hair *et al.* 1998) and the values ranged from 0.705 to .950, thereby satisfying the test, and the results of the study were considered reliable.

4. FINDINGS

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The first section in the questionnaire involved questions regarding the profile of the respondent and the company for which he/she works. These are mainly titled as individual and organisational factors. Firstly the profile of the respondent will be analysed and then the profile of the organisations in the sample will be presented.

4.1. Profile of the Respondents

In terms of the profile of the respondents, firstly their positions and titles were established. Table 1 shows the profile of the both respondents and the companies in the survey. 35.7% of the respondents are operations managers, while general/deputy manager and sales/marketing executive each have the same percentage at 19.6%. Branch managers constitute 10.7% of the sample and regional managers 7.1%. The respondents in the “other” category include export and import executive, railway manager, logistics manager and project manager. In terms of the number of subordinates, it is seen that respondents have mostly (28.6%) between 1-3 subordinates and this is followed by 23.2% (between 4-6). The number of respondents which have 16-22 subordinates is only six (10.7%). The findings show that half of the respondents have subordinates numbering between 1-6 people (51.8%).

In terms of the education level of the respondents, the majority of the respondents have graduate degree (89.3%), only five of the participants have postgraduate degree (8.9%) and one of the respondents has high school degree (1.8%). The sample consists of relatively young respondents between the ages of 25-35 (62.5%). 30.4% of the sample is between 36-45 years old and only 7.1% of the respondents is between 46-55 years old. The majority of the participants (57.1%) have been working in the current position between 1-5 years and only 5.4% of the sample has been working in the current position for a long time (between 11-20 years). In terms of the duration of work in the industry, 22 respondents (39.3%) mentioned that they have been working in the industry between 6-10 years and this was followed by 19 respondents who mentioned that they were in the industry between 11-20 years. Three quarters (75%) of the respondents had worked in the industry for more than 6 years and nearly 36% for more than 10 years.

Table 1. Profile of the Respondents and the Forwarding Companies in the Sample

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Individual Characteristics	n	Percent %	Organisational Characteristics	n	Percent %
Title			N. of employees		
Operations manager	20	35.7	Less than 5	7	12.5
General/ deputy manager	11	19.6	Between 6-10	11	19.6
Sales/marketing executive	11	19.6	Between 11-15	10	17.9
Branch manager	6	10.7	Between 16-20	6	10.7
Regional manager	4	7.1	Between 21-30	6	10.7
Other	4	7.1	More than 30	16	28.5
Duration in the current occupation			Company's number of years in the industry		
Less than a year	8	14.3	Less than 5	1	1.8
1-5 years	32	57.1	Between 6-10	15	26.7
6-10 years	13	23.2	Between 11-15	9	16.1
11-20 years	3	5.4	Between 16-20	16	28.5
			Between 21-30	15	26.9
Duration in the industry			N. of people involved in transport mode decisions		
Less than a year	1	1.8	Only 1 person	1	1.8
1-5 years	13	23.2	Between 2-4	35	62.5
6-10 years	22	39.3	Between 5-7	13	23.2
11-20 years	19	33.9	More than 7	7	12.5
More than 20 years	1	1.8			
Level of experience in multimodal transport			Main services provided by the company		
High	12	21.4	Forwarding	13	23.2
Quite high	31	55.4	Forwarding-haulage	9	16.1
Average	10	17.9	Forwarding-haulage-warehousing	8	14.3
Low	3	5.4	Forwarding-haulage-warehousing-customs-insurance-packaging	14	25.0
Total	56	100.0	Other*	12	21.4
			Total	56	100.0

* transshipment, distribution, port operations, transport of project cargo and pre-delivery inspection (PDI) services for vehicles.

The last question regarding the respondent in the profile questions was the level of experience in multimodal transport. The level of multimodal transport experience was evaluated by the respondent himself/herself. The participants answered this question in accordance with their own evaluation and perception about the level of experience. Almost half of the sample (55.4%) mentioned that their level of experience in multimodal transport operations was "quite high".

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While 21.4% of participants stated that their experience was high, 17.9% of the respondents declared that their experience level was average. Only three participants (5.4%) had a low level of experience in multimodal transport. Although there was another option of “very low/zero” in the questionnaire, no respondent answered in this way. Considerable number of participants (43 respondents) stated that they had “high” or “quite high” multimodal transport experience. This could be related to the hierarchical rank of the respondents. As revealed in Table 1, a considerable proportion of the respondents are at the senior management level.

4.2. Profile of the Forwarding Companies

With regards to the analysis regarding the company profile where the respondent works currently, it is aimed to provide an overall profile of freight forwarders in Turkey. Although there are 56 respondents in the survey, a combination of small, medium and large scale companies is achieved. It should be noted that the number of employees was asked only for the branch or office where the respondent works currently. As shown in Table 1, there are 10 companies which have more than 30 employees and which have also been in the business for more than 20 years. These can be considered as companies with considerable expertise and experience. The number of small companies with fewer than 5 employees is 7 and three of them have been in the business between 1-5 years. Almost half of the companies in the sample (24 companies) have been in the industry between 1-10 years. The majority of the companies (31 companies) have at least 11 years of history and 15 companies are in the business between 1-5 years.

Another important issue to consider in terms of the characteristics of the companies was the number of departments. 36 companies (64.3%) have between 2-4 departments and 11 companies (19.6%) have between 5-7 departments. 16.1% of the companies stated that they had more than seven departments and can be considered as large scale companies. With regards to the number of people involved in mode choice decisions within the company, 62.5% of the companies stated that there were between 2-4 people involved in the decision-making process. This is followed by 5-7 people (23.2%) and more than 7 people (12.5%). Only one company reported that there is just one employee involved in the decisions related to mode choices. This shows that the buying centre of freight forwarder companies mostly consists of 2-4 people. These employees can be managers in operations and marketing/sales departments and their subordinates may also be involved in the process. Contributions from other related departments such as logistics or customs may provide synergy between departments and it may have an impact on the transport mode choices. Company ownership was evaluated under three main titles as foreign, foreign partner and local companies. The majority of the participants (76.8%) work in local Turkish freight forwarder companies. While 14.3% of the

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respondents work in companies with foreign partners, only 8.9% of the sample works in foreign freight forwarder companies.

The core business of a freight forwarder is to act on behalf of a shipper and arrange the delivery of the shipper's consignment to the consignee within the agreed time and at the most competitive price. The services offered by the industry vary according to the expertise of the freight forwarder. Also the size of the company and the main industry groups in which it is specialised determine the main services that the company provides. Some options were provided to the participants of the survey with regards to the services they provide such as forwarding, haulage, warehousing, customs, packing/labelling and insurance. Also "other" option was provided in order to enable the respondents to add more services which were not included in the questionnaire. Since "packaging" service was often mentioned by some of the respondents in the "other" option, this service was later included in the categories. A few companies listed some services in the "other" category such as: transshipment, distribution, port operations, transport of project cargo and pre-delivery inspection (PDI) services for vehicles.

As shown in Table 1, 25% of the participants provide forwarding, haulage, warehousing, customs clearance, insurance and packaging services. 23.2% of the respondents mentioned that they provided only forwarding services to their customers while 16.1% of the participants provided only forwarding and haulage services. For most of the categories, forwarding and haulage functions were selected by a majority of the respondents (76.8%) and they constituted the main service range of the freight forwarders. It can be inferred from the findings that most of the companies in the sample focused on forwarding and haulage activities rather than value-added services such as warehousing, customs clearance, insurance, packing/labelling etc. This can be due to the size and the scope of the company, only the larger freight forwarders offer a full range of transportation and logistics services including warehousing, consolidation, air transport, distribution, customs clearance, tracking and monitoring of cargo etc. This can also be related to the ownership of the company. Most of the participants work in local Turkish freight forwarders (77%) and many value-added services are provided mostly by foreign companies or companies with foreign partners in Turkey which may prompt Turkish freight forwarder companies to provide a limited range of services such as forwarding and haulage. In support of this view, Namer (2007) mentioned that there has been considerable entry to the Turkish transport market by foreign freight forwarding and logistics companies. Since these companies have heavily invested in value-added services rather than investing in TIRs, trucks and other transport equipment, Turkish freight forwarding and logistics companies have not been actively involved in providing value-added services to their customers and they have started to lose market share in terms of value-added services. Freight forwarding companies were asked for their major destinations in order to gain an insight regarding the main regions or areas in which they are specialized.

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The companies that mostly operate in “Europe-Far East-Africa and Black Sea” achieved the highest percentage (21.4%). As shown in Figure 1, this was followed by only “Europe” and “Europe-Far East-Middle East-America” options (16,1%). It is revealed from the findings that Europe is an important trade partner of Turkey. Different industry groups in Turkey especially in terms of textiles, apparel, electrical machinery, automotive and automotive parts, food and natural stones conduct export and import business with their European customers. “Europe-Far East-America” option is another important market combination for Turkish freight forwarders (12.5%). Also “Europe-Middle East” with a percentage of 10.7% can be considered as important destinations for Turkish freight forwarders.

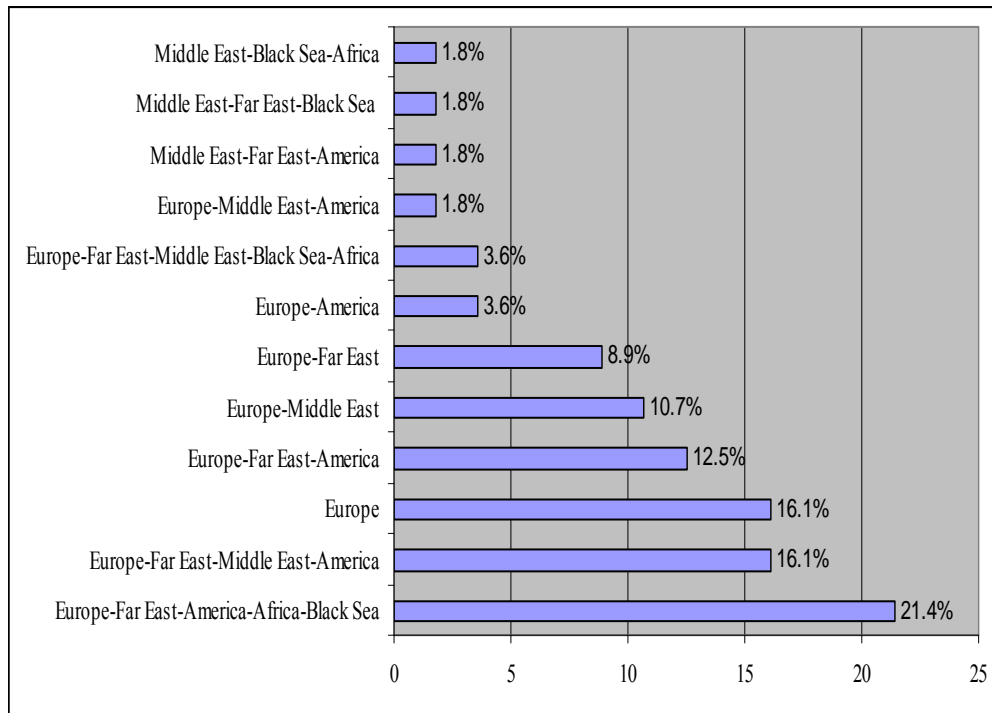


Figure 1. Main Destinations of the Companies in the Sample

The main transport mode combinations were listed in the questionnaire in order to get an insight regarding the use of multimodal transport and the common combinations that freight forwarders and their customers use in their operations. Although the most common combinations were listed in the questionnaire, there were different transport mode combinations mentioned by the respondents which were impossible to group and they were classified under “other combinations” and

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accounted for 12.5% of the total. As a very traditional system of transport, “road and sea” combination was ranked after “other combinations” (19.6%). This combination is not mostly considered as a multimodal transport since a pre-carriage by road transport is mainly provided and needed before the sea-leg of the transport and it is a very common practice in many transport operations. “Road-sea-air” is another combination that freight forwarders use in their operations (17.9%). Ro-Ro transport which includes the use of more than one mode of transport was also mentioned by the respondents under the category of “road-sea-rail-road”. Ro-Ro transport plays an important role in Turkish transportation system and there are four main regions (Marmara, Mediterranean, Aegean and Black Sea) where companies operate. The most important one is Marmara region which is the Ro-Ro line between Pendik/Haydarpaşa (Istanbul-Turkey)-Trieste (Italy) and Ambarlı (Turkey)-Trieste (Italy). 37.627 vehicles have been carried on Ambarlı-Trieste line, 116.815 vehicles on Pendik/Haydarpaşa-Trieste line, 9.269 vehicles on Tekirdag-Toulon line totally regional 171.191 vehicles have been transported in 2010 (COS, 2011). The findings show that “road-sea” combination is mostly preferred by the participant companies and it is also observed that the companies are open to different combinations especially in terms of “road-air” and “road- rail” combinations. Road transport is involved in all combinations. When the main destinations (Figure 1) and the mode combinations (Figure 2) are considered, it is seen that they are closely related to the each other and the destination of the cargo may determine the possible mode combinations within the route.

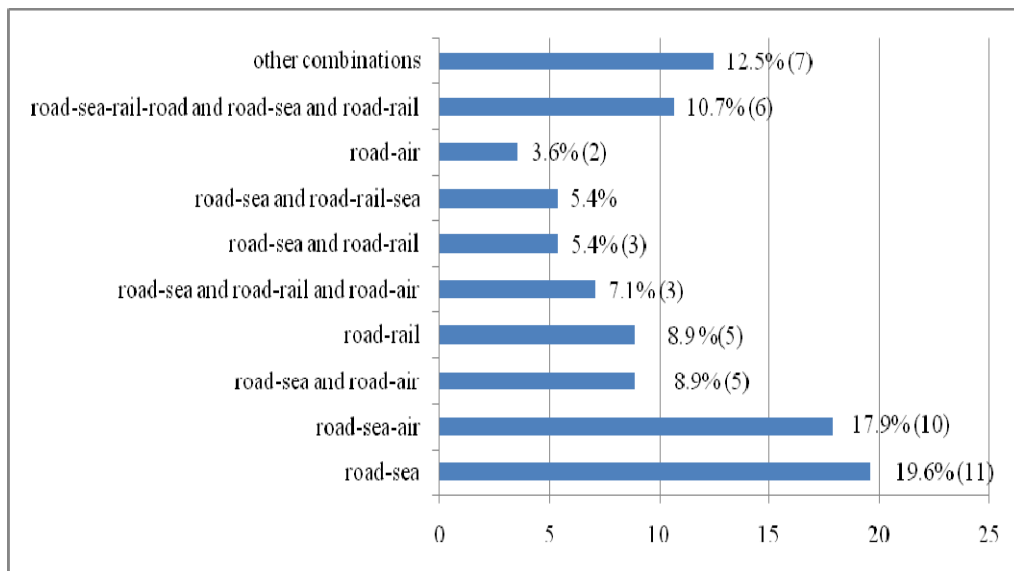


Figure 2. Main Transport Mode Combinations Offered by Companies

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In terms of forms of cargo transported, 17.9% of the participants mentioned that they used “containerised-trailer/semi-trailer-plane” option and this was followed by only “containerised” option (16.1%), “containerised- trailer/semi-trailer-rail wagons” (14.3%). When the main destinations of freight forwarder companies are considered, the results regarding the forms of transport used by these companies seem to overlap each other. Sea transport has such an important share in Turkey’s exports and imports that 85.6% of the volume of Turkey’s foreign trade transportation was carried by sea in 2010 (COS, 2011). Together with the increasing volumes in sea transport, containerisation has also developed. The volume of Turkey’s container transport by sea was 5.7 million TEU in 2010, import cargoes increased to 2.3 million TEU from 467.000 TEU between 1999-2008 and the export cargoes increased to 2.3 million TEU compared with 497.000 TEU in 1999 (COS, 2011). Apart from containerised cargo, different transport forms such as trailer/semi trailer and swap bodies were also selected by the participants. Swap body operations are mostly conducted by medium and large scale companies especially for exports to Germany and road and rail combinations are mostly preferred in these operations.

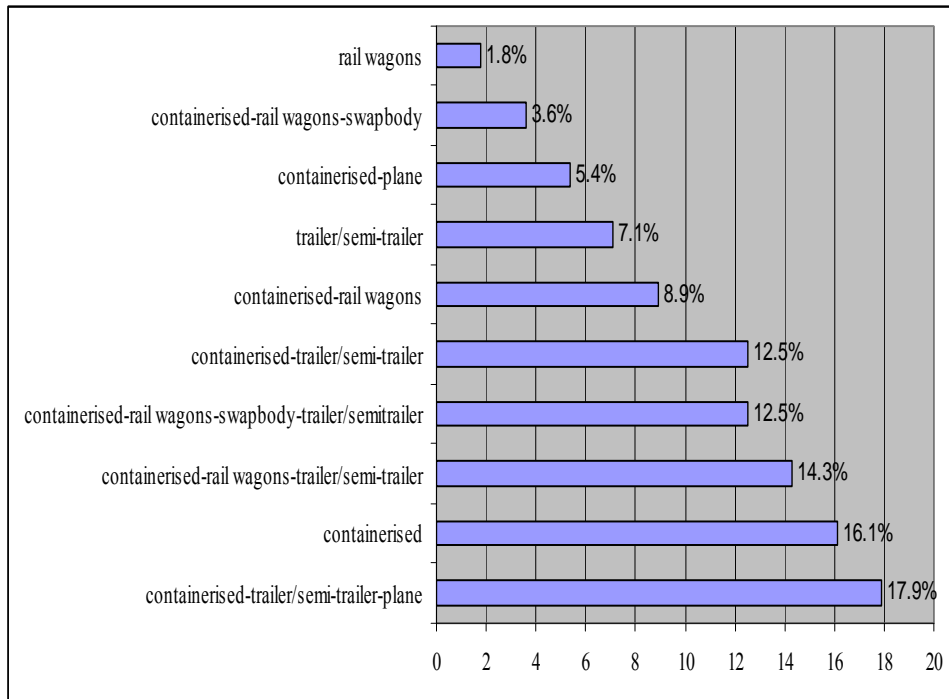


Figure 3. Forms of Cargo Transported

As expected, it was seen that most of the participant companies used the containerised form in their operations together with trailer/semi-trailer and rail

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wagons. Use of rail-wagons together with other forms of cargo can be considered as an important development and a relatively recent one since many private and governmental projects for carrying especially domestic cargoes by railways are underway in Turkey. After analysing the profile of the participants in the survey, descriptive analysis regarding the impact of the factors affecting the buying decisions regarding multimodal transport buying will be provided in the following section.

4.3. Factors Affecting the Buying Decisions regarding Multimodal Transport

The second section of the questionnaire is related to the factors affecting the buying decisions regarding multimodal transport and aimed to understand the respondents' views regarding the factors affecting their buying decisions. The mean and standard deviation values for the statements which are ranked according to their mean values are presented in Table 2.

Table 2. Descriptive Statistics

Rank	In the decisions regarding the buying of multimodal transport;	Mean *	SD**
1	Turkey's position in international transport corridors	3.9821	.84188
2	perception of multimodal transport services as a differentiation factor in the industry	3.9643	.76192
3	investment in multimodal terminals	3.9107	.66815
4	emerging developments regarding shipping lines' provision of multimodal transport services	3.8571	1.01674
5	lack of standard infrastructure in border crossings	3.8393	.82631
6	investment in vehicles and handling equipment	3.8214	.66352
7	dominant role of road transport operators	3.8214	.93628
8	different practices of countries in terms of multimodal transport	3.8036	.90292
9	lack of service integration between modes	3.8036	.86170
10	shippers' increasing expectations regarding service quality	3.8036	.94233
11	Ro-Ro transport's increasingly competitive position	3.7500	1.04881
12	lack of demand from shippers in terms of multimodal transport	3.6429	1.01674
13	competitors' current practices regarding multimodal transport	3.6250	1.00114
14	control mechanisms and inspections in the legal environment	3.5179	.93402
15	lack of use of single transport document in the shipments	3.5000	1.23583
16	state institutions' policies related to multimodal transport	3.4821	1.11177
17	uncertainty in terms of liabilities of parties	3.3929	.98495

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18	conflict issues between the actors in the multimodal transport	3.3036	.97084
19	expected increase in the number of rail transport companies	3.0893	1.08337

(*) 5 point scale, 1: definitely has no effect, 5: definitely has effect, ** Standard Deviation

Most of the statements (15 of 19) have mean value of 3.5 and above and this shows that the participants agreed that these statements had an impact on their decisions regarding the buying of multimodal transport. The main findings can be listed as below:

- “Turkey’s position in international transport corridors” had the highest mean value which suggest that the buying decisions of multimodal transport are mostly affected by the location of Turkey and the scope for a range of multimodal transport options. The strategic location of Turkey as a transit point between many important trade routes and international transport corridors provide many transport mode and route combinations to the parties involved in multimodal transport. Some infrastructural barriers should be eliminated to benefit from the advantageous location in terms of international corridors.
- The perception of multimodal transport services as a differentiation factor in the industry also has an important role in the buying decisions. Supported by semi-structured interviews and the Delphi study (Denktas Sakar and Marlow, 2009), this perception and the companies providing these services mostly consider themselves “differentiated” compared to their competitors.
- “Dominant role of road transport operators” is an important statement that the decisions regarding the buying of multimodal transport services can be affected by the dominance of the road transport industry. When transport mode combinations and routes regarding Turkey’s trade were investigated, it was also noticed that most of the options are related to road transport or road transport dominated in many legs of the route options.
- “Lack of service integration between transport modes” was also considered as an important factor by the respondents. This lack may be due to the inefficient business networks between the parties involved in the multimodal transport chain and lack of integrated transport infrastructure (e.g. road-rail connections).
- It is interesting that the respondents did not consider “state institutions’ policies related to multimodal transport in Turkey” as an important factor in buying decisions when compared to other statements. It may be due to the more general and macro approach that is taken by state institutions rather than focusing on the micro environment of the multimodal transport.
- With regards to the statements of “uncertainty in terms of liabilities of parties” and “conflict issues between the actors in the multimodal transport

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chain”, the respondents were neutral. This could be due to the lack of regulations with regards to determining the role and the responsibility of each party within the multimodal transport chain.

- In terms of the last statement, since efficient rail transport connections with road and sea transport are required for successful multimodal transport operations, the infrastructure related to the rail transport and the operations of the companies providing rail transport services are expected to increase. However, the participants were neutral about the effect of “expected increase in the number of rail transport companies” in their decisions. This statement achieved the lowest mean value in this section.

4.4. Perceptions of Freight Forwarders about Multimodal Transport

Following the factors affecting the buying decisions regarding multimodal transport, perceptions of freight forwarders about multimodal transport were reviewed. Door-to-door potential, connectivity, equipment availability when needed, image of multimodal transport had mean values of 4.1964, 3.8036, 3.7321 and 3.6786 respectively. Respondents mostly considered that their perceptions about the multimodal transport was close to the level of “good”. As one of the very unique characteristics of multimodal transport, ability to provide door-to-door transportation opportunities had received the highest mean score. Perceptions about the freight charges incurred in multimodal transport operations were “good” that it also coincided with the findings in the previous stages of the study.

Freight charges regarding multimodal transport had another high mean score. Opposite to the majority of academic research related to the mode choice criteria and multimodal transport, cost item was ranked after “door-to-door potential” variable. Since multimodal transport is differentiated from other transportation modes with its tailor-made characteristics, buyers of these services may consider door-to-door potential in a better condition than cost related issues. By supporting this, experts in the Delphi study agreed on the statement that “*As long as the buyers of multimodal transport services are informed about the costs of multimodal transport, the perception that multimodal transport can be high cost will disappear.*” (75%) (Denktas Sakar and Marlow, 2009).

Available infrastructure, controllability, frequency of services, transit time reliability variables had relatively lower mean scores. This could be due to the fact that there are some problems in Turkey in terms of ports’ connection to railways, monopolistic structure of railway system, unawareness of many shippers as well as service providers regarding multimodal transport options and other related infrastructural problems. Turkish freight forwarders’ perceptions about the

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multimodal transport's capability in terms of frequency of loss/damage and processing of claims were average which could be due to the problems related to the existing legal environment in multimodal transport.

Table 3. Perceptions about Multimodal Transport

Variables	Mean *	Std.
Door-to-door potential	4.1964	.74881
Freight charges	4.0179	.96278
Connectivity	3.8036	.81842
Equipment availability	3.7321	.86321
Image of multimodal transport	3.6786	.85508
Available infrastructure	3.6607	.90004
Controllability/traceability	3.6607	.97751
Frequency of service	3.6607	.93957
Transit time reliability	3.6429	.88273
On-time delivery	3.6250	.86471
Carrying large and/or odd-sized cargo	3.6071	.90812
Flexibility in satisfying special requirements	3.4821	1.00889
Being environment friendly	3.3929	1.07329
Frequency of loss and/or damage	3.3750	.96413
Processing of loss and/or damage claims	3.3571	.92301

*Five point scale 1: poor 5: excellent

Moreover, experts in the Delphi study had a consensus on the statement that *"There are some uncertainties in the legal framework regarding any possible conflicts and their solutions originating from integrated use of transport modes."*(Denktas Sakar and Marlow, 2009)

5. CONCLUSION

Investigation of the buying processes and perceptions of freight forwarders as the buyers/users in the multimodal transport and as the parties having an intimate knowledge of transport alternatives was considered important in order to understand the way and the process freight forwarders make their decisions This study investigated the ideas and perceptions of freight forwarders in terms of

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multimodal transport. Moreover, the study attempted to identify the main characteristics of freight forwarders located in Turkey. Understanding the situation of multimodal transport with regards to the impact of factors and the main decision makers may provide an appropriate ground for further studies.

A specific framework was developed for the survey questionnaire. Although some parts of this framework consisted of variables and statements specific for Turkey (factors affecting the buying decisions and the profile questions), other parts of the framework such as the perceptions about multimodal transport could be applied for any other studies in order to investigate the buying process in mode choice and multimodal transport. The use of a specific country (Turkey) in the study permitted the use of situational factors such as factors affecting the buying decisions as well as individual and organisational variables in order to get an overview of the buying process. The scale in the questionnaire aimed to integrate main components of decision making and buying decisions related to multimodal transport. This was considered as the first study which associated multimodal transport concept with the components of organisational buying. Despite a large number of studies in different areas of organizational buying and mode choice literature, only a few have focused on the relationship between buying decisions and transportation services buying (Zinszer 1997, Cave 2007) and none on multimodal transport specifically. This study has investigated the ideas and perceptions of different parties in terms of multimodal transport buying and buying centre mechanisms.

As for limitations of the study, accessibility to the sample especially in terms of survey method can be mentioned. It may be due to a lack of understanding and the use of a “true” multimodal transport system in Turkey. Also, there are only a few organisations in which transportation service providers and/or freight forwarders and other transport operators are involved as members, such as Chamber of Shipping in Turkey and this affected the accessibility to the overall sample. Although the concentration on a particular country by the use of different research methods could be considered as a limitation, the methodology used for this research would be seen as a valid option for further studies.

It is believed that the main sample of the study, namely freight forwarders can get important outcomes about their overall perceptions about the main factors affecting their mode choice decisions in general, perceptions about multimodal transport specifically. Main service provider parties to the shipper and freight forwarding companies such as third party logistics service providers or other carriers can employ the research findings to enhance their service offerings to their customers by understanding their perceptions about multimodal transport, areas to be developed and marketing strategies to be followed in order to influence the main stages in the decision-making process. Also, government organizations and

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regulatory bodies can specifically benefit from the findings related to the factors in terms of infrastructural and legal issues.

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