Resource Non-Substitutability as a Predictor of Sustainable Competitiveness

Dr. Lydia Jeptoo Maket

Department of Development Studies Moi Univeristy, Eldoret, Kenya

Abstract: This paper analyses the effect of resource non-substitutability on sustainable competitiveness empirically. The analysis is embedded on the Resource Based View model (RBV and the balanced scorecard). According to RBV of strategic Management, competitive advantage is closely related to companies' internal characteristics (value, rarity, inimitability and non-substitutability). Although RBV is considered one of the most influential theories of strategic management, this paper unveils the empirical evidence of resource non-substitutability on sustainable competitiveness in the service industry (universities). A sample of 262 was selected from 2 universities in Kenya (one private and one public). Using the regression analysis, findings revealed that the public university was superior in resource non-substitutability than the private university and also that resource non-substitutabilty does not contribute to sustainable competitiveness in universities.

Keywords: Resource Based View, Resource value; Rarity, Inimitability and Non-substitutability.

1. INTRODUCTION

The means by which some businesses achieve and sustain a competitive advantage over other firms is the central research focus of strategic management (McGee *et al*, 2000). During the late 1970s and the 1980s, the strategy literature emphasized the external environment of the firm. The focus was on the analysis of the industry attractiveness and the competition. The work of Harvard economist Michael Porter was very influential (Hafstrand, 2002).

Research has begun to recognize the use of resource –based capabilities in gaining and maintaining competitive advantage (chandler & Hanks, 1994; Long and Vickers-Koch, 1995; McGee & Finney, 1997). Tracing its roots from the traditional strategic management concept of distinctive competence e.g. (Selznik, 1957; Andrews, 1971), the resource-based view argues that competitive advantage results from firms a firms' resources and its capabilities.

The resource-based view (RBV), as one of the most widely accepted theories of competitive advantage, focuses on relationships between company's internal resource characteristics and competitive advantage (Spanos and Lioukas, 2001). It is based on the assumption that companies within an industry are heterogeneous in terms of resources they control. Since resources may not be perfectly mobile, heterogeneity can be long lasting (Barney, 1991).

The Resource based view explains that a firm's sustainable competitive advantage is reached by virtue of unique resources being rare, valuable, inimitable, non-tradable, and non-substitutable, as well as firm-specific (, Makadok 2001; Finney et al.2004).

Institutions of higher education are also in competition and (Clarke, 1997) argues that if they are to compete more aggressively, they need to determine the areas of comparative competence on which to base successful resource-led strategies.

Universities differ in terms of the characteristics of resources they posses. Some are difficult, if not impossible to imitate or copy such as quality of faculty and the presence of particular internal and external support structure. (Bryson *et a*l, 2007). Previous research suggests that expert knowledge and scientific capabilities (Deeds *et al*, 1997) as well as access to important personnel information and support structures are important sources of sustainable competitiveness.

Furthermore, access to university research; creation of new products and processes of high technology industries, have been shown to be significant predictors of sustainable competitiveness. Hence in higher education context, resources such as quality of faculty, the presences of particular programs and infrastructure, the amount of research and development support represent critical resources of a university.

Resource Non-substitutability:

The last characteristic of firm resource for sustained competitive advantage is that there must be no strategically equivalent valuable resources that are themselves either not rare or imitable. Two valuable firm resources (or two bundles of firm resources) are strategically equivalent when they each can be exploited separately to implement the same strategies. Suppose that one of these valuable firm resources are rare and imperfectly imitable but the other is not, firms with this first resource will be able to conceive and implement certain strategies. If there are no strategically equivalent firm resources, these strategies will generate a sustained competitive advantage (because the resources used to conceive and implement them are valuable, rare and imperfectly imitable). However, that there are strategically equivalent resources suggests that other current or potentially competing firms can implement the same strategies, but in a different way, using different resources. If these alternative resources are either not rare or imitable, then numerous firms will be able to conceive of and implement the strategies in question, and those strategies will not generate a sustained competitive advantage. This will be the case even though one approach to implementing these strategies exploits valuable, rare and imperfectly imitable firm resources (Barney,1991).

Even if a resource is rare, potentially value-creating and imperfectly imitable, an equally important aspect is lack of substitutability (Dierickx and Cool, 1989;Barney, 1991). If competitors are able to counter the firm's value-creating strategy with a substitute, prices are driven down to the point that the price equals the discounted future rents (Barney, 1986a) resulting in zero economic profits.

Substitutability can take two forms. First, though it may not be possible for a firm to imitate another firm's resources exactly, it may be able to substitute a similar resource that enables it to conceive of and implement the same strategies. For example, a firm seeking to duplicate the competitive advantages of another firm by imitating that other firm's high quality top management team will often not be able to copy that team exactly (Barney, 1991). However, it may be possible for this firm to develop its own unique top management team. Though these team will be different (different people, different operating practices, a different history), they may likely be strategically equivalent and thus be substitutes for one another. If different top management teams are strategically equivalent (and if these substitute teams are common or highly imitable), then a high quality top management team is not a source of sustained competitive advantage, even though a particular management of a particular firm is valuable, rare and imperfectly imitable.

Second, very different firm resources can also be strategic substitutes. For example, managers in one firm may have very clear vision of the future of their company because of a charismatic leader in the firm. Managers of competing firms may also have a very clear vision of the future of their companies, but this common vision may reflect these firms' systematic, company –wide strategic planning process (Pearce and Robinson. 2007). From the point of view of managers having a clear vision of the future of their company, the firm resource of a charismatic leader and the firm resource of a formal planning system may be strategically equivalent, and thus substitute for one another. If large numbers of competing firms have a formal planning system that generates this common vision (or if such a formal planning is highly imitable), then firms with such a vision derived from a charismatic leader will not have a sustained competitive advantage, even though the firm resources of a charismatic is probably rare and imperfectly imitable.

Strategic substitutability of firm resources is always a matter of degree. However, substitute firm resources need not have exactly the same implications for an organization in order for those resources to be equivalent from point of view of the strategies that firms can conceive of and implement. If enough firms have these valuable substitute resources (i.e. they are not rare) or if enough firms can acquire them (i.e. they are imitable) then none of these firms (including firms whose resources are being substituted for) can expect to obtain a sustained competitive advantage (Barney, 1991).

The Balanced Scorecard for Higher education:

The fundamental mission of research universities and their academic units and programs is the advancement of excellence in the creation, sharing and application of knowledge, typically described in terms of teaching, scholarships/ research and public service/ outreach (Ruben, 1999).

Fulfilling this mission requires a distinguished faculty, high level research activities, innovative and engaging teaching-learning processes, supporting technology and quality facilities, capable students, competent faculty and staff and legislative and public support. Ruben (1999) indicates that although historically less well appreciated, universities also requires excellence in communication and a service oriented culture, appropriate visibility and prominence within the state and beyond; and a welcoming physical environment; a friendly, supportive and respectful social environment; expectations of success; responsive, integrated, accessible and effective systems and services; and a sense of community.

Most specifically, fulfillment of this mission requires successful engagement with a number of constituency groups, and for each desired and potentially measureable outcomes can be identified: prospective students who are applying to a university/program as a preferred choice, informed about the qualities and benefits they can realize through attending; current students who are attending their university/program of choice with well defined expectation and high levels of satisfaction relative to all facets of their experience, feeling they are valued members of their university community with the potential and support to succeed. The research contract agencies and other organizations or individuals seeking new knowledge or the solutions to problems are another constituency whose desired outcome is to actively seek out the university and its scholars for assistance. Friends-who are proud to have a family member attending the university/ program, supportive of the institution, recommending it to friends' and acquaintances; Alumni- who are actively supporting the university/program and its initiatives; Employers- seeking out university/program graduates as employees, promoting the university/program among their employees for continuing education; Colleagues at other institutions-viewing the university/unit as a source of intellectual and professional leadership and a desirable workplace; Governing boards- supportive of the institution and enthusiastic about the opportunity to contribute personally and professionally to its advancement; local community-viewing the institution as an asset to the community, actively supporting its development (Ruben, 199).

Another constituency includes the friends, interested individuals, donors, legislators and the general public-their desired outcome is valuing the university as an essential resource, supporting efforts to further advance excellence; faculty-pleased to serve on the faculty of a leading, well-supported institution/program, enjoying respect locally, nationally and internationally and lastly staff-regarding the institution/unit as a preferred workplace where innovation, continuing improvement and teamwork are valued, recommending the institution/unit to others (Ruben, 1991).

2. METHODS

Setting:

This analysis targeted the staff of both private and public universities. It focused on the staff in the schools/faculties that are in both the universities. These included: Arts and Social Sciences; Law; Education and Commerce/Business Management. The total number of staff at the private university in the four faculties/schools is 170 while those from the public University are 250. The staffs targeted were administrators, and all the teaching staff of the four schools.

The four schools targeted were stratified into departments. The school of Arts and Social Sciences for example was made up eight departments at public University and also eight departments at private university; school of Law had 4 departments at the public University and 2 at the private university; school of Education had 4 departments at the public university and 2 at the private university and school of Business Management has the 5 departments at the public University and also 3 at private university.

This study used Kerjcie and Morgan (1970) method for determining the sample that is representative of the population using the following formula:

$S = X^2 NP (1 - P) \div d^2 (N - 1) + X^2 P(1 - P)$

Where:

S = required sample size.

X^2 = the table value of chi-square for 1 degree of freedom at the desired confidence level

(3.841).

N = the population size.

P = the population proportion (assumed to be .50 since this would provide the maximum sample size).

d = the degree of accuracy expressed as a proportion (0.05).

A standardized table has been attached as an appendix. From the sample size table, the public university staff population of 250 in the four schools will be represented by a sample size of 148 and the private university population of 170 will be represented by sample size of 114.

3. DATA COLLECTION

The data collection instruments used in the analysis was questionnaires. The questionnaires were administered to the staff members of the four schools (Arts and Social Sciences; Law; Education and Commerce/Business Management in both universities. Questionnaires were preferred because of the large number of the sample size which means therefore that holding interviews would take very long. A questionnaire was appropriate for this study because it gives the researcher an opportunity to carry out an inquiry on specific issues on a large sample and thus make the study finding more dependable and reliable (Kothari, 2003). The instrument was also appropriate because the respondents are literate and therefore can respond to the questionnaire on their own. The questionnaires were self-administered; where the respondents were asked to complete the questionnaires themselves.

Measurement Scales:

Two main variables were used in this study; resource sustainablitlity as the independent variables and sustainable competitiveness as the dependent variables.

Sustainable Competitiveness:

Sustainable competitiveness was measured using five constructs. They include programs/courses, public service/ outreach, research, workplace satisfaction and finance (Ruben,1999). The researcher measured the strength of the respondents' agreement on 10 statements developed by the researcher.

Two items were used to measure each of the five constructs of sustainable competitiveness. *Programs or Courses* for example was measured using: "all the lecturers in the department have masters degrees and above" and "programs offered in the department are current in the market". *Research* was measured by "the department has a journal that is produced on quarterly basis" and "publications are recognized if they are published in selected stature of journals of publishers". The two items that measured O*utreach* were "Employers send their employees to the departments' programs for continuing education" and "the alumni of the department offer both financial and moral support to its initiatives". *Workplace Satisfaction* was measured by "the department experiences very low staff turnover" and "employees in the department are regularly trained in their area of specialization" and lastly *Finance* was measured with "the department receives donations (monetary, books etc)" and "departments prepares an operating budget annually"

Resource Non-substitutability:

Non-substitutability of resources was measured using 2 items: "programs developed in the department cannot be replaced by other programs from other institutions" and "the lecturers' competencies cannot be replaced by others and the same output expected".

Data Analysis:

A total of 290 questionnaires were distributed; 170 to the public University and 120 to the private. These numbers are more than the sample sizes of 148 and 114 for public and private universities respectively. This is because the some respondents misplaced their questionnaires, requiring the researcher to redistribute them again.   The overall response rate was 91.7% (156) for the public University and 97.5% (117) response rate for the Private University. A total of eight questionnaires were discarded from the public University because they were blank & incomplete, similarly, two were discarded from the private university for being incomplete. The total usable questionnaires were 262, that is 148 (87.1%) from the public University and 114 (95%) from the private university which is acceptable for this type of research (Drnevich and Kriauciunas, 2011; Protogeron *et al*, 2008).

According to Barney's (1991) VRIN Framework, resources should not be able to be replaced by other strategically equivalent valuable resources. When resources are substitutable, they cease to be sources of sustained competitive advantage. Public and private universities were consequently compared in terms of steps taken to ensure that their resources were non substitutable.

Non substitutability of resources was measured using two indicators. Respondents were asked to indicate by ticking appropriate response scores, their views regarding non substitutability of resources in their respective universities.

Results revealed that respondents drawn from public universities appeared to agree that programs developed in the department cannot be replaced by other programs from other institutions and that lecturers competencies cannot be replaced by others and the same output expected (M=3.58, SD1.006). On the contrary, respondents drawn from private universities scored lower on resource non-substitutability (M=3.055, SD=1.002). This would mean that most of the respondents were not sure about the two statements on resource non-substitutability, indicated by the mean of 3.055.

On further testing whether the observed differences were significant, the t-test results revealed that the difference observed in resource non-substitutability was statistically significant {t(260) =4.178, p<0.01}.

The implication of these findings is that public universities have managed to harness non substitutability of their resources by designing programs tailored to the needs of the market. Besides, lecturers' competencies have adequately been addressed through regular training programs within and outside the universities.

Results of the hierarchical regression analysis of sustainable competitiveness on resource characteristics revealed that resource non-substitutability (β=-0.042, p>0.05) was found not to significantly predict sustainable competitiveness among institutions of higher learning.

4. CONCLUSION

This study sought to establish the effect of resource characteristics on sustainable competitiveness. It builds on literature from empirical studies in areas of sustainable competitiveness in institutions of learning, quality of education, Resource based View and Balanced scorecard.

The first hypothesis stated that there is no difference in resource non-substitutability between private and public universities. Findings revealed that public universities were more superior in resources that were non-substitutable. The second hypothesis stated that resource non-substitutablity does not predict sustainable competitiveness. Results indicate that indeed, nresource non-substitutability does not predict sustainable competitiveness.

1) Theoretical Contribution:

This study was informed by two theories; the Resource-based view (also known as the VRIN) framework and the Balanced Scorecard. This paper tested resource non-substitutability hypotheses as a predictors of sustainable competitiveness at the conceptual level and provided evidence that it was a non-predictor of sustainable competitiveness. By empirically confirming this hypothesis from the VRIN framework, this study significantly contributes to Resource-based view.

The other theory that was used in this study was the balanced scorecard. The Balanced Scorecard relies on the concept of Strategy developed by Michael Porter (Kaplan and Norton, 1996). Porter argues that the essence of formulating a competitive strategy lies in relating a company to the competitive forces in the industry in which it competes. The scorecard translates the vision and strategy of a business unit into objectives and measures in four different areas: the financial, customer, internal business process and learning and growth perspective.

The study tested all the five constructs of sustainable competitiveness and found out that there was no difference is sustainable competitiveness between private and public universities. By empirically confirming this hypothesis from the balanced scorecard of higher education, this study significantly contributed to this theory.

Managerial Contribution:

This paper informs management that resource non-substitutability is not key when addressing an organizations sustainable competitiveness. That resources can be replaced by other strategically equivalent resources and still attain sustainable competitiveness.

REFERENCES

[1] J.B., Barney Strategic Factor Markets: Expectations, Luck and Business Strategy.Management Science (1986a)

[2] J. B. Barney. Firm resources and sustained competitive advantage.Journal of Management(1991)

[3]   J. M, Bryson, F. Ackermann and, C. Eden Putting the Resource-Based View of Strategy and Distinctive Competencies to Work in Public Organization. Public Administration Review (2007)

[4]   G. N. Chandler, and S. H. Hanks Market Attractiveness, Resource-based Capabilities, and Venture Performance. Journal of Business Venturing(1994)

[5]   G. Clarke "Reassessing resource allocation strategies in higher education: methods of analysis", International Journal of Education Management(1997)

[6]   D.L. Deeds,. D. DeCarolis, and, J.E. Coombs Dynamic capabilities and new product development in high technology ventures: An empirical analysis of new biotechnology firms. Journal of Business Venturing(1997)

[7]   I. Dierickx and, K. Cool Asset Stock Accumulation and Sustainability of Competitive Advantage. Management Science(1989).

[8]   R., Finney, N. , Campell and, C. Powell: "Strategies and Resources: Pathways to Success?" Journal of Business Research(2005)

[9]   H. Hafstrand, Competitive advantage in the Magazine Publishing Business: A Resource-based Perspective, Nordicom Review(2006)

[10] C. Kothari Research Methods; Methods and Techniques ; New Delhi: Eastern Ltd(2003)

[11] K., Long, &, M. Vickers-Koch Using Core Competences to create competitive advantage. Organizational Dynamics (1995)

[12] R., Makadok (2001), 'Toward a Synthesis of the Resource-based and Dynamic- Capability Views of Rent Creation', Strategic Management Journal

[13] J. E. McGee and J. B. Finney Competing against Retailing Giants: A look at the Importance of Distinctive Marketing Competencies. Journal of Business and Entrepreneurship, (1997)

[14] J. E McGee. H. Thomas and D. Wilson Strategy: Analysis & Practice. New York, McGraw-Hill (2005)

[15] Y.E. Spanosand S. Lioukas An Examination into the Causal Logic of Rent Generation: Contrasting Porter's Competitive Strategy Framework and the Resource-based Perspective. Strategic Management Journal(2001)