Reassessing resource allocation strategies in higher education: methods for analysis

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Introduction

Within a new global environment, characterized by rapid change, intense information flows and increasing competition through the reduction of barriers to trade and exchange, higher education institutions, particularly in the UK, are slowly emerging as organizations driven by the commercial imperative of market-led forces. Yet their strategies for allocating resources are embedded in models of higher education organizations as public institutions, rather than as commercial organizations.

While it would be straightforward to advocate that universities take a more progressive commercial approach to resource allocation than has been the case in the past, this would deny the influence that such institutions, particularly through their business schools, have had on the thinking and business approach of executive officers and directors of competitive organizations. Perhaps it might be a question of “physician heal thyself” if it is suggested that universities take a leaf out of their own business education books. This article, however, argues quite the opposite. The current emerging paradigm of business strategy is the analysis, retention and exploitation of core competencies to achieve, extend and maintain competitive advantage. This is much more a model of higher education collegiate organization than any efficiency/effectiveness parameters of commercial resource allocation. As such it is, therefore, suggested that university models of resource allocation, especially the collegiate approach, if developed sensitively can be more useful to inform not only resource allocation in universities but also to lead development of new resource-based approaches for commercial competitive advantage.

Given that the strategy process starts with an analysis of available resources before developing mission statement and possible path trajectories, this article explores the usefulness of two measures of resource evaluation which will better inform the strategy-making process in universities which operate in a collegiate environment extending participation and decision making to all members of the organization. The first technique is the use of appropriability indices to better understand the strengths and weaknesses of the service offering. The second technique is system network mapping to identify complex core competencies which are not easily replaceable and are also valuable because they are not easily imitated. These two techniques can be used either as a self-assessment exercise for individuals and groups within a university or as an audit tool to inform executive decision making.

Past experience

Allocative mechanisms have always been derived from the overriding strategic paradigm. This is taken to mean the interpretation and internal response of organizations to their external environment in pursuit of their goals. For example scientific management created a functional structure which concentrated on efficiency. In parallel, various teaching models were assessed on the basis of their costs (see Table I) and fit in with this allocative efficiency directive.

Such an efficient mechanism is characterized by a few senior budget holders making the allocative decisions (Mintzberg, 1991a). Still taken as the norm for strategies emphasizing efficiency, some universities worldwide have yet to adopt a more modern approach. Gunn (1995), in particular, argues forcefully for a change away from hierarchy and bureaucracy for the sake of the core service and competitive advantage.

Other strategic paradigms applicable to universities include bureaucratic universalism (public sector, formal, rule-bound, universal and impersonal) which can lead to political conflict (military tactics based on possession, authority and right to make decisions) (Baldrige, 1971; Becker and Kogan, 1980; Pfeffer and Salancik, 1974) and multiversal democracy (Clark, 1983) which Mintzberg (1991b) referred to as relevant for a mature, diversified business with many product/service lines.

More recent commercial research (Hamel and Prahalad, 1993) asks why some companies redefine the industries in which they operate, i.e. what is important are the managerial...
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frames of reference. These frames of reference are considered to be sourced from business schools and are the drivers which create important differential thinking in the minds of today’s managers. On the other side of the equation it is only possible to contemplate alternative strategies within the wider context of a better-educated and more informed workforce also sourced from universities. Therefore higher education is an input into both the internal and external dimensions of corporate reality. Consequently it is reciprocally important for universities to consider their approach to strategy in the light of business experience. More particularly, the Higher Education Funding Council for England (HEFCE) is considering a greater use of institutional strategy statements to inform its resource allocation to fund teaching. It requires that the university’s mission statement now gives:

a clear idea of each institution’s purpose and distinctive characteristics (HEFCE, 1996a).

While the funding council has always made it explicit that the internal allocation of resources should in no way reflect the Council’s allocation to the institution; the Council’s objective (HEFC, 1996b) is to fund similar activities at a similar rate across the country. The present funding method was, in part, inherited from previous bodies such as the University Grants Committee (UGC) and the Polytechnic and Colleges Funding Council (PCFC) which funded the same process at different rates.

The HEFCE now proposes that institutions should bid for additional numbers on the basis of quality, demand, national and regional needs (HEFC, 1996c). This imperative is likely to outlast whatever recommendations the Dearing Committee make. Clearly the government objectives which are bound up in the HEFCE document underpin a move to a more competitive environment in the higher education sector. The key phrase is “efficiency gains” which has, in the first instance, caused a return to the “machine organization” mentality. Some universities have pulled in power and responsibility to the centre or apex of the hierarchy.

As constrained competition has become the norm, it is easy to understand that universities in England will specialize more in order to compete and survive. The ability of some institutions to offer a wide range of subject categories is jeopardized. Increased specialization can, however, also bring about economic and educational benefits. The crux of the debate is what do universities, collectively and individually, envisage as the place and position of the higher education sector in the economy and society of the UK. Has the committee of vice-chancellors and principals (CVCP) actively engaged in this debate?

Fitting the appropriate resources

Within the competitive environment, being more customer led implies that resources are more appropriately targeted to relevant niche markets. Markets are now identified by the characteristics of their consumers and segmented according to niche traits. Alternatively they can also be defined by the organization as a function of their core competencies. This is why Disney was able to grow income from its copyrights even though the original material, i.e. cartoons, had passed the decline phase of the product life cycle. According to Collis and Montgomery (1995) resources can direct a company’s performance if they are accurately identified and assessed. The resources or assets can be particular competencies and they determine the efficiency and effectiveness with which an organization can perform its functional activities. Organizational culture can be one of those assets if it provides cohesion and drives the organization in the direction of its objectives.

For universities, “where a collegiate system operates, driven by consensus ... high academic standards and an ethos of professional integrity prevail” (Williams, 1992). But it has only been operative in resource-plenty environments; individuals resorting to defending territories in times of scarcity. In theory, a collegiate university sector would influence its environment creating greater equity and democracy within society. In practice, a

<table>
<thead>
<tr>
<th>Instructional model</th>
<th>Labour costs</th>
<th>Capital costs</th>
<th>Relative labour intensity</th>
<th>Relative productivity</th>
<th>Costs of output</th>
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<tbody>
<tr>
<td>Conventional(^a)</td>
<td>H</td>
<td>M</td>
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<tr>
<td>RUML(^b)</td>
<td>VH</td>
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<td>VH</td>
<td>ML</td>
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<tr>
<td>Programmed independent(^c)</td>
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<tr>
<td>Programmed learning(^d)</td>
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<td>M</td>
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<td>H-VH</td>
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Key:

VH = very high; H = high; MH = moderately high; M = moderate; ML = moderately low

\(^a\) Traditional mix of lectures, tutorials and lab work; homogeneous service; predictable outcomes; easy to program

\(^b\) RUML - Resource Utilization Model of Learning - large lecture groups focusing on academic excellence; intensive tutorials, no fringe subjects

\(^c\) Student centred; broad-framed syllabus, student choice and initiative, more work stations, staff training in counselling and determine timetable with students, e.g. Lancaster, NE London

\(^d\) Keiffer model-distance learning staff write lecture programmes and deliver via media. Counselling required for non-traditional students, e.g. Open University

Source: Bowers and Douglas (1971)
The resource may also be the institution's active video as with a renowned professor. Students may be just as satisfied with an inter-active video as with a published researcher. The financial support of marginality. It is at the margin, i.e. the least flexible resource, e.g. can the tea-lady give the lecture on Goedel's Theorum at a day's notice if pushed? Alternatively can the maths tutor delivering a business communications module with lectures from 7-9 a.m. in the chemistry laboratory and workshops from 1-3 p.m. in a computer lab with only 286s being wholly financed from the capital equipment fund (intended to update the 286s) not only gives an indication of the appropriability of the package but also the IEEP that went into putting it together!

The implications for this type of approach to a resource-based assessment of an organization's competence in its industry or sector are threefold. First, objectives need to be and can be prioritized with the information obtained; the most appropriate resources being allocated to the highest priority objectives. Second, the extent of leverage will depend on the degree of appropriateness of the least flexible resource, e.g. the feudal system and doctrine of sinecures were both fine examples of bartered loyalty and trust. Collis and Montgomery (1995) ask a very useful question. What makes a resource valuable? They introduce the concept of appropriability into the traditional economic equation of supply and demand. The value of a resource is directly related to its supply and its relative demand. A specialized resource, e.g. a professor, will be more valuable the more appropriate he/she is for a particular function. In the context of higher education, teaching and research skills are fundamentally different. The value of an entertaining teacher who can keep a lecture hall of 200 students interested and learning is on a par with a published researcher. The financial value can be approximated by assessing proportions of fees or net contract income and offsetting for drop-out rates, examination grades and other measures of student/client feedback. There is, of course, the danger to be avoided of measuring the unmeasurable and some educationists argue that the education service in general is not well disposed to quantitative analysis (McIllhatton et al., 1993). On the other hand it would be unsound not to measure what can be.

If higher education institutions are to compete more aggressively in the controlled HEFCE market for teaching and research, they need to have assessment mechanisms which accurately determine the areas of comparative competence and excellence on which to base successful resource-led strategies. Neither should an excellent resource base lead to complacency; the competence may be easily imitated or substituted by a different resource which gives a similar service. So students may be just as satisfied with an inter-active video as with a renowned professor. The resource may also be the institution's reputation. This is a good example of a collective corporate resource not belonging to any particular department; hence least likely to be defended by any department. It is possible to assess the value of the resource, whether tangible or intangible, by asking how appropriate it is for the job it is required to do. To underpin institutional direction and mission for innovation, resources could be subjected to the assessment outline shown in Figure 1. This appropriability index asks about the usefulness of the resource in the context of the existing mission and objectives. Other important resources which need to be added to the equation are finance and IEEP (intelligence, expertise, enterprise and problem solving) (Table II). While finance is not difficult to measure, IEEP requires a more subjective analysis.

This then gives a measure of the adequacy/inadequacy of the resource mix. For example, a maths tutor delivering a business communications module with lectures from 7-9 a.m. in the chemistry laboratory and workshops from 1-3 p.m. in a computer lab with only 286s being wholly financed from the capital equipment fund (intended to update the 286s) not only gives an indication of the appropriability of the package but also the IEEP that went into putting it together!

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lowest priority and the least programme-specific resource that the extent of competitive advantage can be measured. The issue becomes one of flexibility versus specialization.

The third implication is that the degree of success becomes a function of the flexibility of specific resources and the expertise of general resources. In chess, pawns can take the King and the Queen is the most flexible resource on the board. This indicates that even within a militaristic, offensive/defensive paradigm the specialist/flexibility perspective is relevant, i.e. human resource competence and its fit with other resources should underpin all types of strategic perspective.

The mix – network factors and services

Further work on core competencies by Snyder and Eberling (1995) suggests that a university should look at its system of activities and assess the value that they add not only to the present revenue but to the future potential of the organization. This is why reputation is important and why a longer-term view than the present five-year cycle needs to drive the internal allocative process.

The message is repeated: success depends on the correct identification of core competence. It is not enough to say the service or reputation is good. Instead ask: for what services does this institution have a good reputation? Identify in detail what those services are, how they are delivered and how they are received. If there is a core competence to issue degrees and diplomas, what makes this one any more desirable than the next? How should its worth be measured? Is the value of the degree employment dependent?, i.e. does it have value in the labour market? Does it have intrinsic value? Are students with this degree more competent than the next? How can this be visibly demonstrated?
Providing qualifications in many academic areas requires an analysis of core competencies which identifies the synergies between services; so that even if one service is not highly profitable it is easier to provide because it can be sourced from the inputs to a service which is highly profitable. For business this is a dramatic reinterpretation of a “dog” type product/service and the option to divest may be mistaken. McAlaney and McHugh (1994) consider this for universities within the framework of Maister’s model of the professional service firm. Another suggestion is not to imagine an endless list of core competence activities. A corporation will only have one or two. A university on the other hand has to decide first whether to put academic objectives before commercial ones, and how much commercial decisions are required to underpin these goals.

Black and Boal (1994) take a more intensive look at how these synergies can be identified. They propose a dynamic model of factor networks which includes interfactor relationships. Asset flows need measuring as much as asset stocks. The suggestion is that the more complex the inter-relationships between factors, the more difficult it is to imitate and the resource network becomes more valuable. Where a resource is a simple factor network, it may nevertheless be valuable if it is hidden or overlooked. Once exposed its value erodes quickly.

System resources are identified as complex networks which are socially created. This is a constructive measure of organizational culture viewed as a series of valuable system resources. Again it implies that the internal configuration of the organization can provide valuable advantages in the marketplace. Universities have always had a collegiate organizational model on which to base the growth of valuable social factor networks. But Gunn (1995) warns against the insidious imposition of patronage over productivity as the criterion of success in a collegiate organization.

From a strategic perspective, note has to be taken of how to measure these valuable resources when identifying appropriate core competencies. An example of core competency might be the ability of the applied science department to raise a postgraduate programme in animal welfare management and secure 100 suitable students in its first year. The essence of that competence would be the ability to work together, to be inspired and to help each other. The value is attached to the fit between the resources, strategy and the environment.

Core competencies should be intrinsically flexible and able to support multiple services. Competency should also represent a unique capability, not easily imitated. Again organizational culture could be one such asset. In practical terms, decision makers need to have tools which require them to be much more specific about their main activities and the comparative advantage they bring to the institution. Activity-based benchmarking (proof that the activity does add value) and employee and asset distribution can be accommodated in an appropriability index. This tool could be developed in conjunction with the network mapping mentioned above. This would aid the developmental structure of the organization as it links to its current work demands (O’Neill, 1994). Individual and team development could be accommodated within the greater diffusion of control to the operating periphery of the university as observed by Handy (1989) in the commercial management environment and being pursued as a macro-economic policy by central government (Kogan, 1988).

Attention can be given to redefining the core competencies. This redefinition is the other side of the coin. What are client perceptions of the service they receive? Who are the university’s main clients? The HEFCE provides 50 per cent of the income to the UK higher education sector; adding the research grants gives another 12 per cent and government funds through the local education authorities (LEAs) a further 12 per cent (HEFC, 1996b). Should they therefore concentrate on their role as agents in a principal/agent framework? i.e. should universities act as agents for the government and provide the service the government requires, i.e. training for employment and applied research to generate new industry?

Another view is that as independent institutions, universities should lead academy and education policy initiatives. These basic issues emphasize the direction in which each institution will travel into the future. If government-funded students bring in less income than overseas students, should the latter be offered a better service? Service differentiation in higher education is one of the issues which underpin the third universal organizational process objective – equity. More specifically, equity is a principal for all public-sector institutions which has been undermined by the competitive imperative.

Informing the strategy process in higher education

The effects that a rethink of purpose can have on the strategic intent of a university should create changing patterns in its
structure, systems and processes. The former and the latter are directly controlled by executive directives. The organizational system, however, is the linchpin and if the three are not congruent then strategies cannot work and objectives are not achieved.

If appropriate core competencies are to be identified, then resources, in the first place, need to be allocated to the task. Internal audits are one way of achieving a detailed description of what the institution is doing. This can be enhanced by using tools of analysis such as the appropriability index and the systems-mapping techniques as indicated. These composite analyses can underpin a structural framework for the mission stated, based on the recognized appropriate core competencies. This does not necessarily support one single hierarchical structure. There is also the possibility that each emergent segment of activity will require its own appropriate structure. A low-cost conventional area of activity may require a mechanistic hierarchy. Similarly a differentiated high-income section may require more individual autonomy. This brings the institution into the realms of the multiversity (Livingstone, 1974) as well as the professional service firm. Business parallels are recognized in multi-purpose global divisionalized corporations or in global business systems operating through networks rather than hierarchies.

The resource-based view (RBV) of business clearly identifies the pivotal position of competencies in building competitive advantage. More particularly, complex, hidden and intangible asset flows which cannot be easily replicated provide an organization with the potential for success. This is the most noticeable where the asset flows are appropriate to the markets that they operate in. In higher education, one of the most valuable asset flows is systemic networks of socially created teams of professionals. These assets are made available more readily within a collegiate framework which is based on professional consensus. It is important to identify what factors create and drive an effective collegiate system operating within a competitive environment.

The implication for the processes which are established to disseminate the resources for the objectives intended is also a complex issue. Allocating resources to prioritized activities in the present and the future is important. What procedures are to be instituted for the allocation of resources is usually only directed by the executive to the departmental level. More notice could be taken of the possibility of resourcing networks through a more informal structure. Informality does not necessarily imply unaccountability. Rigorous procedures for accounting for expenditure are always necessary in a public-sector institution. However, the accounting should give some measure of use of other resources besides finance and could therefore highlight over- or under-capacity of these resources.

Conclusion

This article has highlighted the preoccupation of modern strategic thinking with resources and competencies. It is an approach which can aid the better analysis of the corporation’s ability to compete successfully. Institutions of higher education are expected to increase the competitive nature of their activities within the environmental framework which demands continuous efficiency gains. Efficiency alone may suggest that such institutions look more closely at cost-effective universal models of education.

On the contrary, it may be that a university can achieve success by differentiating its services on the basis of identified core competencies which are appropriate to the different markets it serves. As an aid to identifying these core competencies two techniques are suggested. Systemic network mapping and appropriability indexing of areas of higher education activity would provide a greater degree of accuracy required to inform the strategic planning exercise. More research is required to refine and adapt these techniques to make them accessible and to improve their applicability. A study to investigate application across subject and activity centres in different universities would provide evidence of validity and reliability. Also research is required to identify the pathways by which this information can be used to inform the allocation process on an ongoing basis.

These techniques would generate a better picture of the direction in which the organization should head and make the mission more achievable. It would also improve the institution’s self-consciousness by creating a better picture of its distinctive characteristics. Further to this it would inform the executive of the most appropriate structure to adopt to foster successful competitive advantage in its differentiated systems, whether it be collegiate, bureaucratic or functional. Procedures for resource allocation would, therefore, vary according to the structural and systemic identity and direction of each area of activity. The need to foster an overall cohesion in the institution becomes the new executive imperative rather than the requirement to oversee and plan all subordinate activities.
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