



Strategic development and SWOT analysis at the University of Warwick

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Abstract

SWOT analysis is an established method for assisting the formulation of strategy. An application to strategy formulation and its incorporation into the strategic development process at the University of Warwick is described. The application links SWOT analysis to resource-based planning, illustrates it as an iterative rather than a linear process and embeds it within the overall planning process. Lessons are drawn both for the University and for the strategy formulation process itself.

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1. Introduction

The University of Warwick was founded in 1965, and in the thirty-five or so years since has established itself as one of the UK's leading universities regularly featuring in the top ten of the various league tables constructed by the media (e.g. *The Times*), and having a turnover of £160 million. Strategic development at the University of Warwick has a mixture of components including: the development annually of a corporate plan for submission to the Higher Education Funding Council for England (HEFCE); an annual five-year planning process undertaken by the Strategy Committee (a body comprising the principal officers of the University, who form the Steering

Committee, and a number of lay (external) members of the University's governing body, the Council); and the formulation and sometimes adoption of strategic initiatives throughout the year.

In the spring of 2001 the Steering Committee considered that the corporate plan was due for a radical overhaul. However, with a new Vice-Chancellor (chief executive) appointed and due to take up his post in the summer, it was agreed that the Steering Committee would have a strategic awayday which would aim to produce recommendations for future consideration. It was agreed that a SWOT analysis would form the core of the awayday, which would be facilitated by the author who was a member of the Steering Committee due to his role as a Pro-Vice-Chancellor.

The paper first introduces SWOT analysis and its links to contemporary planning methods such

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as resource and competency-based planning. This is followed by a description of an application of SWOT analysis at the University. The SWOT analysis is then set in the context of the University's strategic development process.

This featured issue of EJOR is concerned with applications of soft OR approaches, with SWOT analysis mentioned in that context. The author has argued elsewhere (Dyson, 2000) that OR has much to offer in the field of strategy support. It must however be inclusive of methods including hard and soft, but also should not confine itself to methods with a traditional OR label. Dyson and O'Brien (1998) in their book on methods and models for strategic development include chapters on the balanced scorecard, visioning, SWOT analysis, resource and competency-based planning, cognitive mapping, scenario planning, system dynamics, capital investment appraisal and real options as examples of this inclusive approach. This application is offered in that spirit.

2. SWOT analysis

SWOT analysis aims to identify the strengths and weaknesses of an organisation and the opportunities and threats in the environment. Having identified these factors strategies are developed which may build on the strengths, eliminate the weaknesses, exploit the opportunities or counter the threats. The strengths and weaknesses are identified by an internal appraisal of the organisation and the opportunities and threats by an external appraisal. The internal appraisal examines all aspects of the organisation covering, for example, personnel, facilities, location, products and services, in order to identify the organisation's strengths and weaknesses (Fig. 1). The external appraisal scans the political, economic, social, technological and competitive environment with a view to identifying opportunities and threats. A variation of SWOT analysis is the TOWS matrix (Fig. 2). In the TOWS matrix the various factors are identified and these are then paired e.g. an opportunity with a strength, with the intention of stimulating a new strategic initiative.

Employees
Brands, products, capabilities
Innovative capability
Customer relationships
Facilities and infrastructure
Efficiency, effectiveness and flexibility
Size, location, accommodation

Fig. 1. Internal appraisal, strengths and weaknesses.

	Strengths	Weaknesses
Opportunities	SO strategies	WO
Threats	ST	WT

Fig. 2. The TOWS matrix.

An early example of the TOWS matrix is shown in Fig. 3, adapted from an account by Heinz Wehrich (1982). Volkswagen (VW) undertook this strategic exercise in the early 1970s. At that time they were concerned that the high labour costs in Germany and the strong mark were making it difficult to export to the US, the largest market for cars in the world. The analysis, provided by the TOWS matrix, suggested that VW should build cars in the US as all pairings pointed in that direction. For example the production strengths coupled with the threat of the high mark suggest building in the US rather than exporting from Germany. In fact this strategy was adopted but initially failed, as the company never overcame a key weakness, their lack of US production ex-

	Strengths: R&D Quality production Sales and support	Weaknesses: One products High costs in Germany No US experience
Opportunities: Incentives to invest Small engines	Build cars in US Supply engines to US producers	Build in US Diversify product range
Threats: High mark Japanese competition	Build in US Improve cost effectiveness	Build in US Diversify product Withdrawn from US

Fig. 3. A TOWS matrix for VW.

perience. They were unable to come to terms with the US car manufacturing culture. However they later gained the benefits of the analysis by producing successfully in Central and South America and exporting to the US from there rather than from Germany and thus overcoming the problems presented by the strong mark and the high labour costs.

3. Resource and competency-based planning

SWOT analysis has its origins in the 1960s (Learned et al., 1965). In more recent years SWOT analysis has been seen as somewhat outdated and superceded by resource-based planning (Wenerfelt, 1984; Grant, 1991) and competency-based planning (Ulrich and Lake, 1990). The resource-based view focuses on the internal resources, capabilities and core competencies of the organisation, and advocates building strategies on these foundations to assure the competitiveness of the organisation and the attractiveness of the industrial sector (Fig. 4). Barney (1991) further developed the resource-based view arguing that a resource was strategic if it satisfied the criteria of valuability (the capacity to increase the organisation’s effectiveness and efficiency), rarity (rare and in high demand), inimitability (difficult to imitate) and substitutability (not readily substituted). Likewise the competency-based view (Fig. 5) identifies an organisation’s competencies as the foundation for strategy development.

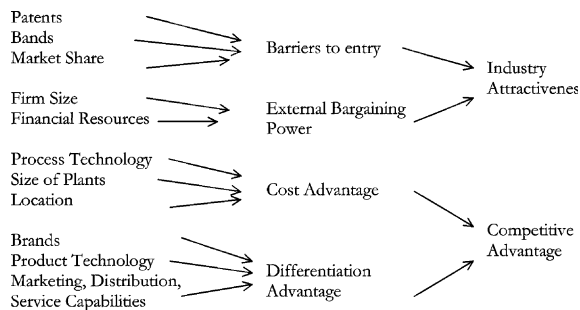


Fig. 4. Resource-based planning.

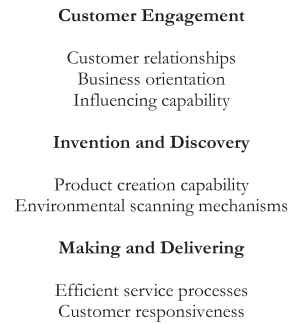


Fig. 5. Organisational competencies.

These more contemporary approaches to strategy formulation are developments of the internal appraisal of SWOT analysis rather than a replacement for it. The advantage of SWOT analysis or the TOWS matrix is its attempt to connect internal and external factors to stimulate new strategies. Hence resource and competency-based planning can enrich SWOT analysis by developing the internal perspective whilst keeping internal and external perspectives in play simultaneously. Rather than seeing SWOT analysis as an outdated technique therefore it is possible to see it as a firm foundation for resource and competency-based planning. (Similarly scenario planning is superficially a rather different technique. However, scenario analysis focuses on the external environment and identifies key external factors in a similar way to the external appraisal of SWOT analysis. The development of scenarios can thus also enhance SWOT analysis, although scenarios were not developed as part of the University strategic development process described later in this article.) An enhanced TOWS matrix is shown in Fig. 6.

Scenario Driven	Strengths, Resources Competencies	Weaknesses
Opportunities	SO strategies	WO
Threats	ST	WT

Fig. 6. The enhanced TOWS matrix.

4. SWOT analysis at the University of Warwick

The Steering Committee of the University (Fig. 7) agreed to hold an awayday in the spring of 2001, prior to the commencement of the annual planning round. The awayday incorporated a SWOT analysis and this was followed up by a questionnaire on aspects arising from the SWOT analysis. The Committee had expertise and experience covering all aspects of the University's activities. The three Pro-Vice-Chancellors and the four Faculty Chairs span the range of academic disciplines of the University and all the Senior Officers were present including the chief executive, the Vice-Chancellor. In fact one of the Pro-Vice-Chancellors was not present at the away day but participated in the follow up questionnaire.

A discussion was first held about the mission and characteristics of the University of Warwick (Fig. 8) to set the context for the SWOT analysis.

Vice-Chancellor	Finance Officer
Pro-Vice-Chancellors 3	Estates Officer
Faculty Chairs 4	Director of Personnel Services
Registrar	Director of Public Affairs
Deputy Registrar	President Students' Union
Academic Registrar	Secretary
Administrative Secretary	

Fig. 7. University of Warwick Steering Committee.

Internationally competitive, entrepreneurial
Research led
High quality research-informed teaching
Undergraduate, postgraduate and continuing and post experience education
Commitment to widening access
Close collaboration with local and regional community
Diverse funding and quality infrastructure

Fig. 8. The mission and characteristics of the University.

The group then went into idea generating mode first addressing opportunities and then following that with threats, strengths and weaknesses. The approach adopted was for each issue to be discussed in smaller groupings of two or three people seated together. Following the informal discussion each individual was asked in turn to contribute. This led to a rich range of factors being proposed and avoided potentially dominant views of some participants biasing the outcomes. As a result of this 16 opportunities were generated, 22 threats, 22 strengths and 21 weaknesses. These are listed in full in the appendix. In the follow up questionnaire participants were asked to score each item on the scale of 1–5 where for example 5 represented an opportunity not to be missed. Of the items scoring greater than 3 out of 5, 14 were opportunities, 11 were threats, 19 strengths and 9 weaknesses. The balance of items was thus in favour of opportunities and strengths suggesting an offensive rather than defensive orientation in the SWOT analysis.

The highest scoring opportunities and threats are shown in Fig. 9 and the highest scoring strengths and weaknesses in Fig. 10.

Demand for continuing professional development (CPD) was seen as a key opportunity and interestingly the internet appeared both as a leading opportunity and a leading threat depending presumably on the view of whether Warwick

<u>Opportunities</u>	Score	<u>Threats</u>	Score
Demand for CPD	4.18	Declining government fund	3.45
Entrepreneurial climate	4.09	The internet	3.45
The internet	4.09	Competition	3.45
Brand status	4.00	Decline in media profile	3.45
Strategic alliances	3.64	Career prospects in HE	3.36
China	3.55	Cumbersome decision making	3.36
Fundraising prospects	3.55	Targeted government funding	3.18

Fig. 9. Opportunities and threats.

<u>Strengths</u>	Score	<u>Weaknesses</u>	Score
Income generating capacity	4.45	Few endowments	3.55
Warwick brand	4.36	Science base	3.55
Research	4.18	Lack of external clout	3.55
Land	4.00	Complacency	3.18
Staff morale and loyalty	4.00	Arrogance	3.18
Student quality	4.00	Strains of expansion	3.09
Dynamism	4.00	Communication	3.00

Fig. 10. Strengths and weaknesses.

can take advantage of the internet rather than be overtaken by its competitors. The highest scoring threat was declining (relative) government funding, but it did not score as high as any of the seven highest scoring opportunities. This might suggest a group looking for opportunities or it could be interpreted as complacency for not taking threats seriously enough. A similar pattern emerged in strengths and weaknesses where the highest scoring weakness had a score equal to the thirteenth highest scoring strength. Complacency in fact was ranked the fourth greatest potential weakness.

The group was then invited to think about what strategies might follow from the identification of opportunities, threats, strengths and weaknesses using these as strategy drivers. The same pattern as before was used where there was time given for discussion in smaller groups and then each individual was invited to make a contribution. Ten broad strategies were proposed and these are listed in Fig. 11. The strategies covered a range of activities including developments in the sciences and social sciences, widening access, human resources policy and expansion of CPD policies. Fundraising was also seen as important.

The follow up questionnaire in addition to asking for importance scores for factors also asked which factors were supporting the proposed strategies. The strategies typically had several factors connecting to them and overall, opportunities appeared 48 times in supporting strategies, threats 33 times, strengths 43 times, and weaknesses 32 times. Again, the bias towards opportunities and strengths is evident. The most popular opportunities supporting the strategies were demand for CPD, science (and that was taken to include engineering and medicine) funding, brand status, fundraising opportunities and widening participation initiatives. The threats most evident included the possible collapse of the pay bargaining system, the relative decline in government

funding and again widening participation initiatives. The latter appeared as a key driver in both the opportunities and the threats, as it is a high profile and funded topic. Warwick although having over 70% of its pupils from state schools, nevertheless has a relatively low proportion from lower income groups. Consequently if the resource premium on such students were increased significantly without new money, that would affect the teaching resource of the University. There are however funding opportunities to exploit, and Warwick sees diversity as an important dimension. Strengths supporting the strategies included the Warwick brand, research and student quality. Weaknesses included fund raising, the science base and the undergraduate student experience.

5. Strategic development at Warwick, 2001

The original intention at this point was to write up the exercise and re-visit it after the new Vice-Chancellor had taken up his post in the summer. The assumption being that the planning round, taking place in April and May, would be simply an incremental development on the previously agreed strategies. However to quote John Lennon, 'Life's what happens to you while you're busy making other plans'. In this case what happened was the announcement by the government of the Science Research Infrastructure Fund (SRIF). Under this scheme money was given to universities to strengthen the infrastructure for sciences (and social sciences). However the money could only be spent on research, the University must put up 25% of the cost, and in addition any non-research spending associated with the projects would also have to be funded by the University. The proposals on how the money would be spent had to be submitted by the end of May, a ridiculously short time scale, and the money had to be spent over the following two academic years. Under the scheme the University of Warwick was allocated £11.7 million. This intervention had a radical impact on the University's planning. Rather than rolling the five-year plan on a year as had been anticipated the University now had to consider the allocation of £11.7 million and the current plans could not

Expansion	Continuing Professional Development
Develop Partnerships	HR Policy
Improve Undergraduate Experience	Improve Government Relations
Develop Science Strategy	Access
Develop Social Sciences	Fundraising

Fig. 11. Proposed strategies.

absorb the sum. The University thus had to move into a kind of reverse fire-fighting role. Rather than having to resolve a sudden severe problem it had to find a way rapidly of committing a significant capital sum. A subgroup of Steering Committee (all of whom had participated in the SWOT analysis) was set up to consider the matter and bring forward proposals to a meeting of the Strategy Committee during the five-year planning round. The main proposal involved the relocation of the Departments of Mathematics and Statistics from the Gibbet Hill Campus to the Main Campus. This move would permit further expansion of those departments but also of Biological Sciences and the Leicester/Warwick Medical School, which would remain at Gibbet Hill. The teaching building for the new Leicester/Warwick Medical School had in fact not been completed at that time. Beyond that, it was felt appropriate that some of the money should be deployed to support the University's e-strategy, which it had been developing during the academic year. However the movement of departments involved the movement of teaching as well as research so that the whole package would cost considerably more than the new income from the government. As the planning round developed, consideration also had to be given to the issue of residences and sports facilities that had been lagging behind the growth in student numbers and proposals to expand these facilities were also adopted. In the latter case due to the relatively low interest rates the building of an extra 700 residence places and 50 family residences was seen as broadly self-financing, but the extent to which the sports facilities would be self-financing was not immediately resolved. Proposals for a sports hall, an extension to the climbing wall, a health and fitness suite and a third hard play area were incorporated into the plan, although the health and fitness facility and the climbing wall were subject to further financial evaluation as they were seen as self funding developments. The strategies adopted during the year or during the planning round are shown in Fig. 12, as are connections to the SWOT proposals.

Nine of the adopted strategies had a clear link to the SWOT proposals. An e-strategy which was

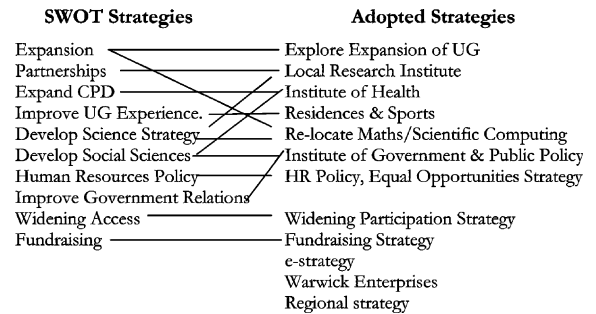


Fig. 12. SWOT vs adopted strategies.

being developed in parallel otherwise might well have arisen from the SWOT proposals given that the internet was seen both as an opportunity and a threat, and it was probably not generated simply because everybody knew it was being actively pursued. The developing activity labeled Warwick Enterprises was a development from the University's strength in research and the opportunities through the entrepreneurial climate. Again perhaps it was not listed in the SWOT exercise due to the knowledge that it was already being developed. Regional strategy was an embryonic development at the time and linked to a number of factors identified in the SWOT analysis such as the political regional agenda, the Science Park, the Warwick Arts Centre and CPD. The richness of the adopted strategies suggests that perhaps the concern about complacency is not a serious issue. This richness may be attributed to the interplay of top down and bottom up strategies as might be expected in a professional organization. For example the Institute of Governance and Public Policy had its genesis in the Social Studies Faculty, the Business School had a strategy to expand its undergraduate programmes, and the scientific computing initiative had its origins in the Science Faculty. On the other hand, fundraising, the e-strategy and the regional strategy were top down initiatives.

The process of adopting the final set of proposals was an iterative one involving evaluation by a financial model, with particular attention being paid to the surpluses and cash position throughout the planning period. The initial proposals were

Opportunities	Strategies
Demand for CPD	Institute of Health
Entrepreneurial climate	Warwick Enterprises
The internet	e-strategy
Brand status	Several
Strategic alliances	Local Research Institute
China	?
Fundraising prospects	Fundraising Strategy

Fig. 13. Opportunities and strategies.

seen as too risky and a series of adjustments were made to ensure that the financial dimension of the plan was sufficiently robust. Uncertainty was accommodated within the plan by applying safety factor reductions to the more risky income streams.

Subsequent to the planning round, a final stage of the SWOT analysis was carried out using the questionnaire results to check back to see whether the highest rated factors were all being addressed by the adopted strategies. In Fig. 13 one of the highest ranked opportunities was China, but none of the adopted strategies explicitly addressed this opportunity. A group discussing partnerships had met during the academic year and this was on their agenda, but no firm proposals had been brought forward to date. Amongst the threats (Fig. 14) a decline in media profile was not explicitly addressed although the range of strategies was certainly contributing to that issue. Ironically, Warwick had had considerable media profile during the year particularly from the visit of President Clinton to the campus where he gave his last major overseas policy speech. To some extent cumbersome decision making was perhaps not as big a threat as feared, as the University were certainly able to respond to the SRIF initiative. Whether that rapid response at Warwick and elsewhere

Threats	Strategies
Declining government fund	Fundraising/Warwick Enterprises
The internet	e-strategy
Competition	e-strategy/Science Strategy
Decline in media profile	?
Career prospects in HE	HR Policy
Cumbersome decision making	?
Targeted government funding	Fundraising/Warwick Enterprises

Fig. 14. Threats and strategies.

Strengths	Strategies
Income generating capacity	Warwick Enterprises
Warwick brand	Fundraising
Research	Warwick Enterprises/Scientific Computing/Institute of Health
Land	Maths Relocation/Residences & Sport
Staff morale and loyalty	HR Policy
Student quality	UG Expansion
Dynamism	Warwick Enterprises

Fig. 15. Strengths and strategies.

Weaknesses	Strategies
Few endowments	Fundraising
Science base	Scientific Computing
Lack of external clout	Institute of Government & Public Policy
Complacency	Strategies
Arrogance	?
Strains of expansion	Fundraising/HR Policy
Communication	?

Fig. 16. Weaknesses and strategies.

will in fact yield value for money is a matter for speculation and the future. There were no obvious gaps in building on strengths (Fig. 15). Amongst the weaknesses (Fig. 16) arrogance was not explicitly addressed nor was communications although the recently appointed Director of Public Affairs was developing a communications strategy.

The resultant strategy generation process incorporating SWOT analysis, resource-based planning plus the enhancements from scoring factors and checking strategy and factor linkages is shown in Fig. 17. Dyson and O'Brien (1998) address the more general issue of the incorporation of analytical techniques into the complete strategic planning process.

SWOT analysis is normally regarded as being firmly in the design (Andrew, 1987) and planning (Ansoff, 1965) schools of management and often presented in a linear way (e.g. Weihrich, 1993). Modern strategic management texts whilst recognizing the pervasiveness of the approach do not typically consider scoring factors or iterating between strategies and factors (Johnson and Scholes, 2000; De Wit and Meyer, 1998). As developed here it connects to the learning school (Mintzberg et al., 1998) as the SWOT analysis itself was iterative and contributed to a process of collective learning. It

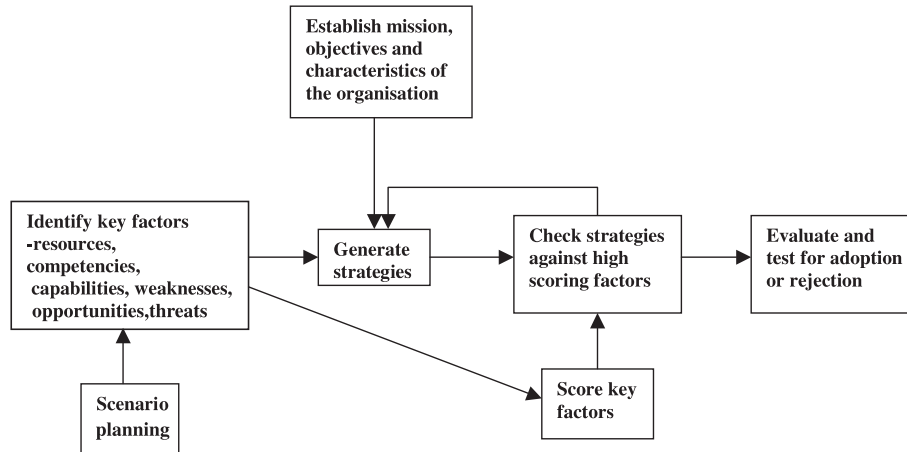


Fig. 17. The strategy generation process.

was also an impulse into an on-going strategic process, incorporating both current and new strategies, feeding forward into the planning round and informing the decision making required by the SRIF episode. Specifically, the scoring and iterating highlighted the lack of strategies related to the opportunities presented by the China market and concerns with regard to the media profile, the decision making process and internal communication. The newly appointed Vice-Chancellor has set up a task group focussing on China, has instigated changes to the decision making processes and has initiated the development of an internal web-site for enhanced communication.

6. Conclusions

In the application at Warwick SWOT analysis was seen as just one input to the planning process. A rich array of factors was generated which triggered a range of potential strategic initiatives. The high scoring factors had a bias towards opportunities and strengths and the strategies proposed were also largely driven by those factors. The University appeared therefore to be pursuing a set of offensive rather than defensive strategies. The planning process itself yielded a rich and balanced range of strategic initiatives covering most of the factors identified as being important, although a

small number of factors needed further consideration. The strategies generated by the analysis were highly commensurate with those in place, or subsequently adopted by Strategy Committee.

SWOT analysis is often presented as a method of rapidly moving towards an agreed strategy. It can certainly be an aid to generating new strategic initiatives, but a strategic development process also requires considerable analysis and testing of new initiatives before adoption. This testing should be against all the scenarios developed, where they exist, and a financial evaluation would certainly be advisable if not mandatory. SWOT analysis can thus be seen as an injection into an on-going process rather than a process per se. SWOT analysis has an old fashioned feel about it but is a framework which has stood the test of time and can readily incorporate ideas from newer approaches such as resource and competency-based planning and scenario development. Crucially however, it keeps internal and external factors in focus simultaneously. Valuable developments to the SWOT approach involved prioritising the various factors generated and adding a feedback loop in the strategy generation process to ensure that high scoring factors are being addressed by the strategic initiatives. This is crucial in ensuring that significant weaknesses and threats are not overlooked, and that the potential of the organisation is fully realized.

Appendix A. Factors and average score

Opportunities	Score (1–5)
Demand for CPD	4.18
Entrepreneurial political climate	4.09
Technological development/ internet	4.09
Brand status	4.00
Local Research Institute China	3.64
Fundraising prospectus	3.55
Demand for re-skilling and training	3.45
Recognition of talent	3.45
Widening participation initiatives	3.36
Collapse of pay system	3.36
National Science Funding	3.36
Climate for partnerships	3.00
Broader student market	3.00
Economic convergence with Europe	2.55
HEFCE pay initiative	2.45

5 represents an opportunity not to be missed and 1 represents an opportunity to ignore, as it is unimportant or diversionary (with regard to the University’s mission).

Threats	Score (1–5)
Declining government funding	3.45
Technological developments/ internet	3.45
Competition	3.45
Decline in Warwick’s media profile	3.45
Poor career structure in HE	3.36
Cumbersome decision making processes	3.36
Targeted government funding	3.18
On-line providers	3.18
Cambridge phenomenon	3.09
Changing government policies	3.00
New models of education	3.00
Science funding	2.91
Recession	2.82

Threats	Score (1–5)
Regional agenda	2.73
Collapse of pay bargaining system	2.73
Widening participation initiatives	2.64
Employer legislation	2.45
Subject decline	2.36
Land use legislation	2.27
Fuller employment	2.18
Corporate universities	2.18
Climate for partnerships	2.00

5 represents a seriously damaging threat if it emerges and 1 represents a minor threat.

Strengths	Score (1–5)
Income generating capacity	4.45
Warwick brand	4.36
Research	4.18
Land	4.00
Staff morale and loyalty	4.00
Student quality	4.00
Dynamism	4.00
Rapid decision making	3.91
Location	3.82
Pragmatic decision making	3.82
Arts Centre	3.82
QAA scores	3.64
Strong departments	3.55
Informality	3.45
Science Park	3.36
Continuity of good management	3.27
Trust	3.27
Buildings/infrastructure	3.18
Lay officer support	3.00
Working conditions	2.91
Academic salaries	2.82
Focus	2.73

5 represents a unique or pre-eminent strength and 1 represents a minor strength.

Weakness	Score (1–5)
No endowments	3.55
Science base	3.55
Lack of external clout	3.55
Complacency	3.18
Arrogant	3.18
Strains of expansion	3.09
Communications	3.00
Local support/profile	3.00
Sports facilities	3.00
Library	2.91
Students' perception that they are treated as "second class citizens"	2.82
Compartmentalism	2.73
Lack of interdisciplinary research	2.73
Adverse to partnerships	2.73
Social diversity	2.64
Old age	2.55
Location	2.18
Unbalanced funding	2.18
Undergraduate intellectual life	2.09
Value of a Warwick degree	2.09
Traditional undergraduate education	1.73

5 represents a serious and potentially damaging weakness and 1 represents a minor weakness.

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