

Management Changes in U.K. Engineering Education

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Until recently, universities and polytechnics in the United Kingdom were mainly concerned with students but now the business aspects of education must be taken more seriously. They are in a new and dynamic environment. Organisations must now be responsive to commercial pressures within a changing and challenging atmosphere. Management and structures will have to respond quickly and positively in this new environment. This paper will consider the new external environment and the changes taking place to the culture and structures within the institutions. The changes will be analyzed using a SWOT appraisal and using the methods of Alexander [1], Pugh and Hickson [2] and Child [3]

1. INTRODUCTION

UNIVERSITIES and polytechnics in the United Kingdom are now in competition. New logos have been produced and new images are being developed. Significant weaknesses and strengths are being identified in relation to structure and cultures, as well as to products, price, place and marketing. Where we were concerned about services and products, we must now be concerned with our markets and customers [4]. The situation needs to be viewed from an external position [5] and this paper attempts to achieve this.

The United Kingdom Government is attempting to meet the needs of its potential customers by monitoring the changes taking place and publicising league tables of education institutions. Products and services are being adapted and expanded, and we must hope to achieve this without diluting the content and worth of the qualifications offered [6].

At one time the polytechnics relied on applications from individuals. This situation has changed and applications are passed through a system where preferences are identified and students are allocated to places. This situation will change again as polytechnics join the universities and a new quality assurance (QA) structure is put in place. At the same time, some individual applications are still permitted. Publicity departments have been created and they are often seen as the main vehicle for marketing. The actual situation is more complicated. At a lower level each faculty, school or department markets themselves through varying place, prices and promotions strategies, as well as the overall course content. The different departments may tend to concentrate on different geographical areas outside the U.K. The only similar part of the marketing mix is the product. This

remains as higher and undergraduate degrees, diplomas, research, consultancy and short courses.

Student places can be regarded as being sold mainly by PCAS and UCCA and partly by the schools and departments. PCAS and UCCA are concerned with allocating U.K. students to places. The students' personal choice is considered within this allocation. PCAS and UCCA accept applications from prospective students. These applications include a list of preferences and it must be a major aim *to persuade students to name the institutions on their application forms*. Courses offered to industry, foreign students and mature students are being expanded. Minimum prices are often set by committees but actual prices and courses are often negotiated within departments.

Schools and departments are concerned with attracting customers from around the world. Their first objective is to inform people that they exist and to persuade them to find out more. In the case of students this extends to enrolling. The design of the range of courses must be key to the ability to supply the range within a budget.

The external customers may be regarded as the Government, potential students, their advisers, industry, consultancy contractors, the professional institutions and the local education authorities. All of these need to be informed of our existence and our abilities. The internal customers are the departments, the faculties, non-teaching staff and students.

The Government are looking for a good return for their overall investment. The local education authorities are more concerned with a local return and may be especially important if they are to be provided with limited budgets. The advisers of potential students (such as parents and school teachers), industry and the professional institutions, are all looking for quality and a good track record.

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The final decision made by students may be based on a number of factors other than the quality of the institution and the courses. These might include geographical location (by the sea, on a campus, etc.), the search reputation or the sports facilities.

The staff tend to require a pleasant place to work within a modern institution with resources and facilities for research and their other personal interests. They also require adequate training and education. The different benefits are summarised in Table 1.

The qualifications and training demanded from institutions are constantly changing. Examples of these are the recent trends towards IT, management and business qualifications [7].

Promotion by means of the media appears to have an influence over the institutions favoured by students. Generally it is the research, project and consultancy work which creates this type of publicity and this work must be encouraged.

It is often usual for students to go elsewhere for a higher qualification and to take new students from other institutions into higher degrees. Good recommendations from past students are vital for future business and it must be ensured that they are happy when they leave.

The most important recent legislation concerns funding arrangements and the coming change of polytechnics to university status. Institutions will be funded in relation to the number of students attending the institution. The cultural tradition of the United Kingdom has placed universities on a higher level than polytechnics. This tradition may continue after the polytechnics receive university status and ex-polytechnics may be regarded as second class universities. This will be discussed further in Section 3.

The perception of teaching and training in Europe is changing. Political parties are attempting to give training a higher perceived value when compared to formal education and the distinction between them may become blurred.

New technology is advancing fast, especially in the areas of science, computing and engineering, but this technology is quickly spreading to other subjects. The technology in use must be perceived as being modern and effective.

2. STRUCTURES AND CULTURES: HOW DO WE WORK TOGETHER?

Having considered the environment, it is necessary to investigate the internal cultures [8] and structures. From these, it is possible for institutions to extract their strengths and weaknesses and to develop the organisation [9]. Dramatic changes have taken place and many images and logos are being created, but there may be a discrepancy between the new public images and reality.

The goals and institutions are changing in this new environment and new objectives are being set to achieve these goals. Of the standard business goals identified by Handy [10] survival, profit and market share are becoming meaningful, where reputation, prestige and a good place to work were important before. Achieving these new objectives may require changing the core beliefs and assumptions of staff and the role of management will be critical during the later process of change. Changes may be necessarily made over a relatively short period of time and at all levels. This will inevitably create difficulties.

It should be noted that changes may adversely affect other departments. Differences are inevitable and necessary, but changes must be carefully monitored. If the changes can be seen as being initiated by staff, at least in part, then the changes will be more successful. Unfortunately the change strategy may have to be partially directive as reaction time may be short. The best that may sometimes be hoped for is to move with the general support of the staff.

In the past, cultures and subcultures of institutions have reflected the history and origins of U.K. education in the United Kingdom. This has been modified by the increasing rate of change and complexity of technology. Attempts are being made to change the cultures to reflect mixes of role culture and task culture. To achieve this, a power culture may be temporarily imposed.

Individual teaching loads are often decided by individual lecturers in consultation with a timetabler, and not by a line manager. This can create conflicts within a new and developing structure.

For research, fluid groups tend to exist which are adaptable and change depending on the task. The largest research groups must be nurtured if institutions are to prosper and many governments are

Table 1. Benefits

The advisers of our potential students Government, LEAs and industry	Academic achievement A reasonably priced qualification or skill
The professional institutions	Academic achievements and a record of research
Potential students	Student lifestyle, relevant qualification and reputation
Staff	Pleasant working environment, research, training, education and staff development

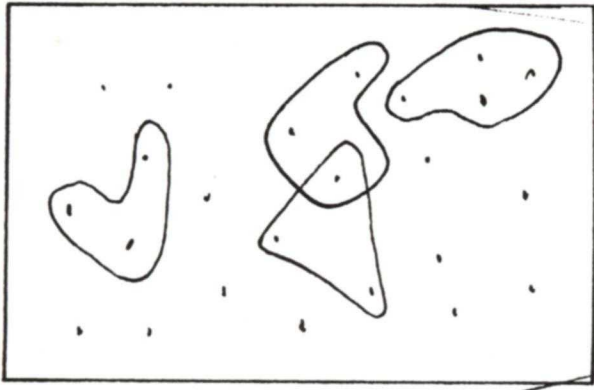


Fig. 1. A representation of a people culture within the task. (The dots represent the people as individuals within an unstructured environment constrained by the task.)

declaring an intention to fund national and European centres of excellence. During scholarly activity, lecturers tend to effectively manage themselves and they are the focal point for the culture. Structures used to be seen as serving the individuals within it and management was often by mutual consent. At one time managers were elected by other members of staff for a fixed period. These aspects reflect the person culture described by Handy [10], but all aspects of the work are now project oriented and the emphasis is on getting the job done. This suggests the cultures will at least become a mix between a dominant person culture and a secondary task culture.

Management are recognising that the old structures may be too large to continue to function well with a dominant person culture. Power cultures may be introduced as a transition to introduce a Role or Task Culture; control may be centralised and key individuals selected for promotion. Power moves away from committees and towards these individuals. This may only be a transition however and once key individuals are in place, a role culture may be developed as the new structures become fully developed around them.

Historical person cultures have spawned inappropriate structural arrangements for the new climate of competition. These structures can make work frustrating and reduce effectiveness.

The most suitable structure and associated

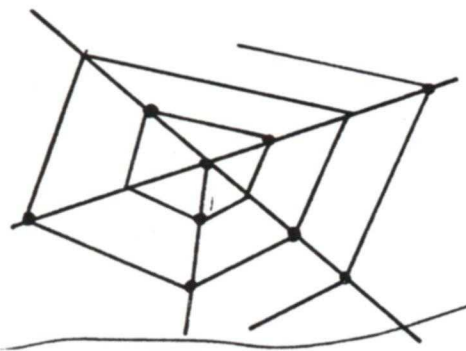


Fig. 2. A power structure. (Power is centralised in a web)

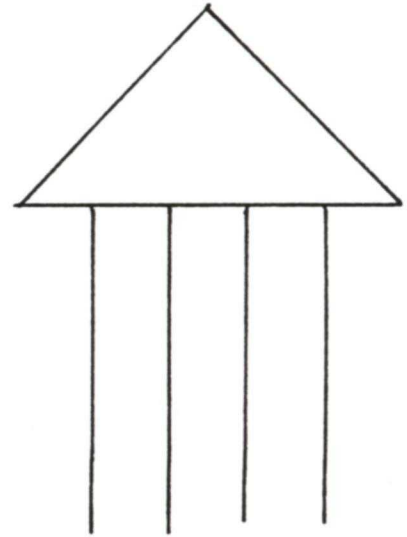


Fig. 3. A role structure. (Each tail represents a departure within a school or faculty)

culture may be a matrix structure with a task culture as shown in Fig. 5. In this case the emphasis is on 'getting the job done' and the structure seeks to bring together the appropriate resources and the right people.

In imposing the vogue structural changes, management may not be giving enough consideration to the people within the cultures and their ability to restrain the forces for change. These may be the most important influencing factor and the high calibre and well qualified staff may have joined and have stayed with the school because it was dominated by a person culture. As people are given new responsibilities within a role culture, conflict will occur. Within a power culture, people are in competition for promotion and scarce resources. During this change, one individual can only win at the expense of others. While the structure is being imposed, the reality may be different; boundaries are often unclear, lecturers and researchers strive for autonomy and the new structures can often be seen as a violation of their territory.

The process of changing structure will inevitably create some conflict. At present people do not fully understand their roles and responsibilities and the role culture must be frozen into place quickly to provide an atmosphere of collaboration.

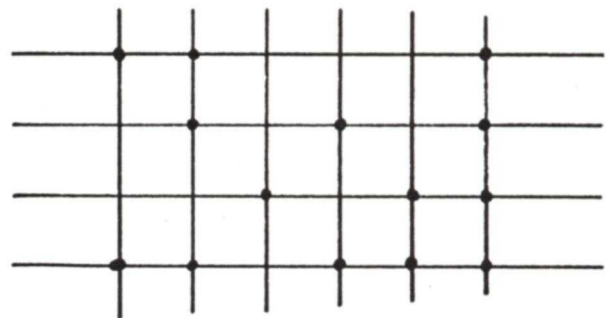


Fig. 4. Matrix structure. (Works with a task culture)

Some conflict may exist between members of different departments which are split or amalgamated. This may include some limited covert plotting and exaggerated inertia. It is vital to introduce an atmosphere of open discussion to remove this opposition to change. This may be helped by asking the staff to help to formulate and agree a strategic plan during the unfreezing stage.

3. DISCUSSION AND CONCLUSIONS: WHAT ARE OUR STRENGTHS AND WEAKNESSES?

Having considered the external environment and internal cultures and structures, some strengths and weaknesses can be inferred. These will be considered in relation to product, price, place and promotion.

3.1 Discussion and conclusions: product

Although the competitive price for services does not affect the main core of the business, students do attend an institution to obtain benefits. Their needs must be monitored to ensure we are still supplying their wants and we must constantly review our courses. The total number of 18-year-old students is declining and macro forecasting and aggregate product/market estimates suggest the whole U.K. market may be in decline. In the short term, the A, B and C1 classes of U.K. 18 year olds is constant, and this may protect our main market for a while—but in this environment the institutions should build on existing strengths while preparing and introducing new courses.

Referring to this audit, if unemployment continues to rise, relevant qualifications, a good job and wider choice of jobs will become the more important benefits. We tend to satisfy these benefits but *must* recognise the often poor working environment and the effect this has on staff and prospective students—as well as students already enrolled. The inability of some courses to provide a positive financial contribution in isolation from other courses has been recognised and new integrated degree schemes may spread resources, costs and facilities.

Cultural traditions in the U.K. have placed universities on a higher level than polytechnics. Now that polytechnics are in direct competition with the universities, attempts must be made to identify areas where institutions are superior, or at least to highlight ways in which they are different. The perception of teaching and training in the U.K. and Europe is changing and the distinction between this and formal education may become blurred. The U.K. may lose our market share as the market becomes smaller and as the older universities may be perceived to provide more valuable services and qualifications.

Competitors are renaming products and presenting new products. This must be monitored!

A GAP analysis shows a gap in market potential

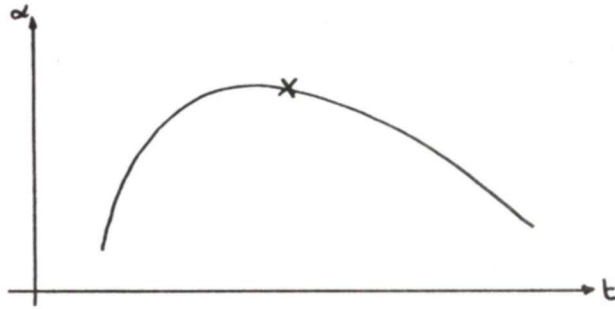


Fig. 5. The position of standard engineering degrees. (The engineering degree has moved from maturity to saturation)

as compared with Germany or Japan and therefore a usage gap in the national market. This suggests we could improve our position and close the product line gap and the competitive gap with other institutions. Market penetration may be increased by diversification and product development to modify existing quality, style and variety. This may be achieved as new courses are introduced. It may also be necessary to find new markets in other countries and other age groups. The engineering degree has moved from the mature stage to the saturated stage on the product life cycle and with the Ansoff matrix, this also suggests a strategy of diversification, but any new products should complement the existing product range. \leq

Analysis with a Boston matrix suggests the courses must be managed effectively and products must be distributed through all of the available channels. Any trading surplus can be used to finance new courses and balance the new courses which are at a risky stage with mature products. Integrated degree schemes may help to spread costs and rationalise resources and other methods of teaching such as distance learning and partnership degrees must be considered.

3.2 Discussion and conclusions: price

Although price generally affects the quantity sold, the price for the U.K. student market has traditionally been set by the Government. This may not be the case in the future as U.K. students may lose their grants and other Government policies take effect. Prices may be undercut by other institutions. This has always been possible for foreign students and for industrial courses. In all these areas we must decide if U.K. institutions are to be quality institutions and if they are, then they must charge quality prices. Four factors influence our pricing strategy: the student needs, the market environment, the institutions and the markets. Low prices are unlikely to yield an increased market share and competition should be avoided on price alone, especially as the market may be inelastic to price. Attendance on courses may be more dependent on customer benefits and their perception of us. We should concentrate on these!

3.3 Discussion and conclusions: place

Is the product available to students when and where they want it? Could we take the courses to them? This may be partly achieved with the new partnership degree schemes, the introduction of study packs and the CAT rating system.

The geographical position and the image of the institutions are important. The location may not be the best for the U.K. student market, but it may provide other benefits such as access to Europe. Strong links are being developed with European institutions and research groups are bidding for European projects. This may be too insular and we may have to look further afield!

The place of effective sale may become less satisfactory to U.K. students as Europe becomes more accessible in 1992 and a foreign language becomes more desirable. Conversely we may become more attractive to the rest of Europe.

The flow of information through institutions, including the processing of prospective students, demand forecasting and loading must be efficient. There are benefits in using an intermediary with local knowledge, especially in foreign markets such as Hong Kong and China. These 'subcontractors' should be considered in the marketing mix and we should ensure a good image is being passed on by the schools ambassadors and liaison officers. Unfortunately we must recognise that this reduces the level of our control.

3.4 Discussion and conclusions: promotion

Promotion by means of the media appears to have an influence over the institutions favoured by

students. Generally it is the research, project and consultancy work which creates this type of publicity and this must be supported. The aim must be to create a favourable image and to reinforce positive attitudes. The corporate image is communicated via qualifications, courses, promotion and the place of sale, including buildings and technical equipment.

Promotional methods include personal selling through school and industrial visits, advertising in national and local media, and articles in magazines and research journals. (It is difficult to consider sales promotions in the usual sense.) Advertising should inform, persuade and reinforce messages. Establishments must be visible in the market place and foster good relations with the press and professional bodies. Attendance at research conferences and research activity can be especially useful for attracting publicity and reinforcing our message and these must be encouraged. Secondary sources must give favourable recommendations. If this is to be achieved, then customer servicing and marketing must be correct. Courses will be recommended by word of mouth.

Objectives must be closely related to an overall plan, including the mix of courses, the total number of students and the market mix. These lead to the formulation of an advertising plan. Success in these areas can be measured by considering the reaction and behaviour caused by exposure.

Institutions tend not to employ salesmen as such, but all staff and students are acting as salesmen all of the time. They must understand this!

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