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BEYOND TRANSACTION COST ECONOMICS: COMMERCIAL HELPLESSNESS OF SMALL-SCALE ANIMAL PRODUCERS IN TURKEY

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Abstract

Small-scale animal producers in Turkey feel commercially helpless in economizing their products, since they are not tradesmen and do not know how to sell and perform well at informal markets. Therefore, they often suffer from high transaction costs. Transaction Cost Economics, in its current context, fails to fully explain producer's helplessness in business. Therefore, there is a need to propose a new concept to the ever improving Transaction Cost Economics literature. With the exception of Ross' article in which he uses the term "commercial helplessness" in a sociological context, no study to-date has integrated the same term in the understanding of our context as pertaining to the application of Transaction Cost Theory. This study aims to model the dimensions of small-scale animal producer's commercial helplessness in Turkey. The model was developed using Structural Equation Modelling technique. Exploratory and confirmatory factor analyses were employed. Second-order confirmatory factor analysis resulted in a 10-item scale with three dimensions of commercial helplessness; namely sectoral unfeasibility, transportation risk and marketing helplessness.

Keywords: Transaction cost economics, animal producers, commercial helplessness, Turkey.

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1. Introduction

Animal husbandry sector in Turkey has long been recognized as a major contributor and influential factor in areas as diverse as nutrition, national income and welfare statistics, the demand and supply of raw materials for industrial giants such as food, leather, cosmetic and pharmaceuticals (Selli, Eraslan, Chowdhury, & Sukumar, 2010). It also contributes to the social fabric of Turkish society by reducing and/or mitigating migration, thereby reducing both the registered and unregistered unemployment figures (Selli, Eraslan, Chowdhury, & Sukumar, 2010).

Most small-scale Turkish animal producers live in rural areas, operate in informal markets and face high levels of transaction costs (TC). Williamson (1985) states that TCs take place in each exchange and have an important effect on economic efficiency and business growth. Not being able to use the resources in an effective way and having high TCs slowed down the increase of welfare in rural areas and decreased the productivity of animal husbandry sector in Turkey.

Vilpoux (2013) states that informal markets are self-regulated markets. According to Perry (1989), there simply happen take-it-or-leave-it exchanges in which prices, quantity, and other dimensions are set randomly. He adds that informal market exchange does not require any governance of durable relationships. Delgado (1999, p. 168) states that producers may offer prices which often do not reflect their real costs since fast and unstable relations are developed and profit is individually pursued there. Thus, producers often find themselves in a difficult position where buyers often undertake presale measurement activities to allow better forecasting of desirable and/or undesirable characteristics and display opportunistic behaviour. Moreover, Perry (1998) has stated that these relations were characterized by the lack of permanent interactions between buyers and sellers.

Shiimi (2009) states that TCs usually arise from the performance of an interactive market which depends on its structure and conduct. Moreover, Coetzee (1995) shows that market structure reflects the degree of development and maturity of the financial system, the available transport and communication facilities, and the efficiency of the legal system.

Past research (Hobbs, 1996b, p. 20) have shown that TCs have complex nature and are not easy to separate from each other. They are neither easily quantifiable by putting in a mathematical form nor readily available on financial records (Hobbs, 1996b, p. 20).

Shiimi (2009) finds that TCs often results from information inefficiencies such as the absence of formal markets and appropriate practices.

Hobbs (1996b, p. 26) states that reduction of TCs is located at the core of the interest in supply chain management. However, he suggests that absolute minimization of TCs is never possible.

Butler et al. (1997) have calculated that interactions (i.e. searching, coordinating, and monitoring) between people and firms while exchanging goods, services and/or ideas, account for over one third of the GDP of the United States. Moreover, Dyer & Chu (2003) have determined that as much as 35 to 40 percent of the costs associated with economic activity could be represented by TCs.

2. Literature Review

Coase (1937, p. 387) has presented a sequence of fundamental but necessary steps required by any business in the initial stages of development, based on his principle of costing single transactions. These

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steps included accurately specifying the transactional costs such as setting of prices and negotiating individual contractual expenses for each exchange (Hobbs, 1996b, p. 510). These costs were then termed "transaction costs". Unlike traditional neoclassical economists, Coase (1937, p. 390) states that there are transactional costs for using the market mechanism and adds that the price mechanism controls the markets in the overall economy.

Over the years, consecutive theories based on the TC concept have emerged including the Transaction Cost Economics (TCE) (Williamson & Masten, 1995). The TCE approach has its roots in the original ideas of Coase and uses the concept of TCs to explain the organization of economic transactions and the way in which they interact along a supply chain (Hobbs, 1996b, p. 16).

TCE suggests that many business exchanges can be characterized by incomplete, imperfect or asymmetrical information (Hobbs, 1996b, p.18). Information incompleteness and uncertainty refer to the situation where all parties to a transaction face the same, but incomplete levels of information (Hobbs, 1996b, p. 18).

Williamson (1981) states that it is the combination of bounded rationality, opportunism and asset specificity, in the presence of information asymmetry, that leads to TCs.

The inability of individuals to make rational decisions as related to their access, ability to understand and apply acquired knowledge is referred to as "bounded rationality" (Simon, 1972). Higher TCs are the inevitable result of higher uncertainty levels as trading companies strive to compensate for the effects of bounded rationality (Anding & Hess, 2002).

The term "information asymmetry" is used when all participants on the trading forum have unequal access to information pertaining to the market situation (Hobbs, 1996b, p. 18). This creates a situation where the same amount of trading advantage is no longer accessible to all participants. Economists consider that a situation of "information asymmetry" is created when varying amounts of trade-related information has been accessed by one party over the other (Bartle, 2001). The magnitude and distribution of TCs remain controlled by the evolution of many factors including public awareness about product specifics (i.e. these insights educate and direct consumer preference and demand), emergent technologies and adaptions to cater or change in public priorities, and the level to which various trading parties are exposed to information asymmetry (Hobbs, 2003, p. 424).

Parties having unequal access to different levels of information and using this information to their advantage in transaction has been described as "opportunistic" when used by the better informed party (Bartle, 2001). Opportunism with information asymmetry may cause adverse unsuccessful selections and/or moral complications since it is not possible to determine which party acts in an opportunist way (Ayars, 2003). Thus, certain transactions are risky if the parties involved are not fully informed about one another's preferences or capabilities (Katja, 2002). Therefore, TCs are incurred in exchange under asymmetric information when the less-informed party tries to reduce the problem of opportunism (Shiimi, 2009). Based on the above assumptions, it is when the imbalance of access to data that the risk of greater TCs are incurred (Katja, 2002).

Sequential to the publication of Williamson's articles, empirical testing has been initiated with various other dimensions in a variety of disciplines such as economics, organization, law, sociology, marketing, finance, accounting, and operations management (Shelanski & Klein, 1995). Although the lack

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of integration across these different disciplines has reduced their overall potential on the wider use of TCE, it has grown in both number of disciplines and number of studies within disciplines.

Shelanski and Klein (1995) concluded that uncertainty, complexity and frequency in exchanges might lead to market failure. Similarly, Williamson (1998, p. 36) identified a different set of factors to describe the elements of TCE, i.e. asset specificity, frequency, and behavioural uncertainty.

The term "asset specificity" is used to define a situation where the amount of assets used in a certain transaction only hold an advantage specific to that transaction (Williamson, 1981). It is considered as the most crucial empirical determinant of the transaction due to its measurability (Globerman & Schwindt, 1986, p. 210). Williamson (1991, p. 281) identifies six types of asset specificity: brand name capital, site specificity, physical asset specificity, human asset specificity, dedicated assets and temporal specificity.

"Frequency" is regarded as an important factor and showed whether specific sellers and buyers/contracting partners have been engaged in one-time, occasional, or recurrent transactions (Williamson, 1979, p. 246).

As for "behavioural uncertainty", opportunism is stated to be the core factor (Brouthers & Nakos, 2004, p. 230). In addition, frequent transactions create trust and thus reduce the form of behavioural uncertainty (Brouthers & Brouthers, 2003, p. 1199).

According to Arinloye et al. (1991), the magnitude of the TCs can be determined by specific investments, level of uncertainty, bounded rationality and connectedness of the transaction.

TCs have been classified under many different categories. Hobbs (1996b, p. 17) has placed TCs in three distinct categories, namely: "information costs" (IC), i.e. those incurred before production and pertaining to obtaining relevant information and supporting production by researching market in terms of product, price and customer profile; "negotiation costs" (NC), i.e. those incurred from the physical act of the transaction and pertaining to labour force, agency and legal overheads; and "monitoring costs" (MC), such as those needed to legally support the adherence to the terms of agreement by the customer/second party. Staal, Delgado, & Nicholson (1997, pp. 782) have classified them into observable TC and unobservable TC. Key, Sadoulet, & Janvry (2000, pp. 245), Makhura (2001), De Bruyn, De Bruyn, Vink, & Kirsten (2001, pp. 423), and Kyeyamwa, Speelman, Van Huylenbroeck, Opuda-Asibo, & Verbeke (2008, pp. 64) have grouped TCs into fixed TC and proportional TC. Viana, Silveira, Arbage, & Machado (2012, pp. 4378) have put TCs into two groups as ex ante TC and ex post TC.

The overall conclusion from this theoretical discussion is that the ongoing development of TCE continues to evolve with respect to the changing factors in the relevant and wider domains.

3. Theoretical Framework

Small-scale animal producers often have stated during face-to-face meetings that they were not satisfied with their businesses at all although they were selling their animals at high prices. The author termed this paradox "commercial helplessness". It is realised that TCE, in its current content, is neither able to fully explain nor solve any of the problems of small-scale animal producers, informal markets and/or animal husbandry sector operating in Central Anatolia, Turkey.

Ross (1924, p. 16) is the first scholar to use the term "commercial helplessness". He states that animal producer has to some extend become a victim of his own occupation through his dependence upon

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those he supplies and also even more so on those he relies on to supply his domestics and makes his domestic life viable.

Very little has changed to the advantage of animal producers until today. They are still the victims of their former circumstances but only now, the working conditions of informal markets show no additional drive for producers to live and rear.

This study investigates whether sectoral unfeasibility, transportation risk and market helplessness are the dimensions of commercial helplessness. By performing meta-analysis, the contribution of any of the following factors were found to influence TCs in the farming literature (Table 1): access to market information (A), unequal bargaining power (B), carcass damage (C), distance from farm to marketplace (D), farming experience (E), transaction frequency (F), access to information related to government regulations (G), grade uncertainty (GU), infrastructure (IN), labour force (L), payment (P), price uncertainty (PU), risk of non-sale (R), shrinkage loss (S) and transport (TR). Table 1 sums up these factors together with data collection method (M) per study (Q: Questionnaire, I: Face-to-face interview, S: Survey, G: Group discussion).

Table 1. Meta-analysis: Types of TCs in Animal Husbandry and Farming Industry

Year	Author	M	Factors													
			A	B	C	D	E	F	G	GU	IN	L	P	PU	R	S	TR
1997	Hobbs	S	X		X					X			X	X		X	X
1999	Fenwick & Lyne	S	X								X	X	X				
2000	Key, Sadoulet & Janvry	S				X								X			X
2000	Vernimmen, Verbeke & Van Huylenbroeck	S/Q				X			X			X					
2001	Matungul, Lyne & Ortmann	S/Q	X			X	X		X		X	X					X
2001	De Bruyn, De Bruyn., Vink & Kirsten	Q		X						X			X	X	X	X	X
2001	Makhura	I/G	X			X					X						X
2004	Nkhori	Q/I	X			X				X				X	X	X	X
2007	Gong, W., Parton, K., Cox, R. J., & Zhou	Q/I	X				X	X		X			X	X			X
2008	Kyeyamwa, Speelman, Van Huylenbroeck, Opuda-Asibo & Verbeke	Q/S	X			X	X				X				X		
2009	Shiimi	Q/S	X	X			X		X				X	X			X
2010	Jagwe	Q/I	X	X		X	X				X				X		
2011	Broderick, Wright & Kristiansen	I			X					X		X		X			X
2012	Koatla	Q	X			X	X				X	X		X			X
2012	Viana,, Silveira, Arbage, & Machado	Q/I				X		X		X		X			X	X	X
2013	Jordaan & Grove	Q/I	X					X			X		X				
2014	Lijia and Xuexi	Q					X				X	X		X	X		X
2014	Martey et al.	Q/S				X							X		X		X

Table 02. Meta-analysis: Factors and Variables of Commercial Helplessness

Factors	Factor Abbr. (SEM)	TC Type	Variables	References
Sectoral Unfeasibility	SU1	IC	Unfeasibility due to poor access to skilled labour.	Fenwick & Lyne (1999, p. 145); Delgado (1999, p. 183); Key, Sadoulet, & Janvry (2000, pp. 246); Matungul, Lyne, & Ortmann (2001, pp. 352); Gong, Parton, Cox, & Zhou (2007, pp. 55); Broderick, Wright & Kristiansen (2011, pp. 1220); Koatla (2012); Martey, Al-Hassan, & Kuwornu (2012, pp. 2139); Lijia & Xuexi (2014, p. 21).
	SU2	IC	Unfeasibility due to inadequate technical equipment.	Matungul, Lyne, & Ortmann (2001, pp. 352); Gong, Parton, Zhou, & Cox (2006); Shiimi (2009); Koatla (2012).
	SU3	NC	Unfeasibility due to bad physical infrastructure during transport and at informal market (road, electricity, telecommunications, water, sewage, etc.).	Matungul, Lyne, & Ortmann (2001, pp. 352); Makhura (2001); Gong, Parton, Cox & Zhou (2007, pp. 50); Kyeyamwa, Speelman, Van Huylenbroeck, Opuda-Asibo., & Verbeke (2008, pp. 63); Koatla (2012); Martey, Al-Hassan., & Kuwornu (2012, pp. 2140); Lijia & Xuexi (2014, p. 22)
	SU4	*IC*	*Unfeasibility due to (lack of information about) legal regulations.*	Vernimmen, Verbeke, & Van Huylenbroeck (2000, pp. 329); Matungul, Lyne, & Ortmann (2001, pp. 352); Gong, Parton, Zhou, & Cox (2006); Shiimi (2009); Jordaan & Grove (2013, p. 38).
	SU5	IC	Unfeasibility due to producers' insufficient professional breeding knowledge/experience.	Matungul, Lyne, & Ortmann (2001, pp. 352); Gong, Parton, Zhou, & Cox (2006); Gong, Parton, Cox, & Zhou (2007, pp. 50); Kyeyamwa, Speelman, Van Huylenbroeck, Opuda-Asibo., & Verbeke (2008, pp. 65); Shiimi (2009); Broderick, Wright & Kristiansen (2011, pp. 1220); Koatla (2012); Jordaan & Grove (2013, p. 24); Lijia & Xuexi (2014, p. 24).
Transportation Risk	TR1	NC	Risk of weight and value loss / shrinkage during transport.	Hobbs (1997, p. 1086); De Bruyn, De Bruyn., Vink & Kirsten (2001, pp. 410); Von Bailey & Hunnicutt (2002)
	TR2	NC	Risk of stress / accident / injury / waste during transport.	Hobbs (1996a, p. 514); Hobbs (1997, p. 1087); Ndoro, Mudhara, & Chimonyo (2015, pp. 248).
	TR3	NC	Risk of animal illness during transport or at marketplace.	Hobbs (1997, p. 1087)
Market Helplessness	MH1	NC	Feeling helpless due to not being able to find enough buyers in informal market.	Woldie & Nuppeneu (2011, p. 499).
	MH2	NC	Feeling helpless due to selling animals cheaply in order not to bring them back to farm.	Hobbs (1997, p. 1086).
	MH3	NC	Feeling helpless due to not being able to sell animals in informal market and bringing them back to farm.	Hobbs (1997, p. 1086); De Bruyn, De Bruyn., Vink & Kirsten (2001, pp. 410); Nkhori (2004).

Sectoral unfeasibility was operationalized by using the following constructs: producers' poor access to skilled labour, producers' purchase and use of inadequate technical equipment, bad physical infrastructure during transport and at informal market (road, electricity, water, sewage, etc.), lack of producers' information about legal regulations, producers' insufficient professional breeding knowledge/experience.

Low (1986) states that loss in labour force quality may have adverse implications for productivity of small-scale producers. According to Matungul, Lyne, & Ortmann (2001, pp. 352); most producers do

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not know how to produce with the most economical costs of resource and labour. They state that producers often lack marketing information as to what to produce and its quantity. In addition, they describe that lack of appropriate communication technology among the constraints facing producers in Africa. Jagwe (2011) has discovered that small-scale animal producers are usually located in remote areas with poor transportation facilities and poor infrastructure. They conclude that these conditions add to the high TCs which are an impediment to enable many transactions to take place. Kyeyamwa, Speelman, Van Huylenbroeck, Opuda-Asibo., & Verbeke (2008, pp. 70) discuss poor infrastructure emerging as a significant variable in his model and conclude that poor infrastructure decreases the likelihood of farmers participating in informal market as opposed to farm gate. They find that that bad infrastructure is positively correlated with transportation costs. Ruijs, Schweigman, & Lutz (2004, pp. 226) state that reductions in transportation costs have a major effect on the functioning of food markets in developing countries. They consider quality of road infrastructure as a significant factor and conclude that improvements reduce transportation costs substantially. They conclude that animal producers are generally discouraged from using the roads with poor infrastructure since it is too costly. Makhura (2001) states that transport networks, i.e. more accessible roads and vehicles, facilitate access to informal markets. Ruijs, Schweigman, & Lutz (2004, pp. 224) suggest that better road conditions decrease cattle prices and improve transport flows. Dorward, Kydd, Poulton, & Bezemer (2009, pp. 1097) show that standardized weights and measures, infrastructural investment and enforcement of business laws may altogether result in reduced number of TCs with lower risks. Matungul, Lyne, & Ortmann (2001, pp. 348) suggest that being informed about government policies is an important factor in market participation for small-scale animal producers in developing countries since producers often lack information about their rights and the legislative frameworks.

Transportation risk was operationalized by using the following constructs: weight and value loss during transport, stress / accident / injury / livestock waste during transport and animal illness during transport and/or in the informal market.

Leach (1982, p. 57) defines transportation of animals as an unnatural activity that inevitably exposes them to a variety of hazards. She states that microclimate, space allowance and location within trailer, transport duration, distance and vehicle speed are important factors of animal welfare during transport. Moreover, she adds that animals in transport are usually confined to a restricted amount of space, in close contact with other animals, and without access to feed or water, which inherently imposed restrictions. Goldhawk (2014) suggests that these restrictions are related to the behavioural adaptations and metabolic responses that animals can perform to cope with acute changes in environmental conditions during transport. Moberg (2000) investigates the way how animals adapt and cope with challenges during transport in terms of integrated physiological and behavioural responses. Deshazer, Hahn, & Xin (2009) states that acute changes in temperature primarily elicit behavioural changes, such as changing posture, feed consumption, and distance from other animals followed by changes in metabolism to cope with maintaining core body temperature. McEwen (1998, p. 33) concludes that animals become pathological (i.e. ill and/or start losing carcass value) or even die when these response systems are faulty or overloaded.

Market helplessness in the informal markets was operationalized as: the problem of not being able to find enough buyers in the informal market; the problem of not being able to sell their animals and incur

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the expense of transportation of cattle back to the farm; and that they felt obliged to sell their animals cheaply rather than incur the expense of transportation of cattle back to the farm; and that they sold their animals cheaply rather than incur the expense of transportation of cattle back to the farm.

Shepherd (1997) suggests that the cost of obtaining market information and demand is a fundamental TC for small-scale animal producers. He states that they lack information about the prices of products both at the local level and at final consumer's level, about quality requirements, about places and best periods for selling their animals, about potential customers and about production in other areas. He concludes that this information may be obtained through contacts with other members of the community, but the accuracy of information cannot be guaranteed since those parties might have opportunistic behaviour. Delgado (1999, p. 184) concludes that a decline in the cost of information may reduce TCs. Farace, Monge. & Russell (1977) define information in terms of the reduction of uncertainty and concludes that greater uncertainty will cause greater need for information.

4. Research Methods

TCE approach has been widely accepted and extensively applied in explaining various aspects of animal producers' behaviour and predicting estimates (See Table 1). There are two approaches to studying TCs: One can study them either as exploratory factors to explain certain behaviour, or as a response variable affected by a range of factors (Williamson, 1985; North, 1997). To investigate the main factors underlying the structure of TCs in animal husbandry, we opted to use both approaches.

To investigate the current problems in animal husbandry sector in Turkey, this study will examine the contribution of the TC elements resulting in commercial helplessness of small-scale animal producers operating in informal markets. The sample size consisted of 509 small-scale animal producers selected randomly in Central Anatolia, Turkey.

Structural Equation Modelling was employed in order to test the following hypotheses:

H_1: Sector unfeasibility is a dimension of commercial helplessness.
H_2: Transportation risk is a dimension of commercial helplessness.
H_3: Market helplessness is a dimension of commercial helplessness.

4.1. Sample and Data Collection

A pre-test questionnaire consisting of 18 statements was developed and tested by face-to-face meetings with small-scale animal producers and key role players within the animal husbandry sector. Data collection was carried out with the assistance of agricultural engineers and vets. In the light of the findings obtained from literature reviewing on TCs in the farming industry (Table 1), they were asked about the problems they commonly faced in the sector. These included the producer's access to labour force, access to adequate equipment, access to legal information, low professional knowledge, transporting animals on bad roads and access to price information; opportunistic buyer's bargaining power and animal's probability of getting ill, death and losing weight during transport and at the marketplace. These problems were then

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classified into three main factors, namely sectoral unfeasibility, transportation risks and market helplessness. It was noted that these factors were commonly faced by animal producers at different levels.

Prior to formal implementation of survey, a panel of four experts was designed that comprised a group of academicians and two key role players from industry to solicit their opinions and assess the contents of the questionnaire. Some questions were put differently for animal producers' better understanding and thus, to minimize bias. The final questionnaire captured information on animal producer's demographic information, socio-economic condition, current condition at informal markets, in addition to 13 statements related to commercial helplessness. A five-level Likert scale was used with "1" corresponding to "strongly disagree" and "5" corresponding to "strongly agree".

5. Analysis

The procedure of analysis can be outlined as follows (Chen., Zhang., Liu, & Mo, 2011, pp. 244): First, the structural and measurement factors to construct a hypothetical model were defined. Second, the hypothetical model was continuously verified, developed and improved with profound modifications by using Structural Equation Modelling (SEM). Consequently, the final model was interpreted, validated and introduced to the literature. Statistical analysis was performed by using SPSS and AMOS software packages.

Kaiser-Meyer-Olkin (KMO) test and Bartlett's Test of Sphericity were applied to test the sample adequacy for factor analysis. First, the Kaiser-Meyer-Olkin (KMO) test was conducted in order to find the proportion of variance in the variables that might be caused by underlying factors (Hayton, Allen, & Scarpello, 2004, pp. 193). The value at the diagonal of the anti-image correlation matrix was measured to be greater than 0.50. As the KMO of measuring sampling adequacy was 0.884, i.e. greater than 0.500, strong partial correlation in the data was exhibited (Hair, Anderson, Babin, & Black, 2010). Second, Bartlett's Test of Specificity showed the strength of the relation among the variables and added that there existed significant relationships among variables at $p<0.001$ ((Hair, Anderson, Babin, & Black, 2010). Therefore, it was concluded that correlation matrix was explained in the sample group and added that the sample was suitable for factor analysis.

Maximum Likelihood Factor Estimation method was employed in order to fit the model to data ((Hair, Anderson, Babin, & Black, 2010). Then, optimal estimates for factor loadings and unique variances were obtained. Next, the multivariate normal likelihood function was maximized by yielding desired similarity between the observed and model-implied co-variances. In addition, the results were verified by Varimax Rotation procedure ((Hair, Anderson, Babin, & Black, 2010).

To discover the number and nature of latent variables that explains the variation and covariation in a set of measured variables, Exploratory Factor Analysis (EFA) was conducted. It grouped different variables which might address similar features. The factor structure of each variable in the scale was compared with the theoretical predicted factor structure. Factor analysis was repeated after each variable subtraction. Therefore, the communality value, i.e. each variable's proportion of variability that is explained by the factors, was investigated. Since communality values greater than 0.50 should be considered for further analysis, variables with communality values lower than 0.50, were discarded since these were outlier variables (Hair, Anderson, Babin, & Black, 2010).

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Consequently, two items, i.e. one from the “market helplessness” factor and the other from the “transportation risk” factor were excluded from the scale due to their low factor loading levels. Therefore, a scale consisting of five items for "sectoral unfeasibility", three items for "market helplessness" and three items for "transportation risks" was developed. Cronbach's alpha reliability coefficients values were measured to be greater than 0.70 for all the remained variables (Table 3). This indicated the acceptable level of internal consistency ((Hair, Anderson, Babin, & Black, 2010).

Table 3 shows that all items had factor loading level greater than 0.70, resulting in a high degree of reliability for the analysis. The total explained variance was measured to be 79.778%.

Table 03. Factor Loading Levels (EFA)

Factors	Items	Factor Loading Levels		
		1	2	3
Sectoral Unfeasibility	SU1	0.732		
	SU2	0.775		
	SU3	0.825		
	SU4	*0.834*		
	SU5	0.748		
Transportation Risk	TR1		0.820	
	TR2		0.903	
	TR3		0.889	
Market Helplessness	MH1			0.824
	MH2			0.845
	MH3			0.802
Explained Variance (%)		31.342	25.551	22.884
Total Explained Variance (%)		79.778		

Notes: (i) Maximum Likelihood Factor Estimation method with Varimax Rotation procedure
(ii) KMO =0,884 with roderickt’s Test of Sphericity; p<0.001

Construct validity for the three dimensions was assessed by Confirmatory Factor Analysis (CFA). The SU4 item was excluded from the scale due to its low factor loading level. All variables were found to be statistically significant. Factor loading level of each item was found to be greater than 0.50 (Table 4). Similarly, average loading level of each item was found to be greater than 0.70 (Table 4).

Then, a second-order CFA was carried out. Table 4 shows the items of the final structural equation model with their indicators. Factor loading level of all items were greater than 0.700. The significance level of each variable was found to be at the desired level (Table 4).

The next step in scale validation was to examine the Goodness-of-Fit Index (GFI) of the overall CFA model. The analysis included the use of other fitting measures such as the Relative Chi-squared Test (χ^2/df) the Root Mean Square Error of Approximation (RMSEA), Non-Normed Fit Index (NNFI), Tucker-Lewis Index (TLI), Comparative Fit Index (CFI) and Parsimonious Normed Fit Index (PNFI) (Kline, 2005; Hu & Bentler, 1999, p. 2). To achieve the recommended GFI value (Table 5), several iterations were made. As shown in Table 5, the resulting model based on the necessary fitting measures was appropriately supported. The $\chi 2$/degree of freedom ratio, giving a value of 3.905, indicated acceptable fit to the data. The value of the absolute fit parameter, i.e. RMSEA, is 0.076, which was smaller than the accepted level of 0.080. The two incremental fit parameters, i.e. CFI and TLI yielded values of 0.97 and 0.98, respectively

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which also supported the acceptable model fit. In addition, the PNFI value of 0.649 provided sufficient evidence that the fit between the commercial helplessness measurement model and data was acceptable.

Table 04. Factor Loading Levels (CFA)

Factors	Items	First-Order CFA			Second-Order CFA		
		Factor Loading Level	Standardized Factor Loading Level	t	Factor Loading Level	Standardized Factor Loading Level	T
Sectoral Unfeasibility	SU5	1.442	0.816	16.743	1.000	0.722	
	SU3	1.370	0.811	17.920			
	SU2	1.301	0.879	18.101			
	SU1	1.000	0.727				
Transportation Risk	TR3	1.095	0.981	37.584	2.130	0.855	11.781
	TR2	1.041	0.933	40.031			
	TR1	1.000	0.979				
Market Helplessness	MH3	1.102	0.838	19.216	1.205	0.777	10.872
	MH2	1.231	0.926	20.629			
	MH1	1.000	0.749				

(iii) All factor loadings are statistically significant at $p<0.001$ level.

Table 05. Fitting Measures

Measure	Good Fit	Acceptable Fit	Final Model
χ^2/df	$1<\chi^2/df\leq 3$	$3<\chi^2/df<5$	3.905
RMSEA	<0.060	<0.080	0.076
GFI	>0.950	>0.900	0.959
NNFI (TLI)	>0.950	>0.900	0.970
CFI	>0.950	>0.900	0.980
PNFI	>0.500*		0.649

* valid when GFI, NNFI and CFI values are altogether at the 0.900 level.

Next, convergent validity was evaluated for the three factors using Average Variance Extracted (AVE) and Composite Reliability (CR), suggested by Fornell & Larcker (1981, p. 45), and Bagozzi & Yi (1988, p. 80), respectively. All item factor loadings should be significant and greater than 0.70; AVE value item each item should exceed the variance due to measurement error for that item (i.e., AVE should be greater than 0.50) and CR value of each item should be greater than 0.70. All of these three conditions for convergent validity were met (Table 6).

Table 06. Correlation, Validity and Reliability

Factors	CR	AVE	Sectoral Unfeasibility	Transportation Risk	Market Helplessness
Sectoral Unfeasibility	0.884	0.656	**(0.810)**		
Transportation Risk	0.976	0.930	0.618**	**(0.965)**	
Market Helplessness	0.878	0.707	0.561**	0.664**	**(0.841)**

(…): Cronbach Alpha coefficient value
**p<0.001

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Divergent validity is defined as the degree to which the measure of an item differs from the results of unrelated items (Hart, Albiani, Crangle, Torbit, & Varma, 2012, pp. 185). It is calculated as the square roots of AVEs should be higher than the correlations between items ((Hair, Anderson, Babin, & Black, 2010). The square root of AVE values which were found to be greater than the relevant coefficient values, are represented on the diagonal in Table 6.

6. Findings

Both convergent validity and discriminant validity analyses showed that the scale was valid. In addition, validity and reliability of the factorial constructs were found to be at the desired levels (Table 6). Since second-order CFA also yielded meaningful results, it was concluded that the hypotheses i.e. H_1, H_2 and H_3 were supported based on the information derived from the data collected from small-scale animal producers. On the basis of the theoretical findings, it was found that data analysis resulted in standardised coefficient values of 0.72, 0.86 and 0.78 for H_1, H_2 and H_3 respectively.

The final structural equation model showing the second-order CFA factor loadings between commercial helplessness and its dimensions is depicted in Figure 1. The same figure also shows the standardised coefficient values between factors and their corresponding items.

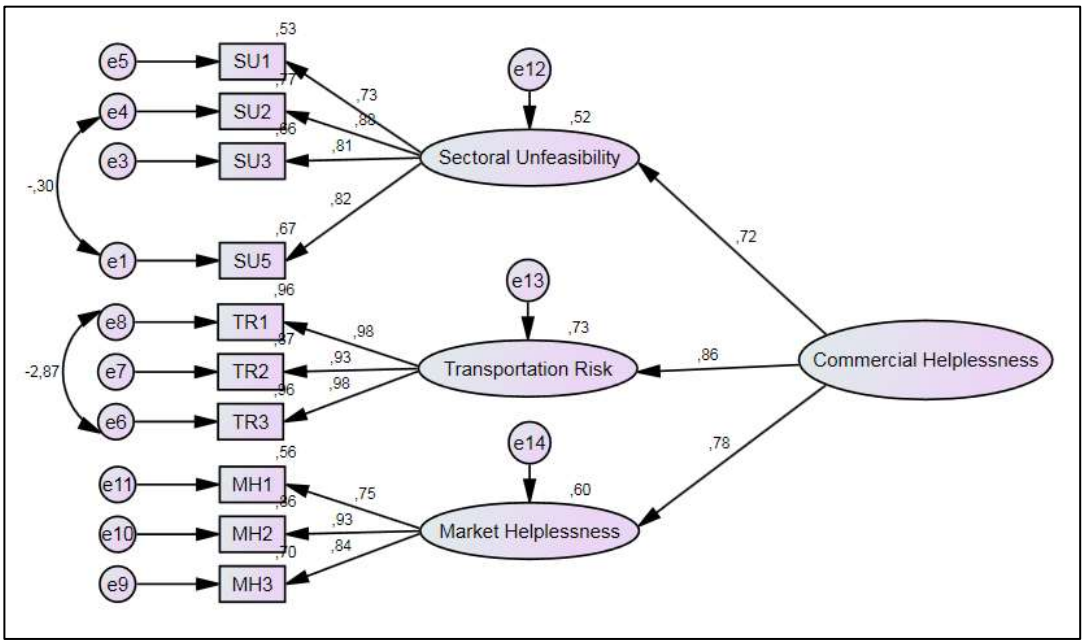

Figure 01. Final structural equation model with all coefficient values

7. Conclusion

Throughout this study, "commercial helplessness" has been defined as the clear weakened ability of small-scale animal producers to achieve their full potential. It is described as a set of following three dimensions:

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1) Unfeasibility in animal husbandry sector,

2) Transportation risks from farm to marketplace,

3) Helplessness felt by animal producers at the market place.

Therefore, commercial helplessness can be summarised under the following headings:

a) A marked deficiency in animal husbandry sector,

b) The very prominent risks, all too common, during transportation of livestock from farm to marketplace.

c) The manner in which the animal producers feel insignificant at the market place, bearing in mind that it is their efforts that have prepared these same animals for market.

This article introduces a pioneering "commercial helplessness" study to the TCE literature. It presented a detailed study of the literature, emphasising the shortcomings which all too apparently leads to commercial helplessness and hardship in the working life of the animal producer. It is a field report, researched on real everyday small-scale animal producers, clearly highlighting the many and diverse problems widespread in the animal husbandry sector in present-day Turkey. Different factors and dimensions may well arise while conducting this same study among large-scale animal producers when referred to formal markets at present being practised in developed or other developing economies.

Future studies can be initiated to establish the dimensions of commercial helplessness in other domains by closely examining the independent but interdependent fields such as business-finance, market practises and growth performance. Any weakness among any one of the three criteria mentioned above and the entire commercial model will be weakened.

This study was conducted by incorporating the TCE. When different management and organisational theories are the basis of this study, different models may be obtained, depending on the range of variables employed during the study.

This study was undertaken to highlight the shortcomings and disadvantages to the present day inefficiencies rampant at many levels of the animal rearing and marketing. It is believed that this insight will be helpful not only to explain animal producers' circumstances and working conditions in informal markets; improve such animal rearing and marketing methods, but also result in driving the animal husbandry sector to acquire a strong and steadfast future.

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