



Review of Competitive Advantage Measurements: Reference on Agribusiness Sector

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Author's contribution

The sole author designed, analyzed and interpreted and prepared the manuscript.

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ABSTRACT

Aim: In the rapid pace of competition in the current business environment, a firm or an industry is required to be more competitive and hostile. Competitiveness of the global agribusiness has raised concerns among economists and policy makers about the need for competitive advantage in the agribusiness sector of developing countries like. The concept of competitiveness could be viewed as an outcome and as such, superior economic or market performance is considered as an indicator of competitive advantage. Unique measurement of competitive advantage in agriculture sector hence provides supplementary value for identifying factors enhancing competitive advantage.

Approach: This paper attempts to critically review measurement criteria of competitive advantage at firm level, specially concerns with agribusiness sector. The paper undertakes a critical review of the available measurement variables of competitive advantage.

Value: The proposed measurement items of competitive advantage could be used for valid measurements in future empirical studies, especially in agribusiness sector, after testing the validity and reliability. Further, review of comprehensive measurement dimensions of competitive advantage could enhance practitioners' attentiveness to identify the sources of competitive advantage of their firms.

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1. INTRODUCTION

The term 'competitiveness' refers to a comparative measure between companies within an industry or its external environment [1], which is closely related to the presence of competitive advantage [2]. Hence, both competitiveness and competitive advantage represent a multidimensional concept which can be described at the national, industry and firm level [3,4]. Competitive advantage is one of the important factors to retain long-term prosperity of a nation [5]. As Chikan [6] indicates, there is no competitive nation without having competitive firms and nation's competitiveness strongly depends on firm's competitiveness. As such, firm level competitive advantage has insofar received the greatest attention from researchers and practitioners [7,8,5]. This is not difficult to understand since in this rapid pace of competition, each firm is required to be more competitive and hostile. At the level of individual firms, competitiveness is the ability of a firm to survive and prosper. Creating and sustaining competitive advantage hence requires firms to always stay ahead of competition [9].

Since competitive advantage can serve a useful scientific purpose which is beneficial to all industries and the agribusiness sector is no exception [10]. In line with the recent trends in the global agribusiness sector, which are more industrialized, competitive, technological, and managerial intensive [11], competitive advantage of agribusiness has generated much interest in the academic literature [12]. Specifically, competitiveness of the global agribusiness has raised concerns among economists and policy makers about the need for competitive advantage in the agribusiness sector of developing countries [13]. Agricultural sector plays an important role in the development of any nation's economy [14] while contributing significantly from agricultural exports, employment opportunities, and expand the production base of any nation.

Whilst the sector is recognised as a provider of major livelihood support to many people in developing countries [15], it is increasingly facing competitive challenges due to technological innovation and changes in global economies and climate [12]. It is apparent that the agribusiness sector needs to achieve competitive advantage if

it is to meet those challenges. Hence, it is timely to place more concern on the sources of competitive advantage of this sector. There are two fundamental reasons to concentrate more on sources of competitive advantage [6]; conceptualized competitive strategies by Micheal Porter and appearance of competitiveness report by international organizations like European Union, Organization for Economic Co-operation and Development (OECD), and World Economic Forum. Further, Industrial Organization Economics (IOE) addressed the source of competitive advantage of a single firm with form of market structure, behavior of firms and the social benefits, and costs associated with market structure [16].

All being said, agriculture is the major livelihood support in the developing countries [15]. The competitive advantage of this sector has become an interesting field of academic study due to the recent trends in the global food and agribusiness sector, specifically size and the continuous growth of agricultural exporting. These facts have paid the attention on sources of competitive advantage of agribusiness farm. Identifying the factors associated with competitive advantage of agribusiness farms will enable farmers to raise the economic benefits from the agricultural products and make that model economically viable to enhance competitive advantage. Depperu [2] emphasize that competitiveness can be identified as a dependent or an independent variable. As a dependent variable, competitiveness is considered as a driver and therefore considered as an outcome of firm's competitive advantage. As the view of competitiveness as a driver, sources of a firm's competitive advantage are included. Competitive advantage as an outcome, measurement criteria need to be considered in order to measure competitive advantages.

In concern with sources of competitive advantage, there is a requirement of having a valid and reliable measurement/s of competitive advantage [17]. Hence, this study attempts to critically review measurement criteria of competitive advantage in general view as well as relating to agribusiness sector. A better understanding of measurements of competitive advantage of agribusiness sector hence provides the necessary economic framework to enhance competitive position at both the domestic and global markets.

2. CRITICAL REVIEW

2.1 Competitive Advantage Definitions

Prior definitions of competitive advantage most commonly focus on the indicators such as profitability, productivity, and market share [18]. Competitive advantage is regarded as part of the foundation for high level performance [19]. A firm's ability to improve the quality of its products, reduce the costs of its products, or enlarge market share or profit is known as competitive advantage [20]. Porter [5] defines competitive advantage at firm level as productivity growth that is reflected in either lower costs or differentiated products that charged premium prices. Smith [21] indicates that competitive advantage is the extent to which firms in a specific region can compete with firms elsewhere. Newbert [22] defines competitive advantage as the degree to which a firm explores its opportunities, neutralizes threats and reduces cost. However, Sigalas [17] argue that exploring opportunities, neutralizing treats and reducing cost represent the degree of competitiveness of a firm.

From the given definitions, competitive advantage appears to be a relative term. As concluded by Esen [23], competitive advantage is a situation defined and measured against a competitor. As such, there is no common definition of the term competitive advantage, either in theory or in practice [20,24,17] highlight that the term competitive advantage does not have a uniform definition both in the national and international level literature. The theory of competitiveness is constantly developing.

The operational definition of competitive advantage can be expressed as a specific way of using the resources available and other precise activities to keep the firms separate from its competitors as well as to keep it active and growing [25]. From the given definition, competitive advantage consists of three characteristics [26] namely; long survival, difficult to imitate, and difficult to identify. However, this definition should be viewed as a generic than a specific one to guide future studies. The lack of having a uniform theoretical and operational definition causes to find unclear operationalization of competitive advantage.

2.2 Measurements of Competitive Advantage

In concert with the concept of competitive advantage, there is a rich literature foundation for measurements of competitive advantage in relation to different sectors or industries [27]. Competitiveness could be analyzed by using past performance indicators or potential competitiveness indicators [28]. For example, market share, productivity [29,30]; product cost, gross margin, returns on assets, net income, unit cost ratio [31]; total factor productivity [32]; financial performance (profit, sales growth, returns of investment), non-financial performance (customer satisfaction, employees growth [33]; and benchmarking, balanced scorecard [34].

While measuring firm level competitiveness; profitability, costs, productivity, and market share are often used indicators [2] because competitiveness is identical with performance. Competitive advantage enables a firm to earn profits that are higher than the average profit earned by its competitors [13]. Thus, profitability is a key variable for measuring competitiveness and turnover is a kind of profit margin that firms often have to rely [35]. The growth of market share is one logical realized consequence of the improvement of competitiveness. Therefore, market share of a particular product is considered as an indicator to measure the competitiveness of a firm or industry. The studies of [28,29,30,33,36] concluded that in order to measure the firm's competitive position, market share is an important indicator.

Having said so, productivity, market share, and profitability are traditional economic indicators which are seen as inadequate to measure competitive advantage at the firm level. This scenario is also similar to the agribusiness sector, measurement of competitive advantage of this sector relatively concerns with market share, productivity, profitability, and revealed comparative advantage (RCA) indices. The RCA index is widely used to measure competitive advantage in agricultural sector [37,38,39,40,41, 42]. The study of Notta [43], use market share, profitability, and productivity as measurement indicators of competitive advantage for the food and beverage manufacturing industry. Kozena [34] measure competitive advantage of agricultural sector utilising productivity as ratio indicator. Woodford [44] use productivity to assess competitiveness of dairy farming sector. In addition, Toit [31] employ profitability to

measure competitiveness of commercial milk producers in South Africa, while Yee [32] utilize total factor productivity of agricultural firms in South-eastern States.

However, the terms competitive advantage and performance are conceptually differed [22,45]. Competitive advantage refers to the economic value that has been created from the exploitation of a firm's resource-capability combination, whereas, performance refers to the economic value that the firm has created from their commercialization [22]. The competitive advantage proposition may show a better way to achieve superior performance of a [farm] [45] to achieve the desired target earnings of the sector. In this rapid pace of competition, farms are required to be more competitive and hostile. Whenever competitive advantage is present, superior performance is achieved and whenever superior performance is achieved, competitive advantage is presented [45]. Hence, performance measurement indicates are inappropriate to measure competitive advantage at firm level.

Further, there are certain limitations of productivity and profitability as the measurements of competitive advantage such as lack of availability and reliability of data, failure to measure quality level and innovation, and difficult to compare between industries [36]. Acknowledging that, [46] also emphasizes that the measurement points of competitiveness such as revenue, profit, and productivity can be quantified and accessible but sometimes those are difficult to quantify or access. Further, Singh [47] mention that partial productivity indices are not succeed due to fail to measure the technical progress. Moreover, productivity in the agricultural sector can be defined in different terms, namely land productivity, labour productivity and capital productivity. Hence, there is no universally accepted criterion to measure productivity. Notta [43] use labour productivity, whilst [34] employ land, material and labour productivity. Any measurement indicator of a firm's competitiveness should take into account a long-term rather than short-term orientation. The concept of profitability may be ambiguous because it requires the definition of a period of time over which the measurements are carried out. Hence, profitability could be referred to the short term or long period [2]. Those issues lead to research the indicators to measure competitive advantage rather than productivity [36].

Similar to the limitations of productivity and profitability dimensions, lack of availability and reliability of financial data on total market sales keeps market share away from the dimension of competitive advantage measurement. While competitiveness is often observed through changes in market share, a [firm]/country may hide its competitive weakness by manipulating [price]/exchange rate [29]. As such, although market share is one indicator that a firm can use to measure its competitive advantage [34], it may be problematic when analyzing aggregates. In the context of RCA, Latruffe [48] claims that the RCA measures competitive advantage at aggregate level rather than at firm level. In order to measure competitiveness at the firm level, assessment should include determinants from the firm level factors.

Therefore, in order to identify the factors affecting competitive advantage, there should be clear dimensions to measure competitive advantage of a firm. Sun [49] made a unique change to Porter's diamond model, arguing that three parameters of diamond model (factor conditions, demand conditions, and related and supporting industries) are covered in the fourth dimension of the diamond model, i.e. firm's strategy, structure and rivalry. Content validity of the model developed by [49] was confirmed by [50] who employed the same model to determine the factors affecting competitiveness of selected sectors.

Accordingly, firm's strategy, structure and rivalry get hold of the hardness of domestic competition. Strategy is needed to focus on effort and promote coordination activity. In global competition, rivalry is very important. The pattern of rivalry has an effect on the process of innovation and the ultimate outcome is international achievement. As Bakan [50] described it, the national diversities in business practices and approaches such as management manner and structure, relationship between work and management, and working morale, create advantages and disadvantages in competing in different sectors. Therefore, to measure competitiveness, firm's strategy, structure, and rivalry were used in the diamond model. However, firm strategy and structure compromise with firm's capabilities and system [51]. Prior studies have clearly highlighted that firm's management strategy and organizational system have significant impact on competitive advantage [52,53,54,55,51,56].

In order to overcome the limitations of prior measurements of competitive advantage, [57] propose four dimensions of measuring competitive advantage by combining the RBV theory, the blue ocean strategy, dynamic capabilities view, and the structural view. There are four dimensions such as supply chain management (SCM), product differentiation and innovation, organizational responsiveness, and cost leadership to measure competitive advantage of a firm. Vinayan [57] applied these four dimensions to measure competitive advantage in manufacturing firms in Malaysia and they suggested that the proposed model could be applied to other sectors' competitive advantage measurement as well.

Conversely, many studies [58,59,60,61,62,63, 64] have investigated the effects of SCM practices in terms of strategic supplier partnership, customer relationship, and information sharing on competitive advantage of firms. Inconsistencies appeared in SCM as a competitive advantage measurement and sources of competitive advantage still remain an issue of measuring competitive advantage. Hence, there is hesitation of exploiting SCM with the intention of measuring competitive advantage of firms.

Similar to the criticism of SCM, product innovation and quality also appeared as the dimensions of measuring competitive advantage and the factors affecting competitive advantage. The studies of [65,54,66,67,68,69] clearly identified that innovation is one of the main sources of competitive advantage. For example, the results of [65] reveal that innovation has positive effect on competitive advantage. Firms should show concern on creating and retaining resources and capabilities that can improve innovative strategies. On the other hand, [70,71, 72,73,74] demonstrated that product quality becomes a driver of competitive advantage.

It is also worth noting that there are considerable empirical studies, [13,29,43,75,73,36], which measure productivity, profitability or efficiency with the intention of assessing competitiveness. However, [35] claim that both profitability and productivity are determinants of competitiveness. Acknowledging that claim, Wijnands [76] insist that labor productivity is a determinant of competitiveness. Likewise, [48] indicates that domestic resource cost ratio (DRC) may be considered as a method of calculating competitiveness and that DRC may be also seen as a component of competitiveness.

The picture becomes more complex as several studies investigated the determinants of productivity and profitability [48]. Hence, [48] concluded that competitiveness is the general concept, and competitiveness is being determined by at firm level factors (size, structure, and social characteristics) or at macro level factors (factor endowments, government intervention, public investments, and climate conditions). Therefore, competitive advantage could be measured through general concepts such as, price/cost, net income, time, flexibility, sales growth, and employee growth. In order to measure firm's competitive advantage, some previous studies used subjective measurement indicators such as sales growth and employee growth [77]. The main reasons behind the selection of non-financial performance indicators are lack of human resources to establish performance measurement and there is no appropriate culture to collect data for decision making process [78].

Competitive advantage is adopted as a management or economics idea that is superior to the traditional economic indicators such as profitability, productivity, or market share [36]. However, traditional indicators can only reflect the historic quantitative facts. To provide customers with greater value and satisfaction than their competitors, firms must be operationally efficient, cost effective, and quality conscious. Besides financial and market-based indicators, other indicators such as innovativeness, ethical standards, social responsibility, and employee working conditions have to be considered [2]. Further, Depperu [2] argue that a single explanatory factor of firm performance is not an adequate indicator of competitiveness. Therefore, competitiveness is considered as a multidimensional construct, including a number of indicators jointly adapted to measure the concept.

In prior studies, competitive advantage deals with the dimension of value and quality, which could be listed as cost-based, product-based, and service-based [19]. Lower manufacturing costs and lower price products are included into cost-based advantage. Product-based advantage comprises higher product quality, packaging, design, and style. Firms can also achieve service-based advantage through product flexibility, accessibility, delivery speed, and technical support. Aforementioned empirical studies related to competitive advantage focused on aspects like operational efficiency, cost

Table 1. The definitions and measurement items of competitive advantage dimensions developed by Thatte (2007)

Dimension	Definition	Measurement Items
Price	The ability of a firm to complete against major rivals based on low cost/price	Offer competitive price Able to offer prices as low or lower than our rivals
Quality	The ability of a firm to offer product quality and performance that crates higher value for customers	Complete product based on quality Offer product that are highly reliable Offer product that are very durable Offer high quality products
Delivery dependability	The ability of a firm to provide on time the type and volume of product requited by customer/s	Deliver customer order on time Provide dependable delivery
Product innovation	The ability of a firm to introduce new products and features in the market place	Provide customized products Alter product offering to meet client needs Cater to customer needs for new features
Time to market	The ability of a firm to introduce new products faster than major competitors	First in the market in introducing new products Time-to-market lower that industry average Have fast product development

effective, quality, marketing, information technology, and innovation.

Considering prior studies' proposed measurements of competitive advantage and their limitations, especially factors which appear as measurement indicators and sources of competitive advantage at firm level, [60,64] developed five dimensions to measure competitive advantage construct, namely price/cost, quality, delivery dependability, product innovation, and time to market. These five dimensions in line with the cost-based, product-based, and service-based including operational efficiency, cost effective, quality, marketing, and innovation. These dimensions are employed by the studies of [79,80,72,22,63] to measure competitive advantage at firm level in different sectors. Table 1 illustrates the definitions and measurement items of competitive advantage dimensions developed by Thatte [64].

In line with the definitions of measurement dimensions, product innovation becomes critical factor to the agribusiness sector. Since, attributes of agricultural products are relatively same, it is difficult to characterize product innovation. It might be process innovation or new market exploration. Innovation can take the forms of a new product or service, a new structure, a new production practice, a new market or a new administration system [81]. Further, [22] integrated exploit market opportunities as measurement dimension of competitive advantage. In that dimension,

Newbert [22] argued that a firm could be competitive if it captivates basic resources earlier than its competitors. The firm gets first mover benefit than its competitors. Hence, exploit market opportunities might incorporate with competitive advantage dimensions developed by [64].

Aforementioned, it is a complicated task to reach a consensus on the methods of measuring competitive advantage in the agricultural sector. According to [2], a single explanatory factor is not an adequate indicator of competitiveness. Therefore, competitive advantage is considered as a multidimensional relative construct, including a number of indicators jointly adapted to measure the concept. Unique measurement of competitive advantage in agriculture sector hence provides supplementary value for enhancing competitive advantage.

3. CONCLUDING REMARKS

Firm competitive advantage is an unobservable construct [63] hence, measurements of unobservable construct will be carried out by latent variables [17].

In the context of agribusiness sector competitive advantage measurements, it relatively concerns of market share, productivity, profitability, and RCA indices. However, the review of literature highlights that there are certain limitations of market share, productivity, RCA and profitability as the measurements of competitive advantage

of agribusiness sector. Hence, to measure competitiveness at the farm level, assessment should include determinants from the farm level factors. Thus, based on levels of measurement classified as [60,22,64], competitive advantage of agribusiness farms can be operationalized using price/cost, quality, delivery dependability, time to market and exploit market opportunities dimensions. The items include in five dimensions of the competitive advantage will be fifteen in number, which are derived from their operational definitions. However, the values of the items depend on whether the items are measured through scale or ratio [17].

Since this paper only intends to report on the findings from the pilot study, future studies should incorporate more in-depth analyses to determine model fitness the proposed dimensions and measurement items. Hence, the proposed measurement items of competitive advantage of agricultural sector farms need empirical assessment with respect to the respondents who are representing agricultural sector. The assessments of content validity, convergent validity, discriminant validity, predictive validity, concurrent validity, reliability, inter-rater reliability, and test-retest reliability need to be carried out in order to develop a reliable and valid measure of competitive advantage. In so doing, scholarly community will have an empirically tested measure of competitive advantage. Hence, the newly developed measure of competitive advantage could be used for valid measurements in future empirical studies, especially in agribusiness sector. Finally, review of comprehensive measurement dimensions of competitive advantage could enhance practitioners' attentiveness to identify the sources of competitive advantage of their firms.

COMPETING INTERESTS

Author has declared that no competing interests exist.

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