Measuring performance of small and medium scale agrifood firms in developing countries: Gap between Theory and Practice

Conceptual paper

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Abstract

Globalization and increasing population of middle income classes in developing countries has led to increased market opportunities. These markets are associated with demand for traceability, food safety and quality standards (Webber and Labaste, 2010). This requires the chains to be competitive and ability to manage and evaluate the performance of the supply chain becomes paramount. Performance measurement is defined as the process of quantifying efficiency and effectiveness of an action. In the recent literature, performance measurement has gained attention in the agri-food chains. Different methods have been proposed in marketing and supply chain management literature to measure supply chain performance such as Activity-Based Costing (ABC), Balanced Scorecard, Economic Value Added (EVA), Multi-criteria Analysis (MCA), Life-cycle Analysis (LCA), Data envelopment analysis (DEA) and Supply Chain Council's (SCOR model). Despite the existence of these measurement metrics, there is lack of consensus on what determines the performance of supply chains which complicates the selection of one measurement system in agrifood chains. The measures may not often be applicable for small and medium size agribusiness firms especially producer organizations in developing countries. Since they are not well structured, do not often collect information which are often needed to feed the complex models. We therefore propose a conceptual model for measuring marketing performance based upon five constructs: effectiveness, efficiency, adaptability, food quality and customer satisfaction.

Introduction and background

Globalization and increasing population of middle income classes in developing countries has led to increased market opportunities (Pereira and Csillaga, 2004). These markets are associated with demand for traceability, food safety and quality standards (Webber and Labaste, 2010). This requires the chains to be competitive and ability to manage and evaluate the performance of the supply chain becomes paramount.

According to Neely *et al*. (1995), performance measurement is defined as the process of quantifying efficiency and effectiveness of an action. Performance measure is a metric used to quantify the efficiency and / the effectiveness of an action and therefore needs to be reviewed by management in order to determine whether the firm is achieving its objectives or not. In the recent literature, performance measurement has gained attention in the agri-food chains (Aramyan *et al*., (2006); Aramyan *et al.* (2009); Chaowarut (2009); Shen *et al*. (2013) and various performance measurements measures have been used. The focus has been on the supply chain performance measures. Supply chain performance refers to the degree to which the supply chain fulfills the end-users and the stakeholder's requirements concerning the relevant performance indicators at any point in time (Van der Vorst, 2006).

Different methods have been proposed in marketing and supply chain management literature to measure supply chain performance such as Activity-Based Costing (ABC), Balanced Scorecard, Economic Value Added (EVA), Multi-criteria Analysis (MCA), Life-cycle Analysis (LCA), Data envelopment analysis (DEA) and Supply Chain Council's (SCOR model). However, Aramyan *et al*. (2006) discusses the advantages and disadvantages of these methods and their inappropriateness to measure performance in agrifood chains. Aramyan *et al*. (2006), further proposed a model for measuring performance in agrifood chains which composed of four constructs; efficiency, responsiveness, food quality and flexibility.

Despite the existence of these measurement metrics, there is lack of consensus on what determines the performance of supply chains which complicates the selection of one measurement system (Van der Vorst, 2007). This makes supply chain performance measurement a challenge. Many attempts have been made towards the development of measurement systems however; none has been successful in practice (Van der Vorst, 2007).

Further, most models basically concentrate on measuring the performance of actors or the entire value chain in a more developed value chains as big enterprises often related to large scale

firms with structures in mainly developed countries (Europe, U.S.A). Such firms may often have well-structured functional units including records, marketing departments as compared to producers, producer organizations, small and medium-scale enterprises.

The measures may not often be applicable for small and medium size agribusiness firms in developing countries. Since they are not well structured, do not often collect information which are often needed to feed the complex models. Developing country agrifood small and medium enterprise firms are characterized by little or no expertise. The management may comprise of one person is in charge of the business and in most cases not skilled. Limited access to capital, so their operating capital is very low and low dominant position in the consumer market, some small and medium scale enterprises (SMEs) are limited to working in small markets, so their operations do not have a significant impact (Anguilera-Enriquez *et al.,* 2011).

In agrifood chains, marketing is a key aspect as it determines how the finished products of the chain can be delivered to the end-users. "*What you measure is what you get*" (Ambler, 2000). However, to the best of our knowledge no study date examine the marketing performance of agri food chains and more specifically within the context of small and medium scale enterprises. Frösen *et al*. (2013) cited that the ability to assess marketing performance in an accurate manner enhances business performance.

From literature, most studies have focused on either processing or manufacturing firms with little or no attention given to producers and other small and medium enterprises in the chain. More ever, most of the marketing challenges especially for fresh produce are observed in this segment of the chain. The key aspects of agrifood supply chains have been summarized by several authors (Aramyan *et al*., 2006, Spiegel, 2004, Van der Vorst, 2000).

The aim of this article is to provide a set of indicators which will be relevant for measuring the marketing performance of small and medium scale agrifood firms. The article identifies the key performance indicators which may be suitable for these enterprises in view of their limitations. The objectives of this study are: to review the existing literature about performance indicators and develop a model for measuring marketing performance in small and medium scale agrifood firms.

The remaining sections of the paper is organized as follows; characteristics of agrifood chains, definition of marketing performance, review of the models and metrics used in measuring marketing performance, empirical studies in agrifood chains on marketing performance

measurement, determinants of marketing performance and a conceptual model for measuring marketing performance in agrifood chains.

Characteristics of agrifood supply chains

The key characteristic of agrifood chains is the seasonality in production. This requires global sourcing. There is need to maintain product safety as result of increased consumer attention for both product and method of production. There is variability in process yield in terms of quantity and quality due to biological variations, seasonality and factors connected to weather, pests, and other biological hazards.

The agrifood are more perishable, more sensitive to external influences (e.g. temperature, vibration, light), often of high monetary value, more demanding in terms of logistics and insurance (Fischer, 2010). The perishability of agricultural and food products requires efficient logistic processes, to move the product through the chain as rapidly as possible and to maintain valuable quality and safety characteristics (Bijman *et al.,* 2006). It also requires conditioned transportation. These characteristics together with the characteristics of producer, small and medium scale enterprises require different indicators in measuring the marketing performance.

The concept of marketing performance

Marketing performance is a multidimensional construct (Sampiao *et al*., 2011; Morgan *et al*., 2002). It is composed of effectiveness, efficiency and adaptability (Morgan *et al*., 2002). Marketing performance concerns market place awareness and reactions to the realized positional advantages (Morgan *et al.,* 2002). Marketing performance can be defined from three different perspectives; customer, competitor and internal perspectives.

From customer perspective, it concerns the cognitive and affective responses (e.g. brand awareness and quality) and the subsequent behavior consequences (e.g., purchase decision making and actions) of prospects and customers in the target market to the realized positional advantages achieved by the firm. From an internally oriented perspective, marketing performance is manifest in the subsequent effect of customer behavior as seen in terms of unit sales and sales revenue. From the competitors' perspective is seen in terms of share of mind or market share. In this paper our focus is on an internally oriented perspective and also how the firm relates with other actors.

Models and metrics for measuring marketing performance

Research in marketing performance has been ongoing especially in the marketing, business management and logistics literatures. There are a number of measures or performance metrics or indicators that have been proposed to measure the performance of a firm. These measures having been changing over time; there has been a move from financial measures to non-financial measures and from uni-dimensional and multidimensional measures (Clark, 1999). The financial measures include; sales, profits and revenues (Clark, 1999; Ambler *et al*., 2004) while non-financial measures include; market share, quality of services, adaptability, customer satisfaction, customer loyalty and brand equity (Ambler *et al*., 2004); multidimensional measures: effectiveness and efficiency and input measures: marketing assets, marketing audit, marketing implementation (Clark, 1999).

Clark (2000), proposed another model for measuring marketing performance based on efficiency, effectiveness and adaptability. He defined efficiency as a comparison between outputs from marketing activities to inputs of marketing, with the goal of maximizing the former relative to the later (Bonoma and Clark, 1988) while effectiveness as what was expected from the marketing activities and adaptability as the use of the external environment of the firm to evaluate performance. How the firm adapts to the environment operationalized as the role of competitors and the overall trend in the environment, e.g., Regulation, consumer trends….., role of marketing partners e.g. distribution channel members, suppliers and service firms in supporting marketing programs.

Rust *et al*., (2004a), describes marketing performance as consists of sequentially of customer impact, market impact, financial impact and impact on firm value. More ever, Ambler and Roberts (2008) discussed a number of financial performance measures focusing on their advantages and disadvantages. The measures are Return on Investment (ROI), discounted cash flows (DCF), such as net present value, brand evaluation, customer life time value and customer equity and Return on customer (ROC) and he concluded that there was nothing like "*silver*" measures in marketing performance assessment.

The most recent models proposed include: Pimenta da Gama (2011); Frösen *et al*., (2013) and Mintz and Currim (2013). Pimenta da Gama (2011) emphasized the need of marketing to be effective and efficient. The marketing performance model developed included the evaluative criteria and factors influencing process effectiveness. The model is based on efficiency, effectiveness and adaptability. He pointed out that marketing is short of adequate assessment measures, in terms of

the connection between actions and results. There is limited attention in literature and most of the performance measures have focused more on results than on the processes and systems that enable them (O'Sullivan *et al.,* 2009, Grewal *et al.,* 2009).

Frösen *et al*., (2013) studied the dimensions of marketing performance which underlie Marketing Performance Assessment (MPA) systems and provided the taxonomy of MPA systems in use. The contextuality of the MPA systems and demonstrated empirically how they differ according to business context reflected in the firm- and market specific characteristics. The relationship between different MPA systems and financial performance. Mintz and Currim (2013), focused on what drives the manager's use of marketing metrics or financial metrics in marketing mix decisions. The factors identified as important were: firm strategy, metric orientation, firm and environmental characteristics.

The table below summarizes the different measures that have used in measuring marketing performance.

Authors	Marketing Performance measures
Feder (1965); Bonoma and Clark (1988)	Efficiency and effectiveness Efficiency-Profits, sales, market share and cash flow
Clark (1999)	Financial measures-Sales, profits and revenues Non- financial measures-market share, quality of services, adaptability, customer satisfaction, customer loyalty and brand equity; Multidimensional input measures: marketing assets, marketing audit, marketing implementation
Clark (2000); Morgan *et al*. (2002)	Efficiency, effectiveness and adaptability
Rust *et al*. (2004a)	Customer impact, market impact, financial impact and impact on firm value Financial performance measures-sales, profit and shareholder value Customer impact- awareness, Marketing asset metrics- customer equity and customer lifetime value Market impact-market share, sales and market position Financial impact-ROI, internal rate of return, net present value, economic value added-these affect the financial position of the firm-profits, cash flows Firm value-EVA, MVA (market value added) Tobin's q- the ratio of market value of the firm to the replacement cost of its tangible assets which include ; property, equipment, inventory, cash and investment in stock and bonds
Ambler and Kokkinaki (2002)	Innovativeness, consumer/end user attitudes, direct/trade customer, competitive market and financial measures
Ambler *et al.*, 2004	An upgrade of the above and includes inputs (marketing activities), intermediate of memory (awareness and satisfaction), competitive measures (relative consumer satisfaction, perceived quality)consumer behaviors (loyalty, number of complaints..), financial outcomes (sales, growth margins & profitability)
Woodburn (2006)	Return on marketing investment
Ambler and Roberts (2008)	ROI, DCF, ROC
Tobin,(1969, 1978)	Tobin's q
Srivastava *et al*., 1999	Economic Value Added (EVA)
Berger and Nasr, 1998; Dywer *et al.*, (1989)	Customer Life time value (CLV)
Keller, (1993)	Brand value
Farris *et al*. (2006)	Categorizes marketing metrics into: Share of hearts, minds and markets; Margins and profits; Product and portfolio management; customer profitability; sales force and channel management; pricing strategy; promotion; advertising media and web metrics and marketing and finance

Lehmann (2004),	Non-financial metrics in marketing: Customer value and product market performance
Frösen *et al*., (2013)	Brand equity, market position, financial position, long-term firm value, innovation, customer feedback, customer equity, channel activity, sales process
Mintz and Currim (2013)	Marketing mix activity: firm's stated marketing; customer satisfaction, loyalty and market share; financial (sales, profitability and ROI). Return on sales, return on marketing investment, and Economic value added.
Kaplan and Norton (1992)	Balance score method
Neely *et al*. (1995)	Activity-Based Accounting (ABC)
Petersen *et al*. (2009)	Focuses on current and future metrics in measuring marketing performance. The current metrics are categorized into Transaction, market and competitive information at customer and store level. Transaction information at customer level include: profit, recency…and store level: total revenue…. The future metrics at customer level include: Customer Lifetime value, Customer referral value and Net promoter. While at store level: word of mouth, customer equity, brand equity and customer base growth Financial outcome: Shareholder value and stock price
Sampaio *et al.*(2011)	Customer vision- satisfaction, complaints and commitment; financial-profits, ROI and sales; product vision-product knowledge and perceived quality; market and innovation-market share and product availability
Pimenta da Gama (2011)	Marketing performance should be measured based upon five dimensions: marketing culture, marketing capabilities, marketing processes, marketing performance and financial performance

Measurement of marketing activities and actions is complex, involving both objective and subjective measures (Sampaio *et al.*, 2011). There are a number of marketing metrics that have been generated as result of increase in database technology, new distribution channels of goods and services and identification of new drivers of customer and firm value. The problem is not metrics but which metric are suitable for which firm.

Determinants of marketing performance

From the literature, marketing performance of a firm is determined by a number of factors. The structure and conduct of the market will affect the marketing performance (Rogers and Petraglia, 1994). According to (Duren *et al*. (2003), he found that managerial factors influence profitability,

firm factors influence performance (e.g., firm resources) (Schumacher and Boland (2005); Pendell and Boland, 2005), business strategy type and organization fit affects marketing performance (Vorhies and Morgan, 2003). Other studies show that market orientation and innovativeness are important determinants of relationship performance (Johnston *et al.,* 2009). Smallholder and medium scale enterprises, factors such as trust and reputation are key determinants of chain performance (Lumbregen *et al.,* 2009).

Empirical studies of marketing performance in agrifood chains

Empirical studies in measuring marketing performance of agrifood supply chains are limited. There are few specific studies which focus on marketing performance (Rogers and Petraglia (1994), Vorlaufer *et al.,* (2012)). Most studies focus on measuring supply chain performance, relationship performance, and export performance (Aramyan *et al.,* 2009, Gyau and Spiller, 2010, O'Toole and Donaldson, 2002, Duffy and Fearne, 2006). More ever, the measures used in these studies are either financial or non-financial measures. There are few changes in the non-financial measures depending on the context whether it is supply chain performance, relationship performance or export performance. The table shows a summary of empirical studies on performance measurement in agrifood chains.

Author (s)	**Type of performance**	**Commodity**	**Country**	**Theoretical perspective**	**Methods**	**Performance measurement**
Subervie and Vagneron (2013)		Lychene	Madagascar	-		Traded volumes, price offered
Rogers and Petraglia (1994)	Cooperative marketing performance	Food processing		Cooperative theory & Industrial organizational theory (SCP)		Price-cost margin and market share
Johnson *et al*. (2009)	Firm financial performance of food companies	Food industry (processors)	US	Marketing orientation theory	Structural equation modeling	Total market share growth, total sales growth, return on sales, and return on asset
Vorlaufer, *et al.* (2012)	Collective marketing performance	Coffee-Collective action			Ordered Logit model, Ordinary Least Squares (OLS)	Sales, revenue, quantities of coffee berries delivered per member
Kyriakopoulos *et al*. (2004)	Cooperative performance	Agriculture and horticulture	Dutch	-	Linear regression model	Market share, profit margin, growth of cooperative

						firm relative to main competitors
O'Toole and Donaldson (2002)	Relationship performance (buyer/supplier)	Manufacturers in electronics, engineering and telecommunications	UK	Transaction Cost Economics (TCE), Agency theory, channel theory	Key informant and mail survey	Sales and profitability, Satisfaction, quality and dependence
Duffy and Fearne (2006)	Supply chain performance/ financial performance	Fresh-produce industry	UK	Channel theory: behavioral approach & political economy (SCP)	Multivariate analysis	Reductions in costs, sharing benefits, changes in sales and profits, Suppliers beliefs and expectations for the future prospects of the relationship. Future growth, current costs and sales
Gyau and Spiller (2010)	Inter-firm relationship performance Exporters	Fresh fruit and vegetable	Ghana and Europe	TCE	Principal component analysis and ANOVA	Costs , perceived profits, Commitment, flexibility, satisfaction and information flow
Johnston *et al*. (2004)	Relationship performance	Manufacturing and purchasing firms	Canada	-	Key informants & mailed questionnaire (SEM) Partial Least Squares (PLS)	Long term profitability, net profits, short- and long- term costs, growth Equality , innovation
Vorhies and Morgan (2003)	Marketing performance			Configuration theory, marketing theory, resource - based theory		(Marketing effectiveness and efficiency) Effectiveness- Market share, sales growth, market position Efficiency – ratio of marketing & selling expenses to

						gross revenue
Nasiruddin, *et al.* (2011)		Grains, fresh produce & meat products	Australia	Resource-based view, knowledge & TCE	Key informant interviews	Reliability, responsiveness, flexibility, asset and cost
Fischer (2010)	Export performance					Market share growth

Critics about the models and metrics for measuring marketing performance

Most commonly used accounting based metrics such as sales, profits and margins (Ambler *et al*., 2004). These metrics are disadvantaged in that they are considered static and backward-looking, ignoring long term marketing value to the firm (Clark, 2001; Chakravarthy, 1986; Ambler *et al.,* 2004; Srivastava *et al.,* 1998, Leba and Euske, 2002). More advanced financial measures with long term perspective, such as Tobin's q (Tobin, 1969, 1978), economic Value added (EVA) (Srivastava *et al.,* 1999), the firms market value (*ibid*.), customer life time value (CLV) (Berger and Nasr, 1998; Dywer *et al*., 1989), and brand value (Keller, 1993), are largely drawn from retrospective data and subjective assumptions about the future so there are suggestive at best (Lukas *et al*., 2005). These measures may not be suitable for small firms e.g., producers and small business. This is because the data needed to feed into the models is not readily available to the public domain and are historical in nature (Chong *et al.,* 2008).

The proposed models and metrics for measuring marketing performance are from the perspective of the firm. The study of chains and networks requires performance metrics to measure the effectiveness and efficiency of chain organization and management. Agrifood chains are composed of a number of actors who play different roles along the chain. Performance metrics measure the value added at each stage of the chain, evaluate work done and can help managers to direct their activities (Bijman *et al.,* 2006). From the literature, we propose the model below:

Proposed model for measuring marketing performance of small and medium agribusiness enterprises

From the literature and the nature of agrifood supply chains, it requires a different framework in the measurement of their marketing performance. The conceptual model below is proposed; marketing performance can be measured based upon five constructs: effectiveness, efficiency, adaptability, food quality and customer satisfaction.

Due to the changes in agrifood market environment, there is a lot of emphasis on food quality and safety (Bijman *et al.,* 2006). For agrifood chains to be competitive in the marketing, the issue of food quality is paramount.

Food quality is multidimensional in nature (Fischer, 2010). In literature, there are four different definitions; it is referred to as excellence, superiority, as value conforming to specifications, or as a meeting or exceeding customers' expectation. We consider the fourth definition of quality as being when the consumer is happy with the product. Quality can be easily analyzed through measurable characteristics such as reliability, durability, health and safety (Ninni *et al.,* 2006). It becomes more subjective when it refers to intangible characteristics such as design, taste and flavor which is the case of agrifood chains.

According to Aramyan *et al*. (2006), quality can be measured based on the either intrinsic or extrinsic indicators. The intrinsic indicators include; flavor, texture, appearance, shelf life and nutritional value. These are objective and directly measurable. While extrinsic attributes include; the amount of pesticide use, type of packaging material, use of biotechnology. The purchase of a product is based upon both intrinsic and extrinsic attributes. According to Fischer, (2010), the quality can also be measured based on the marketing costs and product price.

The rise of food safety as one the most important issues in public and private concern has made different actors in the chain to be aware that assuring food safety of the final product requires proper alignment of the activities of all chain participants. In the case of producers, small and medium agrifood enterprises, the aspects of healthy and safety of the products, appearance, shelf life, nutritional value, amount of pesticide use, type of packaging material, Marketing costs and product price are important.

Effectiveness

A Chain may be efficient but may not be effective (Crawford, 1997). Effectiveness is defined as the pschological distance between what is expected to the result from the marketing program and the results returned (Clark, 2000). In reference to developing countries, More effective programs will have results exceed the expectations of the managers and the overall performance should be rated higher. Effectiveness may act as a mediating variable in the judgements of marketing performance. The measures for effectivness include: sales growth, market share growth, profit gross and market position.

The overall performance of a given agrifood chain cannot be merely considered as the sum of the individual performance of its agents. Its also includes the institutional environment which affects the coordination mechanism.

Adaptability

While efficiency uses an internal inferent to judge performance, an adaptability approach uses external inferent. How well adapted is the marketing program to the external environment. The external environment is important to evaluation of any marketing performance. * According to structure-conduct- performance thoery, the environment is cited as a key determinant of marketing performance. Adaptability has multiple effects on percieved performance (Clark, 2000) and can be divided into three dimensions: environmental unfavourability, competitive unfavourability and partner favorability.

Efficiency

Efficiency it is dangerous to rely upon quantitative data when assessing the efficiency and fairness of a given marketing system, or the efficiency of a particular market participant. A new technological development may improve a firm's operational efficiency and permit it to grow very large. However , this growth may reduce the number of firms and thereby affect structure and competition in the industry , and in turn perhaps lower price efficiency (Crawford, 1996)

Changes in the cost of marketing influence customers' satisfaction and the efforts to increase customers' utility often affect marketing costs. A new technological development may improve a firm's operational efficiency and permit it to grow very large. However, this growth may reduce the number of firms and thereby affect the structure and competitiveness in the industry, and in turn perhaps lower price efficiency.

Indicators of measuring efficiency

For the processor: stable and regular supply of inputs that meet quality criteria and are delivered at an affordable cost (da Silva *et al.*, 2010) while for a producer regular out let for their products and providing a good price for the producer. In developing countries, it is not common that domestic agrifood products face the competition of imports. The relative shares for domestic and foreign products could also be taken as performance indicators.

Customer satisfaction; Are consumers getting the products demanded in terms of quantity, quality, timeliness and prices? (da Silva *et al.*, 2010).

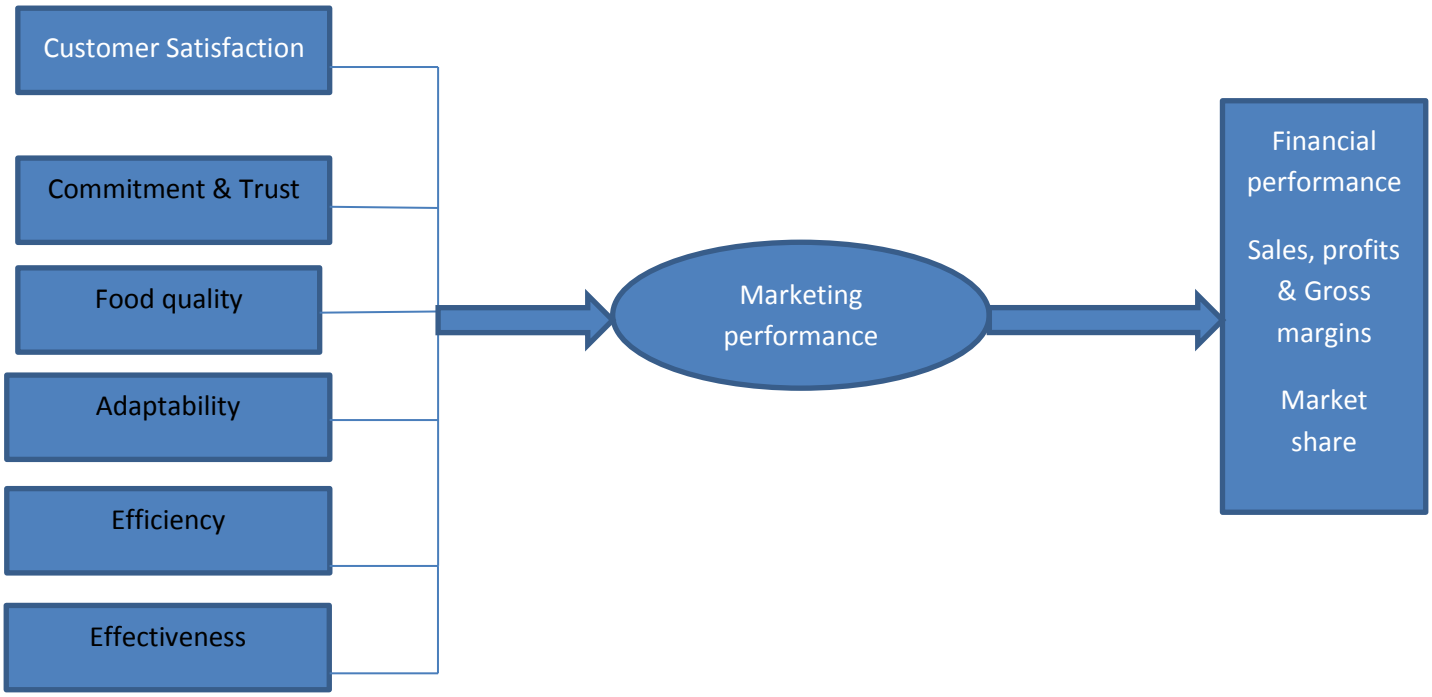

Fig 1: A conceptual Frame work for measuring marketing performance in agrifood chains.

Conclusion and future research

This paper reviewed the available literature about the marketing performance measurement methods and metrics. Based on the existing body of research a conceptual frame work has been suggested for measurement of marketing performance in agrifood supply chains. This framework needs to be tested for its feasibility and measurability of the proposed performance metrics.

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