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MEMBERS' PREFERENCES FOR CO-OPERATIVE STRUCTURES: AN EXPERIMENTAL CONJOINT STUDY

Nikos Kalogeras*
Marketing and Consumer Behavior Group, Dept. of Social Sciences, Wageningen University, The Netherlands, EU, (Nikos.Kalogeras@wur.nl).
The Netherlands Institute for Cooperative Entrepreneurship (NICE), Nyenrode University, The Netherlands Business School, The Netherlands, EU (kalogeras@nyenrode.nl)

Ivo A. van der Lans
Marketing and Consumer Behavior Group, Dept. of Social Sciences, Wageningen University, The Netherlands, EU, (Ivo.vanderLans@wur).

Joost M.E. Pennings
Marketing & Decision Sciences Group, University of Illinois at Urbana-Champaign, USA (jmpennin@uiuc.edu)
Marketing and Consumer Behavior Group, Dept. of Social Sciences, Wageningen University, The Netherlands, EU, (Joost.Pennings@wur.nl).

Gert van Dijk
Prof. Marketing and Consumer Behavior Group, Dept. of Social Sciences, Wageningen University, The Netherlands, (Gert.vanDijk@wur.nl)
The Netherlands Institute for Cooperative Entrepreneurship (NICE), Nyenrode University, The Netherlands Business School, The Netherlands, EU (coop99@xs4all.nl).

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* Corresponding author, Post-address: Hollandseweg 1, 6706 Wageningen, The Netherlands, EU, Tel:+31/317/482201, Fax: +31/317/484361

Abstract

As market conditions change rapidly in the 21st century, questions arise concerning how the organizational structures of co-operatives (co-ops) can meet the challenges that these new conditions pose. This paper introduces a framework to structure marketing co-ops (MCs) based on members' preferences. Several notions from the behavioral decision theory framework are utilized, and a principal-agent approach is adopted for the design of this framework. It focuses on the subjective utility that co-op members derive from levels of the MCs' firm-behavioral attributes, such as business issue/scope, corporate governance, product-related decision-making, financial structure, member benefits, and product quality. Data was collected by means of in-depth interviews with 30 producers and 120 structured computer-assisted face-to-face interviews. The utilities that producers attached to MC's attributes were derived by means of a conjoint experiment.

Key-words: marketing co-op's structure, members' preferences, conjoint analysis.

1. Introduction

Co-ops find themselves competing in a volatile environment. Consumer concerns for food quality and safety, market deregulations due to changes in agricultural policy, technological changes, and globalization, press farmers and food producers to continuously seek the most efficient business structures. The re-engineering of co-op structures towards more individualized business models recently led several authors (see Rogers & Caswell; Rhodes; LeVay; Cook, 1995; Hind; Nilsson, 1998; Sykuta & Cook) to call for research that examines the determinants of the co-op's internal organizational structure.

The economic literature distinguishes four main orientations to studying co-op business organizations. The initial modeling efforts of cooperation in 1940s resulted in the development of the 'vertical-integrated' or 'multiplant-firm' modeling approach (Emelianoff; Robotka; Philips). This is one of the most popular theories amongst co-op researchers today (e.g., Bonus; Schrader; Hendrikse and Bijman). It views agricultural co-ops as a type of vertical integration between farming operations, processing, and marketing functions, which are controlled by their members. These are the main criteria that distinguish co-ops from other member-controlled organizations such as trade-unions, corporations, and political parties (Sexton, 1995). This approach denies the business nature of a co-op and it puts emphasis on the aggregate structuring of independent economic agents. The major criticism of this approach was the Gournot-Nash equilibrium assumption implied in this multiplant-firm model.

The impracticality of the vertical-integration assumptions allowed for Enke's and Helmberger and Hoos studies on consumer and MCs, to be the cornerstones of the so-called 'cooperative as a firm' or 'cooperative as an independent firm'. Enke first mentioned that if the co-op maximizes the sum of co-op members' surplus, then the welfare of co-op members and society are maximized. In other words, equilibrium occurs when the sum of co-op profits and the patron benefits are maximized. In order to attain such a centralized goal, a hierarchical decision-making operational framework is required. This is known in co-op economic literature as the "welfare maximizing solution" (Le Vay). Nevertheless, posterior analysts recognized the difficulty in attaining welfare-maximizing solutions relative to price-taking versions. Thus, this solution does not obtain equilibrium under a purely patronage–based financing system.

New co-op economic theories began to emerge in the 1980's, and particularly focused on the issue of member heterogeneity and risk behavior (Staatz, 1989). The contractual basis of a co-op's entrepreneurship is known in co-op economic literature as the 'nexus of contracts' theory. This approach views all types of business relationships amongst members as strictly contractual relationships (a.o. see Hart & Moore; Hendrikse & Veerman, 2001). Furthermore, a behavioral and application-oriented line of co-op research, known as the 'coalition' approach, can also be distinguished. The primary interest of experimental economists in this field (a.o. see Staatz, 1987; Vercammen et al.; Hendrikse) is the recognition of existing coalitions within the co-op environment. The latest two behavioral-based approaches are considered as the alternatives to neo-classical co-op analysis, which views the co-op firm as a vertical integrated business system or an independent economic organization.

This paper has adopted the behavioral theory of the firm, developed by March, Simon and Cyert, to investigate the process of decision-making within a MC. The economic function of a horticultural MC is the maximization of net proceeds for producing farmers, in particular by adding value to the member's products. We view the MC firm as a coalition of utility maximizing participants. The member-participants, who are owners and controllers, create an organizational structure through their collective behavior, within there are multiple functional and organizational activities to be performed. However, modern co-ops, besides their members, have more participants involved in their decision-making process, such as the board of directors (BOD), hired management, organized laborers and bankers, and each group has its own views and preferences about the behavior of the co-op (Staatz, 1983). LeVay listed all of these

decision-making actors with their possible goals for the co-op, and argues that their preferences on numerous organizational issues may differ from those of the co-op members.

Many studies have theorized on co-op's management without taking heed of empirical evidence concerning the members' as firms in their own right. Member firms face changing needs, stemming from market developments, and preference change due to changes in their entrepreneurial behavior. We propose that empirical studies of members' preference for the co-op's internal functioning will reveal crucial information. This information can be used to then determine preferred organizational modes of their joint economic behavior, or, in other words, of their market agent. There is otherwise the risk, as Fulton and Giannakas have recently shown, that when members feel the co-op is not operating in their interests, the co-op's quality is perceived to be low.

We apply a principal-agent theoretic framework (Jensen and Meckling; Fama and Jensen) and view MC as an entrepreneurial coalition owned and managed by its principals, who co-operate as peers (see Alchian and Demsetz; Douma and Schrouder). This framework seems capable in significantly extending the coalition perspective, through its contribution to a more advanced discussion of the relations between the members (the many relatively small principals) and their co-op (agent). The coalition's entrepreneurs (principals) who are involved in coordinating and monitoring the organizational aspects of the coalition (agent), behave in a bounded rational manner (March and Simon). They are the only legally authorized decision-makers that can provide information about organizational guidelines and their twofold business-role in the two layers of co-op entrepreneurship. While they do cope with real daily decision-making

at their farm level, they also are the decision-makers at the co-op (agent) level, who control and monitor the operational framework of the hired decision-making participants. Thus, we argue that in order to understand the dynamics of co-op organizational structures, we need to investigate the preferences of these entrepreneurs on the organizational structures of their agents. The coalition of participants, or agent's organizational structure, is simply defined as the sum of total relationships in which its principals' (farmer-members) overall utility on their invested resources is achieved, through the co-ordination of their co-op's distinct internal organizational aspects and options. This notion is closely linked with the conceptualization of the firm as a "system of relationships" (Coase), where consistencies between these relationships are of great importance (Williamson). These relationships are therefore recognized as "distinctly separated clusters of firm characteristics" (Milgrom and Roberts), and their effective matching can influence positively the MC's performance (e.g., Hendrikse & Veerman, 1997).

The current research develops a model that optimize the organizational structure of co-op firms, subject to its own particular relationships that are specified as a distinct set of behavioral organizational attributes. We conceptualize this procedure in a principal-agent framework where farmer-members, as user-owners and user-controllers, have a twofold decision-making role in the two layers of co-op entrepreneurship, that of member firms and that of co-op firm. If principals reveal their preferences, and thus the levels of the utility they derive from their relationships, insight can be gained in the member-incentives to invest in the agent. This will also advance our understanding of how the co-op's managerial framework should be formulated. The paper is structured as follows. In

section 2, we will provide an overview of the structural and strategic relationships of modern co-op organizations. Section 3 presents the decision context and methodological design of the survey followed by a brief description of the conjoint modeling framework and the conjoint design of our study. In section 4 we present the results of conjoint experiment. The paper ends with a discussion about the potential theoretical contribution of this study as well as the analysis's limitations and suggestions for further research are discussed.

2. The Transformation of Co-op's Structural Relationships.

The success of the market-driven organization in the agri-food sector is based on a range of organizational choices, which increase interdependence as well as ensure the ability to produce to specifications (Boehlje et al.). Shifts towards consumer driven market channels, merging competitors and technical and organizational innovations make markets complex. They also compel agri-businesses to reconsider their organizational strategic behavior and develop new forms for turbulent environments (Achrol; Day). Presently, several agricultural market-driven co-ops are undergoing changes in their organizational structure (a.o. see Cook, 1996; Nilsson, 2001; van Dijk, 1997). As the complexity of co-ops increases, in terms of size, composition of its membership, market strategy, and internal business operations, new individualized structural solutions are suggested including defined membership, proportional voting schemes, differentiated internal pricing schemes, and tradable residual claims (van Dijk, 1999). Thus, a growing number of agricultural co-ops introduce individualization in addition to traditional collectivized co-op structure (see table 1). As a result, individualized structural choices

become possible new forms of co-operation, thus seem better equipped to effectively compete in the current demands of the global business environment.

In this paper, we argue that the determinants, that drive the internal organizational structure of modern market-driven co-op organizations, can be effectively derived from both the existing theories of the firm and the unique features of modern co-op entrepreneurship. We argue that the decision-making processes within the firm's internal environment starts with the definition of the firm's goals (Douma and Schreuder). In order to explore the co-op's responses to shaping agricultural marketing functions (either upstream or downstream), their role in a market-oriented economy should be specified (Sexton, 1986). Hence, we expect that the co-op's business issue/scope is an important basic determinant of the co-op firm's structure. By viewing a co-op firm as a coalition of different groups of participants, we assume that as heterogeneous participants will have their own particular objectives and goals, the common goals of a co-op firm are therefore achieved through a bargaining process.

Furthermore, following the definition of co-op as a user-oriented business form, a co-op structure can be interpreted as essentially consisting of three behavioral dimensions. According to Garoryan, these theoretical constructs are: the aspects of member financing of capital (ownership/investment); the decision and control process (governance), including the role of the board-of-directors (BOD) and other decision-making participants (hired management); and the methods for allocating costs and returns to members (benefits distribution). The farmer-members collectively own the co-op's assets, and they are user-owners of the co-op's risk bearing capital to a dominating degree, in the form of direct investment, retained patronage refunds, per unit-capital retains (Cobia & Brewer).

Table 1. Co-op Structure: Traditional Collectivized vs. Modern Individualized

Structural Factors	Traditional Co-ops	Individualized co-ops
Investments		
• *Financial entry*	Open, free and costless entry	Closed entry or subject to purchase of production right
• *Residual claims rights*	Permanent and non-tradable	Tradable among members.
Equity Structure & Returns		
• *Equity's form*	Collectivizing structure	Individualizing Shares
• *Pricing policy*	Uniform nominal price with minimum quality criteria	Differentiated pricing with respect to produce content and quality criteria
Governance		
• *Decision-making rights*	Farmer's Board of the Directors full delegation	Decision rights are delegated by a Farmer's Board of the Directors, on behalf of members individually and management
• *Voting principle*	Full democratic control (one man one vote)	Proportional to individualized stocks

Source: see text

Cook (1995) distinguishes three investment-related efficiency problems, for cases where the property rights of common equity are not well defined. These three are the free rider problem, horizon problem and portfolio problem. The free rider problem concerns situations where new members can enjoy profit from joining the co-op without having to pay a fixed entrance fee, or when non-members can profit from the marketing activities of a co-op for generic products. The horizon problem rises when a farmer member investing in a co-op's marketing activities or financial activities, is unlikely to feel that he can participate fully in the potential benefits. This happens because part of the net cash flow will be retained in the co-op firms, and hence shared with future members. Thus, the horizon problem occurs if an investment pays-off in the long-run. Finally, the portfolio problem concerns the reluctance of co-op members or investors to invest. Members of a co-op are obliged to invest in proportion to their use of co-ops. They can thus have a portfolio problem as their claims on assets (share in a co-op) cannot be freely bought or

sold, and so they are inhibited from diversifying or concentrating their investment portfolio to take account of their personal wealth and their preferences for risk taking.

The literature suggests both theoretically and empirically, that the members' incentives to invest in the co-op would be enhanced if the property rights of the co-op were better defined. Eilers and Hanf address the issue of optimal contract design in co-op firms by utilizing a principal-agent theoretic framework. They conclude that such a framework may be an extremely useful tool in analyzing member investment incentives. Cook and Illiopoulos have empirically tested the co-op's efficiency when property rights are defined, and found that members of closed membership policy, defined marketing agreements, and transferable delivery rights, are more willing to invest in their co-op. These co-op models are called new generation co-ops (Harris et al.). Hendrikse and Bijman conceptualize the impact of ownership structure on investments in a multiple tier net-chain. They utilize a property rights incomplete contract framework, and they generate first-best efficient ownership structures given alternate investment situations.

Modern co-ops have relaxed the exclusively generic constraints of co-op equity (and of therefore their financial structure), by adopting other investment-driven financing methods than just general reserves, in response to tremendous own-equity needs. In fact, many of the modern-day American and European co-ops (Cook, 1996; Nadeau and Thompson; van Dijk, 1996) enjoy a scheme of more individualized financial equity. They are expanding their risk-bearing tools by means of long-term loans or certificates issued to members with a fixed return (certificates and member loans). This option offers the possibility that members reserve capital for the co-op, which is still assigned to a specific member. Hence, this form leads to more individualized co-op financing forms.

In contrast with other economic organizations, only member-users have the possibility to affect their organization's objectives and strategies. The growth of co-op firms, however, due to vertical integration, strategic alliances, and mergers, implies an increasing complexity in decision-making. This has brought the need for professional management (van Dijk, 1997), although the co-op's BOD dominates the decision-making process (Henehan and Anderson). Comparing investor-owned firm's *(IOF's)* and co-op's board function, Staatz (1984) states that co-op's board serves as both a trustee for the investors, (like the trustee of *IOF's* shareholders) and a representative of the co-op's customers. This is an important aspect of a co-op firm, because the concerns of its user-owners conveyed to management.

The co-op governance relationship, also called control relationship, thus involves the participation and monitoring of the co-op's decision-making procedures, as taken by all co-op decision-making participants. According to the traditional co-op model, members should have only one vote in the general assembly that elects the BOD. Co-op firms follow this rule in several countries including the USA and Germany (Reynolds et al.), but in several other countries (i.e the Netherlands) almost all co-ops use proportional voting (van Bekkum & van Dijk)[1]. This condition of proportionality in voting power has stirred farmers to co-operate in new ways, and has caused the restructuring of long-standing governance schemes. According to Egerstrom, these investment-driven co-ops have resolved issues regarding co-op property rights and free-rider memberships. They also have asset appreciation mechanisms, delivery rights mechanisms, proportional

[1] The latest means that a member holds more votes the more use he makes of the services of co-op firm. Often a maximum number of votes per members is defined.

patronizing distribution, and individualized allocation of benefits methods, all of which are based on investment-driven equity capital plans.

The combination of the above mentioned realities in co-op entrepreneurship can be characterized as the original reasons for co-operation in a state of flux (van Dijk, 1997). Farmer-members as modern entrepreneurs make investments in such a way that new markets are created, where the members can add value with their land, labor and capital investments, and skills. Clearly, the study of an internal co-op's restructuring should not only focus on the co-op's internal hierarchy. Co-ops are challenged with the boundary between what is produced within the firm and what is contracted for markets like any other firm type (Rogers and Caswell). Thus, entrepreneurial strategies of member-producers require a more direct link with their market segments, and product quality emerged as one of the key-determinants for the building of a market-driven co-op organization. By creating differentiated products, and therefore non-uniform pricing mechanisms, firms appeal to different buyer segments. This will then strengthen their position in the market, and ameliorate economic inefficiencies associated with uniform pricing methods (Fulton & Vercammen, 1995). This is the point where farmers-members have reached their goal. As a result of their market-oriented business structure, the demand for quality products is enchanted, performance of co-op is expressed in the value of their shares linked to their individualized own equity, and profit is made.

To summarize, we define the internal co-op structure as comprising of the behavioral relationships between members and the co-op. These are the ownership/investment, governance, and benefits allocation relationships. In order to build-up a complete and coherent co-op structure model, we also consider other organizational and strategic

behavioral attributes. These are the specificities of the business issue/scope of market-driven co-ops, as well as the strategic focus on a product's quality of co-op firms, determined at industry-wide levels or within final consumer market segments. Each of the above mentioned internal co-op structure's determinants may de described in terms of a number of options. Regarding this definition of a co-op structure model, we investigate the member preferences for market-driven co-ops that are organized with different degrees of organizational and strategic relationships of the collectivized vs. individualized co-op model.

3. Modeling Framework and Methods.

3.1. Decision Context

We study co-op members preference structure for particular attributes of the co-op organizational structure for a Dutch co-op, called VTN/The Greenery. Formally, The Greenery is a distribution, sales, and marketing company of fresh produce whose shares are owned by the horticultural co-op *Voedings Tuinbouw Nederland* (VTN). The 3,000 producer-owned companies that are members of VTN sell their products through The Greenery. This type of marketing channel exists for a wide variety of fresh commodities, such as tomatoes, green-salads, apples, strawberries, etc. The companies in this commodity-marketing channel are relatively small and most of them are family owned, with the manager often times being the owner.

We will use conjoint analysis as a statistical tool to determine the utility that co-op members attach to the various organizational characteristics of a co-op. Conjoint analysis allows us to derive at the "optimal" co-op structure based on co-op members

preference (utility) structure. First we will describe the research design that enabled us to arrive at the relevant co-op characteristics, subsequently we specify the conjoint model.

3.2 Research Design

Design of Qualitative Research

Initially, a desk research was conducted in which the current literature on co-op attributes was evaluated. Next, the relevant attributes and levels of co-ops were determined, based on both, the theory as well as in focus group discussions with the members of VTN/The Greenery. Two focus-group sessions were conducted, in which several characteristics, called attributes, of the co-op in relation to its organizational structure was discussed. These attributes were derived from relevant literature sources, as well as from several discussions between co-op experts from the research team and the managerial employees of VTN/The Greenery. The two sessions were held on different days (one at the end of March and one at mid-April 2002, because the workload of members tends to be relatively low then) and in different locations, in order to facilitate full participation. To ensure the participation of at least ten members per session, a total of 20 members were recruited for each discussion. Member selection was based on certain demographic variables (age of member's company, region in which company is located), product-related (heterogeneity of members regarding products, protected or unprotected cultivation), and economic (business size and structure) criteria, as well as on the degree to which they are involved in their own marketing co-op's functioning (participation in producer's meeting, general assembly, etc). Ultimately, 15 members participated in each session.

Focus group results

The two focus-group discussions gave almost the same results, and revealed no need for a third session. The participants provided various arguments that three out of the eight proposed attributes (*Advantage of Membership, Membership Policy and Competitive Strategy*) should not be considered as structural options of a modern co-op. The main argument was that the proposed aspects are more related to the nature of the business' constitutional arrangements, and thus they already need to be defined as internal regulations in the early stages of co-op establishment.

Of the remaining five attributes, three were considered extremely important for the formulation of the co-op's organizational structure. Other suggestions given by the focus groups pertained to the wording of these three attributes and the feasibility of their different levels. Thus, the attribute *Multi-/Single-Purpose* was renamed *Business Issue/ Scope*, and *Distribution of Wealth* as *Members' Benefits*. For the attribute *Financial Structure*, the number of levels was decreased from five to two. Almost half of the participants strongly insisted that in order to formulate a modern financial structure, *Individualized Equity* should be derived, and the other half accepted the usual *Co-op Norm of General Reserves*. The other three levels (*Members' Out -of-Pocket Investments, Co-op Totally Financed by Members, Co-op Financed by Members and External Investors*) were considered not feasible. Therefore, they were not included in the empirical study.

Notwithstanding the various options about the members' role in the MC decision-making and organizational procedures discussed in the focus-group sessions, the members also clarified that managers and members are both useful in the decision-

making process and the hierarchical structure, but in a different manner. They mentioned that the key decisional procedures in which members and managers are engaged are different due to the nature of the tasks. Hence, product-related decision-making is an issue on one hand, and, on the other, the co-op's corporate governance should be considered.

Table 2. Attributes and levels of the conjoint study

Attribute	Levels
Business Issue/Scope	Entrepreneurial Market-Oriented Organization Intermediary Organization
Corporate Governance	*VTN*: governed by Board of Directors (Members) *The Greenery Ltd.:* governed by Managers under the supervision of the Board of Directors of *VTN* VTN: governed by Managers under supervision of Board of Directors (Members) *The Greenery Ltd.:* governed by Managers under Supervision of Professional Supervisory Board.
Product-related Decision-Making	Managers Members
Financial Structure	General reserves Individualized equity
Members' Benefits	Product price Product price & return on capital
Product Quality	General grading of products Specific/client's grading of products

Finally, the attribute *Marketing Strategy* was changed into *Product Quality*. Two levels are considered, and the first one is *General Grading of Products*, or, a general production grading line that could be followed for bulky products and anonymous buyers. The second one is *Specific/Client Grading of Products*, where the co-op firm maintains a grading line for specific buyers. Thus a total of six attributes with two levels each resulted from the focus-group sessions (see table 2).

Design of Conjoint Study

The findings from the qualitative research were the input for the design of the conjoint study. This limited number of attributes allowed for the use of the traditional

full-profile conjoint method (Green and Srinivasan, 1978). A 2 (*Business Issue/Scope*) × 2 (*Corporate Governance*) × 2 (*Product-Related Decision-Making*) × 2 (*Financial Structure*) × 2 (*Members' Benefits*) × 2 (*Products' Quality*) fractional factorial main-effect-only design generated a set of eight calibration profiles. In addition, six holdouts were generated, each of which were combined into three pairs of profiles. Thus, the total number of profiles to be evaluated by each respondent was 14, with six of these profiles were to be evaluated in pairs. In addition, respondents were asked to design their preferred co-op structure by selecting one of the two levels for each attribute.

We chose the fractional factorial main-effects design to keep the number of profiles to be evaluated at reasonable levels, and because we also assume that the interaction effect between conjoint attributes are negligible. Thus, members overall evaluations are formed by the sum of the utilities derived separately from the levels of the six attributes.

For the final field study, respondents were selected on the basis of their size (in economic and financial terms) and their degree of their involvement in the co-op's functioning. Thus, the largest and most active members were selected for this study. Most computer guided personal interviews were conducted in connection to producer meetings, which are held regularly on an annual basis in different regions all over The Netherlands. Some interviews were conducted at the farms of the respondents due to their workload, which did not allow them to join the pre-arranged meetings. In total, 120 persons completed the interview, which were all held on an individual basis.

Respondents were asked to rate the eight calibration profiles according to their preferences on a nine-point rating scale, which ranged from one (least preferred), to nine

(most preferred). Subsequently, the respondents were asked to pick their most preferred profile for each pair of holdout profiles, and rate the extent of their preference for that profile on a seven-point rating scale, ranging from one (a bit more preferred) to seven (much more preferred).

A pilot test was initially conducted to check the face validity and degree of comprehensiveness of the conjoint task. Eight face-to-face interviews were conducted at first, and members pointed out some changes. Most of them were wording related, and hence the questionnaire was changed accordingly. Also, all the interviewed members expressed a strong willingness to build their own MC profile by choosing one of the two given levels of each given attribute. We considered that suggestion and asked respondents to do so in our final interview.

Conjoint model

The conjoint analysis is grounded in a utility framework (see Lancaster; Houthakker), which assumes that, in the context of our empirical study, producers derive utility from the attributes of the co-op. It is assumed that the levels of the selected co-op's behaviorally-based attributes contribute in an additive way to members' preferences. In the conjoint analysis the respondent is asked to rate or rank various so called profiles. These profiles are a bundle of attributes with particular levels that represent a particular coop. The conjoint model can be formulated as follows:

(1) $$P_{ik} = a_i + \sum_{j=1}^{m} \sum_{l=1}^{L_j} x_{klj} p_{ilj}$$

Where P_{ik} is the preference of respondent i for profile k, α_i a respondent-specific intercept term (to be estimated), m the number of attributes, L_j the number of

levels of attribute, $\chi_{k\lg}$ profile k's value of a dummy variable for level l of attribute j, and it is equals to 1 if profile k has level l of attribute j and $\chi_{klj} = 0$ otherwise), p_{ij} is the (to be estimated) utility (part worth) that level l of attribute j has for respondent i. Since the dependent variable is scaled from one to nine in this study, it can be regarded as approximately interval in nature. This allows for the use of ordinary least squares (OLS) which is the most commonly used estimation procedure in conjoint analysis.

4. Results

In order to estimate the overall utility of the respondents we assumed that the levels of the selected co-op's behaviorally based attributes contribute in an additive way to members' preferences. In our case, a simple additive model represents the preference structure for the MC internal structure as based on six factors (*utility = business issue/scope + corporate governance + product-related decision-making + financial structure + members benefits + product quality*). The preference for a specific MC profile was directly calculated from the part-worth values. With these part-worth estimates, the preference of the selected sample of respondents was estimated for the 8 hypothetical MC profiles, for the three holdout pairs, and for the self-constructed MC.

We first describe the degree of predictive validity for our individual level part-worth estimates. A considerable difference in the signs of the part-worth estimates between the predicted and real scores of holdout cases was found. For the first predicted pair 38 different signs were found, 57 for the second predicted pair and 84 for the third predicted pair. Thus, we proceeded by computing the so-called Tucker congruence coefficient (Zegers & Berge) in order to identify the degree of association between the

predicted and the observed scores of holdout pairs. The estimation of the Tucker coefficient resulted in a mean of 0.157 and a standard deviation of 0.549. These results reveal that the predictive validity of holdout pairs is low. Furthermore, based on the individual conjoint part-worth estimates we examined the difference between the predicted overall utility for their self-constructed predicted optimal co-op and the predicted overall utility for the stated self-constructed optimal co-op. The distribution of the differences across all respondents has a mean of 1.89 and standard deviation of 1.38.

Table 3. Estimated Mean Part Worths (MPWs) and Factors Importance (N = 90)

Attribute	Level	Estimated MPWs	St. Dev. of MPWs	Factor Importance
Business	Entrepreneurial Market-Oriented Organization	0.287		
Issue/Scope	Intermediary Organization	-0.287	0.562	19.9%
Corporate	*VTN*: governed by Board of Directors (Members)	0.058		
Governance	*The Greenery Ltd.:* governed by Managers under the supervision of the Board of Directors of *VTN*			
	VTN: governed by Managers under supervision of Board of Directors (Members)	-0.058	0.583	4.2%
	The Greenery Ltd.: governed by Managers under Supervision of Professional Supervisory Board.			
Product-related	Managers	0.161		
Decision-Making	Members	-0.161	0.647	11.8%
Financial	General reserves	-0.254		
Structure	Individualized equity	0.254	0.515	18.7%
Members'	Product price	-0.265		
Benefits	Product Price & Return on Capital	0.265	0.542	19.5%
Product Quality	General grading of products	-0.330	0.578	24,3%

In order to identify whether or not respondents that scored low on one measure of predictive validity (Tucker coefficient), also scored low on the other measure of predictive validity (self-constructed optimal co-op) we compared their results. Hence, in order to examine the relationship between the two measures we summarized data that fall into these two predictive validity measures through crosstabulation estimates. Although the correlation between the two compared variables was low (Cramer V = 0.259) and not statistically significant ($p > 0.05$), there were serious indications that 6 respondents

performed badly in both measures. In addition, we counted the number of reversals per respondent for the holdout pair (whereas predicted sign of holdout part worth estimate was not equal to the observed sign), and the number of reversals per respondents for the self-constructed MC (whereas selected level was not equal to the level we predicted that one should select). Again, the strength of the relationship was not found significant ($p > 0.05$) and the correlation was found low (Cramer V = 0.223). Nevertheless, we found 24 respondents have a high degree of association and fall into both cases.

Table 4. Predicted Overall Mean Part-Worth Estimates (OMPWs) and Comparison of Actual and Estimated Rankings (N = 90).

MC Profiles	OMPW Estimates	Preference Ranking	
		Estimated	*Actual*
MC1	1.241	1	1
MC2	0.060	4	4
MC3	-0.342	6	5
MC4	0.373	2	3
MC5	0.250	3	2
MC6	-0.848	8	8
MC7	-0.502	7	7
MC8	-0.120	5	6

All in all, we considered that only 90 respondents out of the total of the sample (N = 120) carried out the conjoint task consistently. Hence, the predictive validity of the conjoint part-worth estimates turned out to be relatively low for 30 respondents. Because our part worth estimates were on a common scale, we computed the relative importance of each factor directly for the 90 remaining respondents (see table 3). The factor that scores with the highest relative importance is the *Product Quality* (24,3%) followed by Business Issue/Scope (19,9%), Members Benefits (19,5%), and Financial Structure

(18,7%). The respondents attach less relative importance to Product-related Decision-Making (11,8%) and even less to the Corporate Governance (4.2%).

Table 5. Principals' Most Preferred MC Structure Model

The Greenery's Scope/Concept	Entrepreneurial market oriented organization
Corporate Governance	*VTN:* governed by managers under supervision of BOD (Members) *The Greenery Ltd.:* governed by managers under supervision of professional Supervisory Board
Product-related Decision-Making	Members
Financial Structure	Individualized Equity
Members' Benefits	Product price & Return on Capital
Products' Quality	Specific grading of products

To examine the ability of our conjoint model to predict the actual choices of the respondents, we predicted preference order by summing the part worths for the 8 different combinations of levels and then rank-ordering the resulting scores. Hence, comparing the predicted preference order to the respodents's actual preference order we assessed the predictive accuracy of our model. According to these results (see table 4) the most preferred model is the first one in order (MC1). For this MC model (see table 5) both, actual and estimated, rankings are consistent. Nevertheless, it should be mentioned here that only half of the estimated part-worths predict the preference order perfectly for the 90 respondents. This indicates that the preference structure was not so successfully represented in the part-worth estimates and that the respondents did not make choices fully consisted with the preference structure.

5. Discussion and Conclusions

The structuring of market-oriented organizational structures is underutilised in the field of agricultural economics and marketing. Nevertheless, under present conditions members start re-structuring their processes in their co-ops because old balances have changed. Thus, it seems that there is a gap between what practice is confronted and with and what theory offers. The engagement between traditional co-op principles and the system-driven co-op behaviour demand the acceptance that new co-op organisational structures are required. Hence, the important question relates to the future structural forms of co-op firms. Since, there is no a clear-cut commonly accepted understanding as to which are these structural attributes of a co-op firm, we argue that concepts developed in agricultural economics, marketing and organisational theory could provide a fruitful integration and improve our understanding about re-structuring of co-op firms. We view a co-op firm as coalition and we propose the conceptualization of a principal-agent behavioral relationship. Within this framework we investigated the principal preferences (farmer-members) on the organizational structures of their agents (co-ops). The structure of the co-op consists on the behavioural relations developed among the principals and the strategic organisational apsects of the agent itself. We argue that theoretical application of our behavioural framework offers a way of modeling how co-op firms can be internally structured while preserving the preferences and interests of members to patronize and control the organization.

More specifically, our framework proposes that the success of modern co-ops, in holding their principal interests and at the same time being market-driven market, depends on their principals' preferences related to their developed behavioral

interrelationships of their joint economic activity. Hence, their investment-driven business nature can be enhanced. This can be supported by our results, which provide evidence that member's most preferred a MC structure (see table 5) consisting of individualized equity shares and that allocation of benefits have to be based, next to product price, on capital awards. In addition, members prefer their agent behaving as an entrepreneurial market-oriented organization, and they express their preference to develop a more direct link with their market segments by revealing a strong preference for maintaining a grading line for specific buyers. The agent, according to the information that members display, have to be governed by hired managers under the supervision of the BOD, while the necessity for a professional supervisory board is revealed.

Finally, we recognise that our study faces two major limitations. First, the predictive validity of our conjoint-part worth estimates turned out to be relatively low. Thus, it remains to be investigated whether the low predictive validity is due to particular groups of respondents, or to the fact that respondents had to react to a multiattribute experiment, which was not fully comprehensible for them. Second, our study's proposed conceptual framework is limited by the assumption that co-op participant preferences are not conflicting. It does not address the issue of group choice when the preferences of the members of a group are at least partially conflicting. However, we believe that extensions of this model ought to consider that co-op members may not be homogeneous with respect to the utility that they attach to particular attributes of the co-op. This is because member firms differ from each other in many ways, the most important being the specificity of production. Therefore, future research agenda on co-op structures must address the increasingly important issue of members' heterogeneity in preferences. This

could be modeled by assuming that there are different group of members, and that member preferences are homogenous within groups, but heterogeneous across groups. Therefore, member segments would be identified and therefore the current conceptual framework would be placed in a more dynamic context where specific member-segments reveal their preference for co-op's organizational modes.

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