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Sustained Competitive Advantage in Agribusiness: Applying the Resource-Based Theory to Human Resources

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Abstract

Employees are a strategic resource for agribusiness firms to achieve sustained competitive advantage (SCA). The resource-based theory (RBT) has emerged as a useful framework to analyze the significance of the human resource system in achieving SCA. However, few empirical studies in agribusiness provide evidence of a relationship between human resource system and SCA. This paper builds off our 2005 case study exploring human resource management and sustained competitive advantage. It provides an in depth review of the RBT and develops a framework by which agribusiness scholars might operationalize the RBT for both applied research and guidance for managers.

Keywords: human resource management, resource-based view, agribusiness, sustained competitive advantage

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Introduction

The Resource-based theory (RBT) of the firm has been around for over two decades and has emerged to be a dominant management theory in explaining firm performance differentials. The theory holds that the internal resources that a firm controls have the potential to be a source of sustained competitive advantage (SCA) if the resources are valuable, rare, inimitable, and nonsubstitutable (VRIN). The theory serves as a major theoretical foundation in the management scholarly literature and prominently features in most text books in strategic management. Although the core message of the RBT is simple, and easy to grasp and teach, the application of this message in agribusiness has been slow. With the exception of Mugera and Bistch (2005), Gall and Shroeder (2006), Ng and Goldsmith (2010), there is little empirical application of the theory in agribusiness scholarship.

Why has the theory not been widely used in agribusiness scholarship? What is the importance of empirically testing the theory in the agribusiness environment? How can the test be done? What is the implication of the theory for management practice and research? Those important questions need to be addressed if the theory will find wide application in agribusiness.

The purpose of this paper is to review the literature on the RBT and its application to support SCA, with a focus on agribusiness labor management. The paper proposes the RBT as a potential theoretical framework to guide human resource management (HRM) practice and research in agribusiness. Therefore, through the review of a case study, we illustrate how HRM practices fit the RBT basic tenets and propose a conceptual framework to empirically test the RBT in the agribusiness environment. Indeed, empirical studies in non-agricultural oriented industries suggest that there is a close relationship between the employment of HRM instruments shaped according to the RBT and HRM efficiency (Wright et al. 1999). A key question is how to quantify whether the HRM practices shaped according to the RBT can contribute to SCA in agribusiness.

This paper contributes to advancing the discipline of agribusiness management by suggesting a managerial explanation for agribusiness firm behavior. As noted by Ng and Siebert (2009), the problem facing the advancement of agribusiness management is how to develop its research identity by placing greater attention to "strategic management" explanations of the firm rather than economics.

The remainder of this paper is structured as follows: first, the fundamental tenets and recent advances of the RBT are presented; second, a case study is used to illustrate the application of the RBT to analyze HRM issues in agribusiness and, third, the evidence from the case study is used to illustrate how the RBT framework can be extended and operationalized to guide future research and management practice in agribusiness..

Sustained Competitive Advantage in Agribusiness

The agribusiness sector is facing competitive challenges mainly from innovations in technology and information systems, and changes in demography, global economies and climate. Meeting those challenges is the single most important factor for achieving sustained competitive advantage (SCA). Agribusiness firms can respond to those challenges either through changes in managerial capabilities using human resource (HR) programs or through technical capabilities

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using technology (Chacko et al. 1997). However, as observed by Pfeffer (1994), there is an economic trade-off between human and capital resources. It is the management of human resources rather than the reliance of advanced technology or patents or strategic position that help firms achieve SCA. Becker (2001) buttressed the strategic importance of human resources to the economic success of agribusiness firms by noting that:

> "*In most industries, it is now possible to buy on the international marketplace machinery and equipment that is comparable to that in place by the leading global firms. Access to machinery and equipment is not the differentiating factor. Ability to use it effectively is. A company that lost all its equipment but kept the skills and knowhow of its workforce could be back in business relatively quickly. A company that lost its workforce, while keeping its equipment, would never recover*." (Becker et al. 2001, 6)

Given recent trends in the global food and agribusiness sector, agribusiness competitiveness has become a topic of much interest in both the popular press and academic literature. The economic performances of agribusiness firms is projected to continue to increasingly dependent upon management and returns to management rather than ownership of assets and the capital earnings of these assets. This will mainly be through the adoption and use of new and innovative programs and practices in the management of HR and technology.

The focus of this paper is on labor management in large and corporate farms, hereafter-human resource management. Over the last two decades, labor use in the agriculture of North America and Australia has been affected by changes in the composition of agricultural labor and increasing shortage of skilled agricultural labor. The general trend have been a decline of number of farms, an increase of average farm sizes, and a general shortage of sufficient and skilled workforce (Productivity Commission 2005, DEST 2006, NASS 2002). This trend is attributable to a number of factors that include increase in the productivity of rural labour, overall increase in the volume of rural output, and compositional changes in rural output, with a growth in relatively labour intensive industries (Garnett and Lewis 2002). The combination of declining farm numbers, increasing size of operations and less family members returning to farms has meant a demand for employed labor with different skills.

As farms grow beyond the labor capacity of the immediate families, human resources management (HRM) becomes an important management function and practices developed for large non-agricultural corporations often may not fit the agricultural or agribusiness environment (Bitsch 2009). Therefore, HRM as a managerial function plays an important role in agriculture, particularly in the management of agribusiness organizations and large commercial farms. Traditionally, the HRM function has been viewed as the process of attracting, keeping and motivating employees.

The typical characteristic of most successful corporate organizations is a SCA that results from the configuration of their strategic assets to outperform their competitors. Sustaining competitive advantage is very crucial as competing firms will try to imitate, reach, and even outperform their rivals by acquiring similar or better resources that they perceive to be enabling their rivals outperform them.

Human resources are one of the crucial strategic assets in agribusiness and production agriculture. Farm and ranch owners, their family members and cooperating neighbors provide

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substantial labor to agricultural operations. However, hired employees provide most agricultural labor especially in the labor-intensive tasks that are not easy to mechanize such as fruit picking and pruning. Attracting, motivating, and retaining qualified employees are some of they key challenges faced by agribusiness organizations. Equally, agribusiness managers face the challenge of managing their employees in an effective and efficient manner to remain competitive in the marketplace. This calls for an understanding of how to model the HRM function to be a prime source of SCA and key driver of value creation. However, agribusiness managers have little research-based information to rely on when developing HRM policies and procedures. As noted by Bitsch (2009), this is partly because research on HRM practices in agribusiness has not received significant attention in the agribusiness literature due limited research funding, rare peer reviewed articles, and because many editors do not perceive HRM as a priority.

The resource-based theory (RBT) has received considerable attention in the strategic management literature as a useful framework to analyze the significance of human resources (HR) in achieving SCA. The view posits that firms with a well-managed HR system have the potential to create economic value through their employees, but the potential is only realized when the HRM functions is aligned with the overall competitive strategy of a firm (Barney 2001). However, as noted by Bitsch (2009), there are few labor management studies in agribusiness that have been able to provide evidence of a substantial relationship between any particular HRM practice and productivity or competitive advantage. Yet, it has been observed that technological management programs are less influential in assisting firms to achieve their competitiveness goals than HRM programs (Chacko et al. 1997).

Resource-Based Theory: Literature Review

Literature in strategic management presents two theoretical perspectives in explaining sources of competitive advantage (CA): The Porter's five forces perspective and the resources-based theory (RBT) perspective (Kim and Oh 2003). The first perspective views CA as a position of superior performance that a firm achieves through offering cost advantages or benefit advantages (Porter, 1980, 1981). This model attributes CA to the external environmental factors that a firm must respond to such as erecting barriers of entry to competitors, product differentiation, capital requirements, and buyer switching costs (Lado et al. 1992).

The second model of CA is the resource-based theory (RBT). The model assumes that the desired outcome of managerial effort within the firm is SCA that allows the firm to earn returns that are above industry average (Fahy and Smithee 1999). This model view SCA as emanating from the distinctive resources of a firm that gives it an edge over its rivals. An organization is viewed as a bundle of specialized resources that are deployed to create a privileged market position (Barney 1986a, Ghemawat 1986, Day and Wensley 1988). Therefore, the RBT emphasizes strategic choices where managers of a firm have the important task of identifying, developing, and deploying key resources to maximize returns (Fahy and Smithee 1999). The theory focuses on the link between strategy and the internal resources of a firm in achieving SCA rather than the industry-environmental focus characteristic of the traditional strategic analysis paradigms, for example, the Porter's "five forces model" (Wright et al. 1994).

The RBT of the firm assumes that resources (factors that a firm are owns and controls) and capabilities (firm's capacity to deploy resources) are both heterogeneously distributed and

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imperfectly immobile. These assumptions allow for the existence of differences in firm resource endowment and those differences persist over time. The theory hypothesizes that if a firm possess and exploits resources and capabilities that are both valuable and rare, it will attain a competitive advantage. The firm will sustain this advantage only if these resources and capabilities are also inimitable and non-substitutable. Barney (1991) defines a firm's resources to include all assets, capabilities, organizational processes, firm attributes, information, and knowledge that it controls and that enable it to conceive and implement strategies that improve its efficiency and effectiveness.

Resource heterogeneity refers to the distribution of different resources across firms. Peteraf (1993) notes that heterogeneity implies that the productive factors used in firms have intrinsically differential levels of efficiency whereby some are superior to others. Therefore, firms endowed with superior resources are economical in production and can effectively compete in the market compared to those without superior resources. Resource immobility refers to the inability of competing firms to obtain resources from other firms (Wright and McMahan 1992). This could be due to several reasons: First, when the resources property rights are not well defined (Dierickx and Cool 1989); second, when the resources have no use outside the firm (Williamson 1975); third, when the resources are co-specialized, that is they are used in conjunction with another or have higher economic value when employed together (Teece 1986); and forth when the resources have high transaction costs (Williamson 1975). Since the immobile resources are non-tradable or are of less value to other users, they remain bound to the firm and available for use over the long run. Hence, the resources are a source of competitive advantage to the firm (Peteraf 1993).

The assumptions of heterogeneity and immobility of resources are necessary but not sufficient conditions for a firm's resources to hold potential for SCA. A resource must have four other attributes to provide SCA: 1) the resources must add value to the firm; 2) the resources must be rare among current or potential competitors; 3), the resources must be imperfectly imitable; and 4), the resources should not be strategically substitutable with another resource by competing firms (Barney 1991, Wright and McMahan 1992).

A firm's resources are valuable when they enable its management to conceive or implement strategies that improve its efficiency and effectiveness. Valuable resources enable a firm to capitalize on its strengths to exploit the opportunities in the external environment while neutralizing existing threats (Barney 1991, 1999). A resource is rare when a large number of firms do not possess it. Barney (1992) urges that if a large number of firms possess a particular valuable resource, the resource becomes a source of competitive parity and not CA or SCA. Resources that are valuable and rare may lead to the resources being imperfectly imitable, i.e., not easy to obtain or copy (Lippman and Rumelt 1982, Barney 1986a, 1986b). A firm may find it difficult to obtain a valuable and rare resource because of the cost disadvantage it faces compared to firms that possess that resource (Barney 1992). Derricks and Cool (1989) describe three conditions under which resources can be imperfectly imitable. First, when the ability of the firm to obtain resources is dependent on unique historical conditions; second, when the link between the resources and the firm's competitive advantage is causally ambiguous; and third, when the resource generating a firm's competitive advantage is socially complex.

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The first condition states that the performance of a firm not only depends on the industry structure within which it operates but also on the historical path it followed to arrive where it is, i.e. path dependent (Barney 1991). For example, a firm that developed significant commitment to a particular way of doing business may find it hard to adapt to minor changes in technology. Causal ambiguity is defined as the situation where the link between the resources controlled by a firm and its SCA is not understood or only understood imperfectly (Lippman and Rumelt 1982, Reed and DeFillippi 1990, Barney 1991). In this case, the relationship between a resource and other firm-specific resources and capabilities creates uncertainty regarding the causes of efficiency differences among firms. This prevents would-be imitators from knowing exactly what to imitate or how to imitate it (Lado et al. 1992, Peteraf 1993). Casual ambiguity arises out of an informational problem where a competitor is unable to identify what are the reasons behind a given firm's success (Fahy and Smithee 1999).

Social complexity is a complex social situation arising from human interaction and constitutes a competitive advantage. According to Wright et al. (1994), the term refers to the fact that many social phenomena are complex to make it possible to manage and influence them systematically. Examples of social complexity in a firm's resources include (1) the interpersonal relationship among managers (Hambrick 1987), (2) organizational culture (Barney 1986b), (3) reputation among suppliers (Porter 1980), and (4) a firm's relationship with customers (Klein and Leffler 1981). The final requirement for a resource to be a source of SCA is non-substitutability. This demands that a firm's resource must not have other strategically equivalent resources. As such, other competing firms cannot implement the same strategy because of the absence of another strategically equivalent resource to generate the SCA (Barney 1991). Figure 1 presents a conceptual framework for understanding the assumptions and conditions relevant for attaining SCA as postulated by the RBT.

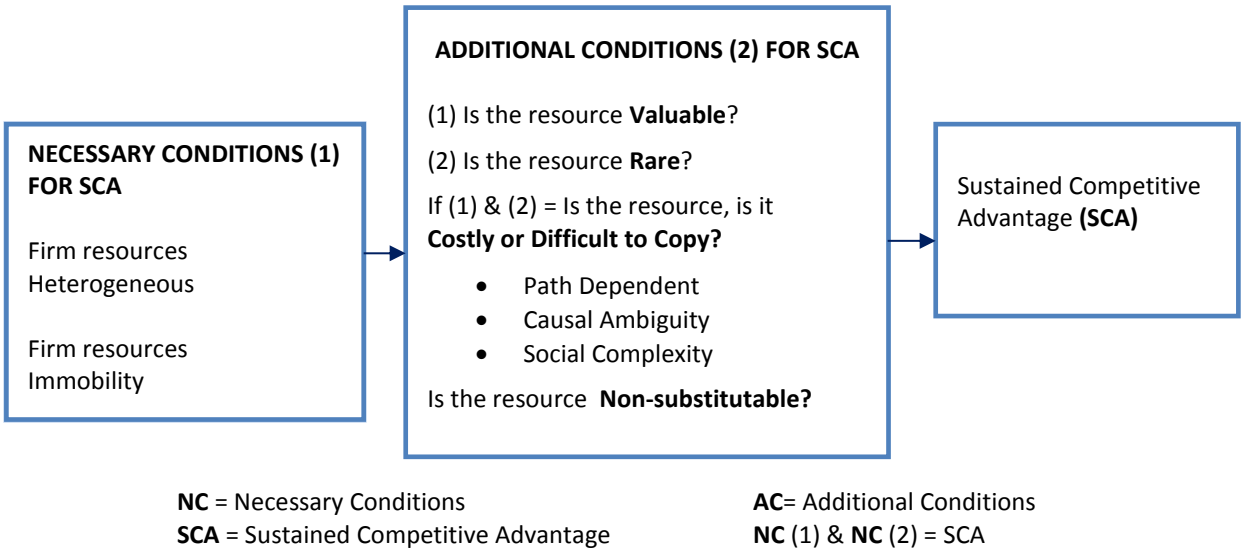

Figure 1. Conceptual framework for sustained competitive advantage as postulated by the Resource-based Theory

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The RBT has emerged to be the most prominent and powerful theory of understanding organizations in the last two decades. The theory appears to have reach maturity stage; research using the resource-based framework is now precise and sophistication, closely resembling a theory than a view[1] (Barney, Ketchen Jr, and Wright 2011). The theory has given rise to prominent spin-offs perspectives that are yet to be tested and operationalized in the agribusiness environment.

Such spin-off perspectives include the knowledge-based view (Grant 1996), the natural-resource-based view (Hart 1995, Hart and Dowell 2011), the dynamic capabilities view (Teece, Pisano, and Shuen 1997), the family capital theory (Hoffman, Hoelscher, and Sorenson 2004), and the corporate diversification view (Wan et al 2011). Insights from the RBT are already integrated with other perspectives such as the institutional theory and strategic HRM (Wright and Snell 1991, Oliver 1997, Wright et al. 2001) and organizational ecology (Ng and Goldsmith 2010).

Hoffman, Hoelscher, and Sorenson (2004) introduced the concept of family capital and proposed that family capital has potential to impact on business performance. Drawing from the RBT, they suggest that family businesses with high levels of family capital possibly do hold SCA over family businesses with low levels of family capital or nonfamily businesses. Eddleston et al. (2008) empirical study of family firms using the RBT confirm that family firms can benefit from emphasizing the positive aspects of kingship and that family relationships can be a source of CA. Hart and Dowell (2011) examine the application of the natural-resource-based view (NRBV) to help firms incorporate environment sustainability in their quest for competitive advantage. They provide a model of SCA that includes the constraints and challenges that the natural environment places on firms.

Kunc and Morecroft (2008) use the RBT to present a framework that connects managerial decision making to resource building and firm performance. The authors identify two decisions making processes: the creative conceptualization of resource configurations intended to deliver CA, and the painstaking development of resources required to implement strategy. They argue that heterogeneity in the resources of rival firms arise from the interplay of those two processes. Sirmon et al. (2011) discusses the potential of an emerging research stream, termed as resource orchestration, to enlighten our understanding of the role of managers' actions in resource management within the RBT. Makadok (2011) notes that although the RBT attributes CA as the main source of interfirm profit differentials, additional sources of profit differentials includes rival restraint, information asymmetry and commitment timing. The author propose for a unified approach of investigating the relative effects of each of those four mechanisms on interfirm profit differentials rather than examining each in isolation.

Wan et al. (2011) outlines ways to enrich the RBT perspectives on corporate diversifications by integration of ideas from organizational economics, new institutional economics, and industrial organization economics. Wenerfelt (2011) examines the process through which a firm can acquire resources and argues that firms should expand their resource portfolios by building on their existing resources. Therefore, as different firms will acquire different new resources, small initial heterogeneities will be amplified over time. Maritan and Peteraf (2011) discuss how to create heterogeneous resource position by resource acquisition in strategic factor markets and internal resource accumulation.

[1] The resource-based theory is also referred to as the resource-based view in the extant literature.

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Kraaijenbrink et al. (2010) review some of the main critiques of the RBT. They identify five critiques that do not threaten the RBV's status and three that offer serious challenges that need to be dealt with if the RBV is to realize its potential to explain SCA. They recommend moving the RBV's agenda into the dynamic Austrian framework by incorporating time, space, and uncertainty resolutions into the RBV's axiomatic base.

Kraaijenbrink et al. (2010) highlight the need for analysis within firm boundaries of the internal processes of managing resources and recognition that heterogeneous human capital is a critical underling mechanism for capabilities. Coff and Kryscynski (2011) agree that human capital provides a promising source of CA but call for stronger micro-foundations for understanding human capital-based CA. They identify individual and firm level components that interact to grant some firms unique capabilities in attracting and retaining, and motivating human capital. Co-specialization of idiosyncratic individuals and organizational systems are identified as among the most powerful isolating mechanisms that sustain human capital-based advantages.

Ng and Goldsmith (2010) use insights from the RBT and Organizational Ecology to explain a firm's entry into the ethanol market. The study demonstrates that a firm's entry timing is dependent on the specialization of their assets to which such specializations introduces a "commitment-flexibility" trade-off that influences a firm's entry into distinct stages of the product market life cycle. The study provides a greater understanding of how specialized assets impact a firm's internal decision process. This study extends RBV explanations of entry timing by attributing entry to both the specialized nature of a firm's assets as well as to the uncertain and population conditions of the market.

On methods and measurement issues within the RBT, Molloy et al. (2011) use content analysis to identify how scholars have examined 186 intangibles in published tests of the RBT. To better link RBT and measurement concerning intangibles, the authors present a theory driven multidisciplinary assessment process that integrates complimentary perspectives of economics and psychology and provides a context-specific theory of intangibles for empirical studies. All those recent development on the RBT suggest that the potential application of the theory to the agribusiness environment is unlimited and remain untapped.

Application of the RBT to HRM

Drawing from the RBT of the firm, literature in strategic HRM is increasingly concerned with whether HR can be a source of CA (Reed and DeFillippi 1990, Wright and McMahan 1992, Wright and Snell 1991, Wright et al. 1994, Kamoche 1998). Ulrich (1991), Wright et al. (1994), Barney, and Wright (1998) used the BRT to describe how HRM practices can be used to develop strategies that leads to CA.

Wright and McMahan (1992) and Wright et al. (1994) describe two conditions in the labor market that make human resources a source of CA: 1) the heterogeneous demand for labor, and 2) the heterogeneous supply of labor. The authors argue that human resources add value to the firm because of the existence of heterogeneous demand for and supply of labor. Heterogeneous demand for labor exists because firms have jobs that require different skills. For example, the skills needed to work on a dairy farm are different from those required to work in a greenhouse

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operation. Heterogeneous supply of labor exists because individuals differ in their skills and level of skills. Those two conditions ensure that human resources with high competencies provide value to the firm. Wright et al. (1994) argues that there would be no variance in an individual's contribution to the firm if both the demand for and supply of labor was homogeneous, i.e., all employees and potential employees have equal productive capacity. In this case, there would be no need to create value through investment in employee training and development. However, Barney and Wright (1998) note that the main goal of HR executives is to create value through the HR function. The authors argue that a firm can create value by either decreasing product and services costs or differentiating the product and services in a way that allows it to charge a premium price. Richard (2000) observes that cultural diversity in human capital can serve as a source of CA because it creates value that is both difficult to imitate and rare.

Wright et al. (1994) used the difference in cognitive abilities of individuals to demonstrate that human resources are rare. The authors argued that jobs require individuals to have different skills that allow for variance in individuals contributions in organizations. Hence, since these skills are normally distributed, human resources with high ability levels are rare. Therefore, firms with employees of high average cognitive ability relative to their competitors will also possess more valuable human capital resources. The ultimate goal of all selection programs is to ensure that the organization is hiring only individuals with highest ability. Barney and Wright (1998) use an example from a firm in a highly competitive retailing industry to demonstrate how a firm can develop and exploit rare characteristics of its human resources to gain CA. The retailing industry is characterized as having low skill requirements and high turnover for sales clerks. Assuming the labor pool for sales clerk is homogenous, a firm can invest in attracting and retaining young college-educated sales clerks who desire a career in retailing. The firm can provide high incentive based compensation system that allows the sales persons to earn twice the industry average in pay. In this example, the firm takes labor that is considered homogenous and exploits its rare characteristic - those individuals who desire a career in retailing - to gain CA.

Wright et al. (1994) demonstrate how human resources meet the third criteria of a resource being inimitable by using the concepts of unique historical conditions, causal ambiguity, and social complexity. Human resources are inimitable when the firm has a unique history over the course of which particular cultures and norms develop. The culture and norms may meld human resources together to create a synergistic work culture where individuals cooperate in line with organizational goals. Such an organizational culture rooted in its history may not be imitable. Casual ambiguity leading to efficient production in one firm may be due to teamwork whereby it is impossible for a rival firm to create a team with similar attributes. Social complexity may arise out of transaction specific relationships whereby there is knowledge and trust between employees and other business stakeholders that are hard to analyze and imitate. Barney and Wright (1998) also point that social complex phenomenon such as an organization's unique history or culture that competitors cannot easily imitate. Richard (2000) agues that human resources cannot be easily imitated because they are protected by knowledge barriers and are socially complex because they involve a mix of talents that are elusive and hard to understand.

The fourth condition for a resource to be a source of SCA is not to have substitutes. Wright et al. (1994) argues that human resources are one of the few firm's resources that have the potential of

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not becoming obsolete. Therefore, if one firm develops a technology that provides greater productivity than what is generated by a rival firm that relies on human ability, once the latter firm is able to purchase the new technology its human resources would again become a source of CA. This is because technology can be purchased in the market place or become obsolete while human resources with high cognitive ability and highly committed to the firm are valuable, rare and cannot be imitated. Hence, human resources are non-substitutable.

Application of RBT Model to HRM in Agribusiness

Several scholars have used the RBT to conduct empirical research in strategic HRM in the non-agricultural environment (King and Zeithaml 2001, Richard 2000, Wright et al. 1999, and Koch and McGrath 1996, Wright et al. 1995). However, Mugera and Bitsch (2005) is the only empirical application of the RBT to analyze HRM practices in agribusiness.

This study builds on and extends the work of Mugera and Bitsch (2005) who applied the RBT to analyze HRM practices on six dairy farms in Michigan. Their case study employed in-depth interviews with farm managers, supervisory, and non-supervisory employees in order to illustrate an application of RBT in agribusiness.

The purpose of their 2005 study was to illuminate how the HRM practices of dairy farmers contribute to making human resources and resulting HRM systems valuable, rare, imperfectly imitable, and non-substitutable (Table 1 see Appendix). These are the attributes that contribute to farm competitiveness as postulated by the RBT.

The fundamental purpose of the RBT is to explain how a firm can deploy its internal resources to implement its **business strategy**. The mission statement defines the strategic intent of the firm and the operational goals stipulate how the firm expects to achieve its mission. To achieve CA, the mission statement and operational goals provide a road map to dairy farm managers on how to deploy, develop, and manage their human resources. Two cases had written mission statements. Three other cases did not have written mission statements but the respondents could verbally define the future direction of their farm enterprises. The statements focused on three main issues: increasing profitability, milk quality, employee job satisfaction. The long-term goals revealed that the two main strategies for the dairy farm enterprises is either expansion by increasing herd size and milk production or maintaining the farm at current size. Maintaining a sound financial position by reducing operational costs was a common theme across the six cases. The short-term goals of the farms focused on achieving efficiency in dairy management by keeping the cows healthy, producing premium milk and improving reproduction. Employees identified explicit goals that are measurable and specific as important yardsticks for value creation.

Managers of dairy farms can **create value** by either decreasing operational costs or increasing revenue and employees play a major role in achieving these goals. Employees contributed to this goal by taking measures to ensure a low somatic cell count. Employees also contributed to creating value by striving to achieve other goals such as heat detection, successful insemination, and a low calf mortality rate. Managers recognized the importance of employees in creating value by providing incentives to motivate them to achieve those goals. Rather than hire new employees formally, managers mostly relied on their current employees to recommend job seekers and provide the scarce information about the individuals' work ethics. Employees, therefore,

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create value to the farms by providing important information that enables managers to overcome the problem of adverse selection and hiring of low quality employees. This reduces the cost of recruiting through advertisement or through farm labor contactors, hence reduction in operational costs. In all six cases, newly hired employees were trained on how to perform different tasks related to their jobs by working alongside incumbent experienced employees. Incumbent employees, therefore, create value to their farms by training newly hired employees and passing on their knowledge about the farm's routines and culture.

The RBT posits that a resource must be **rare** to be a source of CA. Despite the large pool of job seekers in the labor market, dairy farmers reported difficulties in recruiting employees with the requisite skills and dairy husbandly knowledge. Farmers who had made the transition from hiring local employees to immigrant employees skilled in dairy husbandly did not want to revert to the local workforce. Managers in five cases practiced selective hiring to ensure that only individuals who are can work in teams and have the aptitude to learn and work on a dairy farm were hired. Managers also reported variance in individual performance with some individuals consistently outperforming others. Managers strive to retain such employees even when there were good grounds for termination. This evidence supported the notion that skilled and knowledgeable employees who like working on a dairy farm environment are a rare resource.

Resources are immobile when they cannot be transferred easily from one farm to another. Immobility may arise out of social complexity, causal ambiguity, path dependency, or a combination of all those factors. Internal hiring deterred the transfer of specific skills and knowledge developed on one farm to another. For example, three farms trained their employees on specific milking routines that are not practiced by other dairies. Routines practiced on a particular farm are also path dependent. A farm that has been committed to particular standard operating procedures may find it difficult to adapt to new ways of performing the same tasks. Routines result in immobility of knowledge and skills because they are a result of cumulative experience and practice. Execution of a routine also depends on the given context, i.e., the physical equipment and work environment that facilitates and nurtures collective action.

Well-trained and experienced employees had higher replacement costs because they supply services that cannot be immediately provided by newly hired employees. Managers strived to retain those employees by offering job security, higher compensation, and good interpersonal relationships that minimized their mobility. Two herdsmen, for example, reported that they would not take alternative employment offers because of close interpersonal working relationships with their managers. The herdsmen were not sure whether they would have such working relationships in alternative employment offers.

Path dependency, social complexity, and causal ambiguity contributed to farms developing distinct human resource systems that were **not imitable**. Managers selected and hired non-supervisory employees based on their kinship and friendship ties with current employees because they wanted to have employees who can effectively work together in teams. Employee turnover and termination were reported to be low in five cases where selection was based on kinship and friendship ties; turnover and termination was high in the case where the manager hired walk-ins who had no ties with incumbent employees. In two cases, employees used peer pressure to compel their coworkers who are not able to meet performance expectations or who did not fit into their working culture to quit.

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Causal ambiguity describes the inability of competitors to identify and imitate the sources of a firm's CA. For example, a large farm provided higher wages, more benefits and training opportunities to employees compared to a smaller farm. Yet, employees on both farms reported to be satisfied with their current employment. Therefore, employee satisfaction was a source of causal ambiguity. The history of a farm influenced its ability to achieve CA through its human resource system. For example, one manager mentioned that family values and beliefs determined the farm's organizational culture. Family employees trusted each other and subsequently trusted their hired employees. This evidence suggests that family capital can be a source of CA.

Milking is done in shifts and employees work in teams. When employees are able to achieve the set operational goals like low somatic cell count or increased milk production, it is not possible to determine or separate the contribution of each individual in the team. Therefore, high productivity arising from teamwork production is a potential source of causal ambiguity because it is not easy to relate superior performance to an individual's effort. The manager cannot isolate and reward the individual nor can the competitors hire out the individual responsible for the high performance.

Employees on dairy farms are **non-substitutable resources**. All cases hired year-round fulltime employees because dairy farming could not be fully automated. Even on highly mechanized farms, human resources were needed, for example, to monitor the herd health, administer treatment, and assist calving cows. Current technology and machinery will becomes obsolete over time but human resources that are constantly educated and retrained retain their value. Dairy farm automation may results in increasing the number of cows per employee but does not entirely replace the need for human resources. For example, the organizational culture and interpersonal work relationships that are based on kinship and friendship ties on each farm cannot be easily substituted.

Across case comparisons of the labor management practices indicated that each case had a distinct human resource system emanating from its organizational culture, kinship and friendship ties, resource endowment, and HRM practices. Organizational outcomes, such as voluntary turnover and termination rates, employee satisfaction, and manager satisfaction did not stem from single or isolated HRM practices. Therefore, in each case, the manager had the potential to develop his or her own unique human resource system as a source of SCA. Such a human resource system is not something that can be purchased from the labor market. Overall, the managers recognized the importance of hired labor to the success of their farm enterprises and three managers considered losing their employees due to voluntary turnover as their worst-case scenario in HRM.

The empirical results from the six case studies lend support to the claim that dairy farm managers can manage their human resources effectively and efficiently to achieve CA. Human resources and the emanating human resource systems on dairy farms have the potential of being valuable, rare, inimitable, and non-substitutable if effectively managed[2].

[2] The leadership style of the farm manager is equally important in managing resources to achieve CA. The manager who applies good leadership styles can enhance the potential of his HR system to be a source of competitive advantage. The philosophy and personality ("emotional intelligence") of a manager can indirectly lead to CA by influencing the leadership capability necessary for implementing effective strategic change.

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Empirical Test of the RBT in the Agribusiness Environment

The RBT was a useful theoretical framework for understanding how human resources in the six dairy cases can be a SCA, and the role of the HRM function in this process. To gain better understating on how to achieve SCA through HR, there is need for future empirical research to narrow the gap between the theoretical utility and the practical utility of the RBT by operationalizing the theory in the agribusiness environment. Levitas and Chi (2002) and Rouse and Daellenbach (2002) both state that RBT can be validated empirically without having to operationalize all its key constructs.

The model depicted in Figure 2 provides a conceptual framework of how different HRM practices from the case study relate to the four key assumptions of the RBT. The model also draws from the work of several authors on the RBT (Barney 1991, Wright et al. 1994 and Wright et al. 2001) to demonstrate that SCA does not emanate from isolated HRM practices, like compensation and training. It emanates from the integration of HR practices, managerial function, and employee behaviors into an HR system that is a strategic partner to the overall competitive strategy of an organization.

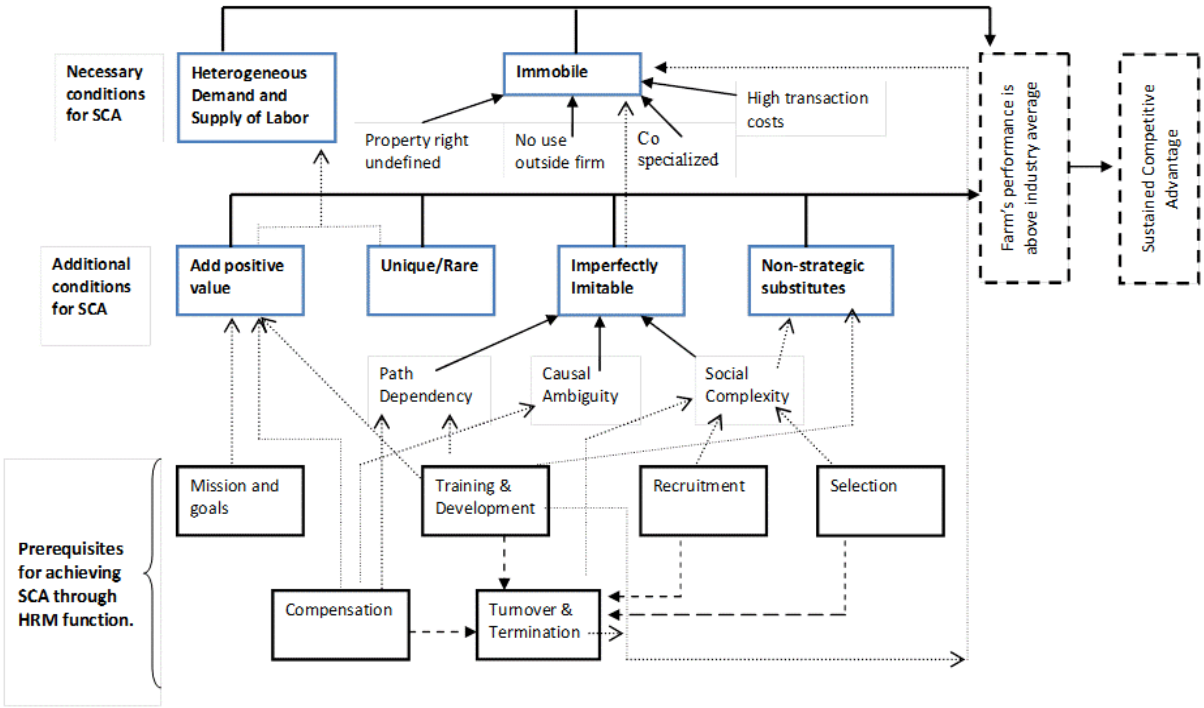

Figure 2. A proposed conceptual framework for investigating the relationship between HR systems and firm performance grounded on the RBT.

Note. Black boxes represent HRM practices, blue boxes represent the necessary and sufficient conditions for the RBT to hold, and dashed boxes represent firm outcomes. Dotted arrows represent the relationship between HRM practices and RBTconstructs, dashed arrows represent the relationships between HRM practices and outcomes, and solid arrows indicate the linkage of the RBT constructs and firm outcomes.

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The dotted arrows from the boxes with HRM practices indicate how the practice relates to the four key assumptions of the RBT. For example, the arrow extending from compensation to add positive value indicates that managers can use compensation to add value to the farm, say by providing performance based incentives. The arrow extending from compensation to path dependency indicates that the compensation system of a firm is path dependent. Solid arrows that link path dependency, causal ambiguity, and social complexity indicate that those three factors lead to a resource being imperfectly inimitable. Likewise, solid arrows linking to immobility indicate the factors that contribute to a resource being immobile.

The dotted arrows linking add value and rare to heterogeneity indicate that the assumptions of a resource being valuable and rare contribute to the resource being heterogeneous (Barney 1991, Lado and Wilson 1994). The dotted arrow linking imperfect inimitability to immobile indicates that meeting the conditions of not being easy to imitate also contributes to a resource not being easy to transfer from one case to another. Therefore, to empirically test the relationship between the HRM function and the performance of a farm based on the RBT, one needs only to test whether human resources meets the four key assumptions of being valuable, rare, imperfectly inimitable and having no strategic substitute.

The dashed arrows from compensation, training and development, recruitment, and selection indicate that those four practices have an effect on termination and voluntary turnover. Termination and turnover together with the direct effect of training and development eventually affect the mobility or immobility of human resources. The solid lines indicate the conditions postulated by the RBT for a resource to generate competitive advantage.

Before testing the theory one needs to operationalize the key criteria that human resources and the HR system have to meet to fulfill the RBT assumptions of a resource being valuable, rare, inimitable and non-substitutable. This can be achieved by designing a structured questionnaire that focuses on the HRM practices and organizational culture. Those practices would include recruitment and selection criteria, training and development, compensation, and termination. The questionnaire would also include aspects of strategic planning like mission and goal setting.

Collected data could be analyzed using the principal component analysis (PCA) method to extract the main factors that relate to the RBT. Principal component analysis explains the variance structure of a matrix of data through linear combinations of variables. Hence, the data can be reduced to a few principal components that generally describe 80 to 90% of the variance for each construct. The extracted factors can be used as proxies for the four RBT constructs.

To explore the relationship between the four factors and firm performance, truncated and ordinary least square regression models can be used. Sustained competitive advantage can be measured by benchmarking the performance of a farm relative to other farms in the same industry. Return on assets, technical efficiency, and allocative efficiency can be used to measure the performance of firms. Technical efficiency refers to the ability of a firm to obtain maximum output from a given set of inputs with reference to a production function. Allocative efficiency measures the ability of a firm to use inputs and outputs in optimal proportions, given prevailing market prices. Those two measures can be combined to provide the measurement of total economic efficiency. The efficiency scores can be computed from output and inputs data using the

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econometric approach (i.e., stochastic frontiers) or mathematical programming approach (i.e., data envelopment analysis).

The dependent variables in the analysis would be measures of technical efficiency, allocative efficiency and return on assets. The extracted factors from PCA would be the explanatory variables in the following regression equations:

$$(1)\ \text{Technical efficiency} = \alpha + \beta_1 \text{Value} + \beta_2 \text{Rareness} + \beta_3 \text{Inimitability} + \beta_4 \text{Non-substutable} + \varepsilon$$

$$(2)\ \text{Allocative efficiency} = \alpha + \beta_1 \text{Value} + \beta_2 \text{Rareness} + \beta_3 \text{Inimitability} + \beta_4 \text{Non-substutable} + \varepsilon$$

$$(3)\ \text{Return on Assets} = \alpha + \beta_1 \text{Value} + \beta_2 \text{Rareness} + \beta_3 \text{Inimitability} + \beta_4 \text{Non-substutable} + \varepsilon$$

The suggested framework would answer the question of why the performance of agribusiness firms differ by extending production economics to explain how HRM practices impacts on a firm's SCA. For instance, the computation of allocative efficiency is important in determining the optimal mix of inputs and outputs given prevailing market prices. Although the proposed framework can be implemented in a cross-sectional setting, use of a longitudinal setting would be more appropriate as the dynamic relationship between the RBT key constructs and firms'' performance can be observed over time. Dummy variables can be included in the three equations to control for unobserved heterogeneity across firms, for example, farm size and recent history of major change such as expansion. Equations 1 and 2 can be estimated using truncated regression while equation 3 can be estimated using ordinary least square.

Conclusion

This paper has provided a comprehensive review of the Resource-based theory as a framework to formulate HRM strategies to achieve SCA. Drawing from the fundamental tenets of the theory, a review of empirical studies in strategic HRM served to illustrate how the concept can be applied in agribusiness. A case study in agribusiness was used to illustrate how the different HRM functions fit to the theory. Given that this type of study is still in the explorative stage, a conceptual framework on how to empirically test the theory in agribusiness environment is proposed. This is a good starting point for engaging both practitioners and academicians in developing HR systems that are shaped according to the RBT tenets.

The paper demonstrated that the HRM system is a potential source of SCA for agribusiness firms. Employees in agribusiness firms are enablers of change and can help the agribusiness organizations to dynamically develop and achieve longer-term superior performance relative to other firms in the same industry. However, the gap between the theoretical utility and the practical utility of the RBT need first to be narrowed by operationalizing the theory in the agribusiness environment.

The RBT has not been widely used in agribusiness scholarship, perhaps due to a lack of a comprehensive review of the theory in agribusiness and challenges in operationalizing the theory. Therefore, there is need to empirically test the theory in the agribusiness environment in order to explain differences in the performance of agribusiness firms with the aim of identifying factors that lead to superior performance over time such as management practices or resource

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endowment. The necessary next step is to apply the proposed framework to a variety of agricultural settings to evaluate its usefulness and make modifications as necessary.

The management implication of this study is that agribusiness managers can use the RBT framework to configure how their HR system operates and identify ways in which it can be customized to be a source of SCA. The focus should be making the HR system valuable, rare, inimitable, and nonsubstitutable. Managers need to understand how to nurture firm idiosyncrasies such as trust-based relationships and routines that can lead to SCA. This would involve a shift of perspective from one that sees the HRM function as primarily administrative to recognizing the HRM function as a key player in the overall competitive strategy of a firm.

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Appendix

Table 1. Potential Sources of Competitive Advantage in the Six Cases

Valuable	Rare	Inimitable	Non Substitutable
▪ Employees achieve goals that bring revenue to the farms. ▪ Employers provide incentives and bonuses for achieving goals. ▪ Employees avoid mistakes that affect the farm's bottom line. ▪ Employers reduce operational costs by cutting down expenditure on labor. ▪ Employers recruit through their employees provide valuable information about job candidates. ▪ Employers invest in training employees to acquire specialized knowledge and skills. ▪ Current employees train new employees at no cost to the farm.	▪ Not all job seekers have requisite skills to work on dairy farm. ▪ Employers hire selectively. ▪ Some employees have specialized knowledge such as the veterinarians and nutritionists. ▪ Variance in individual performance at work. ▪ Most employers prefer hiring Hispanic to American employees. ▪ Employers retain their productive employees even then there are reasons to terminate them.	***Social Complexity*** ▪ External social networks used by employees to recruit. ▪ Interpersonal relationships among coworkers based on kinship and friendship ties. E.g., peer pressure. ▪ High performance due to teamwork production. ▪ Trust based relationships between managers and employees developed over time. ***Causal Ambiguity*** ▪ Causes for employee satisfaction. ▪ Superior performance emanating from teamwork. ***Path Dependency*** ▪ Organizational culture-values, norms and beliefs. ▪ Work routines that are farm specific, e.g. milking. ▪ Resource accumulation. E.g., tacit knowledge and skills in employees that results from cumulative learning.	▪ Unique workplace relationships based on kinship and friendship ties that lead to increased performance. ▪ Organizational culture on the farms that is path dependent. ▪ Human capabilities that cannot be replaced by capital goods.

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