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Abstract

This paper describes the development of a process map of marketing as an aid to the understanding of the role of IS and its improved deployment in this important domain. Interviews were undertaken with marketing staff in organisations in order to develop the map. A second set of interviews with staff concerned with specific marketing IS developments in these organisations were also undertaken and the applications overlaid on the map in order to test its utility.

Introduction

Business information systems (IS) are increasingly being applied to a wider range of business activities. A feature of this is the increase of applications aimed at areas of the business previously considered as too unstructured or creative to be compatible with the application of IS (Russell, 1999; Avison *et al*, 1998; Wilson, 1989). A second feature of current IS development is the move towards integration across large parts or even the whole of the organisation, as demonstrated by the growth in deployment of systems such as enterprise systems (ES) and customer relationship management (CRM) suites (Taylor and Ward, 1999; Ovum, 1999).

In order to develop and implement successful IS, the need to fully understand the business processes being addressed is well recognised (Edwards *et al*, 1991; Willcocks and Mason, 1987). As systems that aim to integrate a large number of business processes are developed it is no longer appropriate to look at individual processes; rather whole domains of activity should become the initial unit of analysis. Without such high-level analysis, systems developed will merely link existing processes potentially missing the opportunity to develop a truly integrating framework that maximises the link between activities and the opportunities to share practices and data between them. The difference in approach is summarised by Hammer (1999);

> *To characterise a system as integrated is merely to summarise its principal technical feature; to describe it as integrating is to capture its organisational impact.*

This paper reports a study that seeks to undertake such a high-level analysis of the highly unstructured and creative domain of marketing (Leverick *et al*, 1998). Despite marketing boasting a considerable number of analytical and prescriptive techniques these tend to be considered individually rather than forming the basis of a process view (McDonald and Wilson, 1999a). A process map of this activity is developed and is used to better understand the role of IS in this domain. The paper commences with a summary of relevant previous research. From this the research objectives of this study are derived and the adopted methodology is described. The resulting map of the marketing domain is presented and discussed and a specific case of a marketing information system is presented using the map.

Previous Research

Leverick *et al* (1998) argued that there are a number of differences in the nature of marketing from other business areas and these result in distinct requirements from IS. The differences noted include, the need to work at the external interface of the company , which might imply a greater dependence on the actions of customers or other organisations. Also the need to secure input from other functions in the organisation, inherent in the nature of marketing as the function responsible for coordinating the organisation's response to customer needs. This latter difference might have implications for the scope of projects and the nature of senior management support needed. The need to support creativity might have implications for the style of system support provided; and the emphasis on effectiveness rather than efficiency might suggest a less readily predictable benefit stream, increased sales being less easy to predict than reduced costs. It was also observed that the use of IS in marketing activities was less well developed than in other areas of the business.

To date IS applications in marketing have tended to be tied to individual tasks, such as marketing planning (Wilson, 1989; Wilson & McDonald, 1996), direct mail (Tap, 1998) or sales force automation (Semanoff, 1996), with little integration between these task specific applications. The benefits of integration of such applications has previously been recognised (Lennox, 1993) and a large number of software vendors and companies are now trying take steps towards this end. An

example of such integration is the area of customer relationship management (CRM) systems which are intended to integrate the product databases or data-warehouses in an organisation and the distribution channels, so that the organisation has a single view of each of its customers (Ovum, 1999). Such a view is expected to improve customer service activities but also aid in customer profiling, segmentation and new product and service development.

A number of previous studies have reported developing process maps or models of areas of business that would be considered as highly unstructured or creative and therefore a challenge for IS. Avison *et al* (1998) examines the area of corporate vision. They suggest a model of the 'vision process' containing a set of stages (or a life-cycle) in order to structure and understand the process. They use this process model in order to suggest system development methods that could be used in order to develop IS that incorporate corporate vision. Russell (1999) develops a process model of intrapreneurial systems by use of a cognitive mapping approach. Although the focus of his work is not a basis for IS, the map he generates would indeed provide a useful starting point to any system development in this field.

McDonald and Wilson (1999a) consider the domain of marketing planning and present a model that shows how existing techniques and frameworks can be interrelated into a planning process. Their work forms part of specifying the requirements for a marketing planning information system. This study forms a useful starting point for the consideration of marketing as a process. However these same authors note that marketing planning is only part of the total marketing cycle (McDonald and Wilson, 1999b) and the development of IS intended to integrate over a wider range of marketing activities should be based upon the full marketing cycle. Other studies that have consider a process view of creative activities are Alder (1995) who considers the case of the design/manufacturing interface and Davenport and Nohria (1994) who consider the development of key account teams in the financial services sector.

Research Objectives

The intention of the study is to develop a high-level process map of the marketing domain as an aid to the development and deployment of marketing IS. The process map could be used in a number of ways. For individual organisations, their current marketing applications could be overlaid on the map. This could help to indicate how such applications might be linked to improve integration. Such an overlay would also indicate areas of marketing activity not currently supported by IS and the organisation may wish to consider developing such applications and integrating them with their existing marketing systems. Comparison of such maps for different organisations would allow the map to be used as a benchmarking tool, indicating how the organisations current use of IS to support marketing compares with competitors or companies in other market sectors.

Research Methodology

The first phase of the study was to develop the process map of the marketing domain. A map showing our hypothesised marketing process was first generated by reference to the marketing literature (Kotler, 1998; Baker, 1987; McDonald, 1999; Lancaster and Massingham, 1988). In accordance with the approach adopted by Avison *et al*, 1998, a set of four simple stages in the marketing cycle was first identified as shown by the major boxes in Figure 1 below. These were then each expanded to a greater level of detail drawing sub-stages or processes. Generic terms and processes were used throughout to ensure that the map had maximum applicability.

This map was then tested and amended where necessary by undertaking interviews with staff in the marketing function of seven organisations. We chose an analytic induction approach to this qualitative analysis. Originally proposed by Znaniecki (1934), analytic induction has developed into the best-developed logic for theory development and testing across multiple case studies (Gill and Johnson, 1991). In brief, the method involves formulating a hypothesis, (our map taken from the literature); comparing the hypothesis against the first case; if it does not fit, reformulating the hypothesis so as to be consistent with the data in the first case; comparing the revised hypothesis against the second case; and so on.

Translated into the context of this study, the method can be summarised as follows:

1. Seven cases within the domain of marketing IS were selected (listed in Table 1). A range of industry sectors was covered to ensure that the results were as widely applicable as possible.
2. Interviews were held with staff in a marketing or sales role and with relevant general managers. 16 managers were interviewed over 7 interviews, some interviews involving more than one manager. Interviews were from one to three hours long.
3. The interviews were tape-recorded and transcribed.
4. Mangers were asked to describe the marketing activities of their organisation. It was stressed that all activities related to understanding and satisfying customer needs should be included even if some of the activities sat in functions other than that of marketing.
5. The interviewees were then shown the hypothesised marketing map and asked to say how well this fitted

the activities of their organisation. If they indicated the map needed modifying this was noted.
6. After the first interview, the transcript and the suggested modifications to the hypothesised map were analysed. Where necessary changes were made to the map, either adding additional detail or linkages or amending stages.
7. This amended map then formed the starting point for the interviews with the next company.
8. Steps 6 and 7 were repeated for each case. When a change was made to the map it was ensured that this was consistent with any previous data. As stated above, the most generic terms were used in the map throughout the above process to ensure that a single view of marketing could be produced across a diverse range of companies and industry sectors.
9. All managers that took part in the interviews were shown a copy of the final map generated and asked to confirm that this encapsulated the marketing activities of their organisation.

The methodology described above proved very robust and the map shown in Figure 1 below was produced.

Table 1. Case Studies Undertaken

Organisation	**Marketing Information System (stage two of study)**	**Status at time of Case Study***
Paper Manufacturer	EDI implementation with distributors	Requirements analysis
Software Vendor	E Commerce application	Acceptance testing
Energy Generator	Management of contract negotiation process	Acceptance testing
Pharmaceuticals company	Support of new product development	Project initiation
Distributor	OLAP applied to sales data	Acceptance testing
Business School	CRM application	Code modules/Integration testing
Utility Provider	Direct mail composer	System handover

*Status according to the 7 stage V-model of systems development (Edwards *et al*, 1991).

The second stage of the project was to overlay marketing IS currently being developed or used in these organisations on the map. This would test if the map was indeed useful tool for the deployment of IS in this domain. In order to undertake this stage of the project, further interviews were undertaken with staff from the same organisations. However, this time the unit of analysis was a specific marketing information system in the organisation and staff from both the marketing and the IS groups were interviewed.

1. Interviews were held with both IT managers and with staff in a marketing or sales role and with relevant general managers. The marketing and sales staff tended to be the same individuals that were involved in the first stage of the work. At this stage 10 managers were interviewed over 7 interviews, some interviews involving more than one manager. Once again interviews were from one to three hours long.
2. Interviewees were asked to describe one specific marketing IS project. The projects discussed covered a range of applications and varied in their stage of development, as shown in Table 1 above.
3. The interviews were tape-recorded and transcribed.
4. Using the interview transcripts the marketing IS described was depicted on the process map to indicate which elements of the marketing process it supported and, if appropriate, how it integrated stages of this process.
5. As before, the maps generated were shown to the interviewees to ensure their accuracy.

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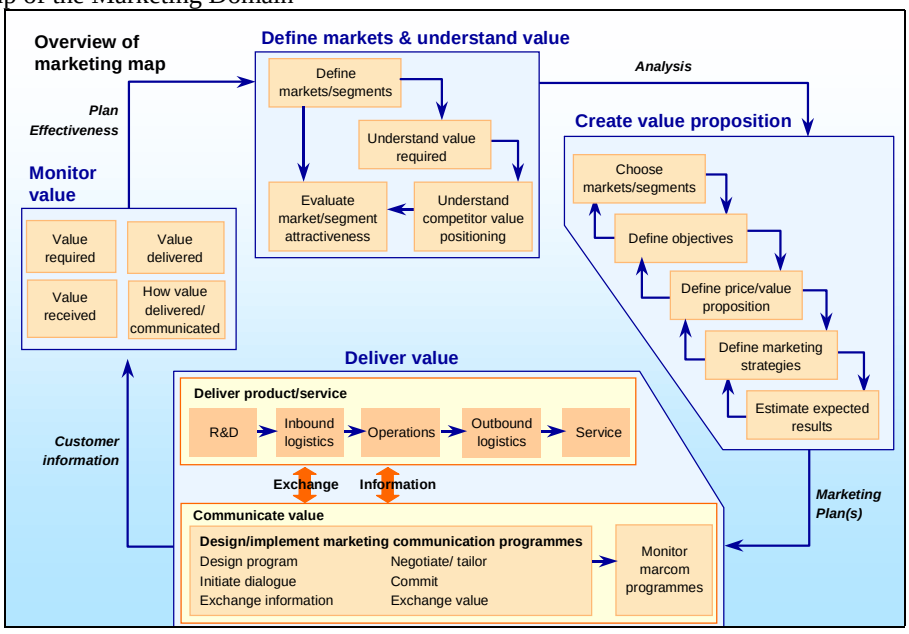
Marketing Map Developed

The marketing map developed at the end of the first stage of this study is shown in Figure 1. The process is clearly cyclical, in that monitoring the value delivered will update the organisation's understanding of the value that is required by its customers. The cycle may be predominantly an annual one, but equally changes throughout the year may involve fast iterations around the cycle to respond to particular opportunities or problems.

Figure 1. Map of the Marketing Domain



We have used the term 'Create value proposition' rather than 'Create value', to make plain that we are here referring to the decision-making process of agreeing what the offering to the customer is to be - what value the customer will receive, and what value (typically the purchase price) the organisation will receive in return. The process of delivering this value, such as by making and delivering a physical product or by delivering a service, is covered by 'Deliver value'.

In particular the map shows that not all of the value delivering processes will be under the control of the marketing department, whose role varies considerably between organisations. The marketing department is likely to be responsible for the first two processes, 'Understand value' and 'Create value proposition', although even these need to involve numerous functions, albeit co-ordinated by specialist marketing personnel. The 'Deliver value' process is the role of the whole company, including for example product development, manufacturing, purchasing, sales promotion, direct mail, distribution, sales and customer service.

Case Study Marketing Information Systems

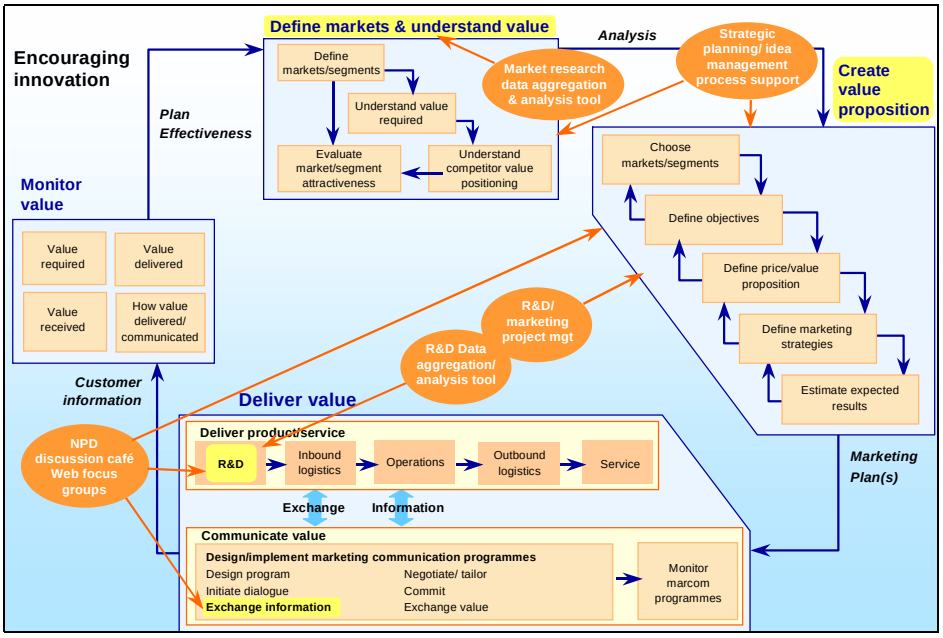
The second stage of the project was to test the robustness and usefulness of the map by using it to illustrate IS applications currently being used or under development in the case study companies. One example is given here which focuses on the use of IS to support new product development in one of the case study companies and is shown in Figure 2. The IT application areas are shown in the ovals which are superimposed on the marketing map and are described below.

- *Data aggregation and analysis tools*: Just as with market research, organisations can benefit from making data on R&D projects and ideas widely available. In this case, information on the status of R&D projects was provided to marketing staff only at particular points in the project, rather than being available continuously to aid the communication between R&D and marketing. The current relationship between the departments was analogous more to a 'transactional' approach rather than a 'relationship' approach. IT was envisaged as an enabler to make the relationship closer and more profitable.

- *Using the Internet to generate ideas:* A virtual (Internet-based)"discussion café" was conceived, to provide an open forum for new product ideas originating from both employees and customers. Consideration was also being given to conducting focus groups over the Web.

- *Planning support for R&D*: planning tended to focus around existing products, with a plan for each. The company recognised the need to broaden the planning procedures to consider more creatively the range of possible product-market segments that could be addressed, and which of them were of sufficient attractiveness and a sufficient fit with the company's skills to be sensible targets. Although largely an issue of modifying business processes, it was recognised that IT support might well be required.

Figure 2. IS Support for New Product Development



The map shown in Figure 2 very powerfully illustrates how IS support for new product development is not focused exclusively on the R&D stage of the 'deliver value' activity as might be expected, but instead links various stages of the marketing process. Such a depiction is expected to aid the understanding of how the use of IS in marketing might be developed in any particular organisation, either by comparing a map of their current applications against one developed for other companies or against a depiction of best practice.

Conclusions and Discussion

This paper has described the development of a process map of marketing as a tool for the improved understanding and development of IS in this domain. Use of the map to illustrate marketing IS in a specific case study example is presented.

The map could be used in a number of ways that would improve the deployment of marketing IS. It could allow an organisation to illustrate its current marketing IS and highlight possible areas for further development and areas for integration of existing or new systems. It could be used to benchmark marketing IS between companies in the same sector and because of the generic nature of the map, it could be used to benchmark across sectors. It could also be used to illustrate best practice in the use of IS in the marketing domain by illustrating how the latest trends in this field, such as data warehousing and CRM, support the complete marketing cycle. Such a map would provide an illustration of the level of integration across the marketing activities that is currently deemed best practice.

It is intended that the work presented here will be developed further. A limitation of the current study was the same companies were used to generate the marketing map as were used to populate it with IS applications. Additional case studies on distinct companies could be used to further test the usefulness and robustness of the process map developed. In addition to using the map as a tool to benchmark an organisation, either against other companies or against a model of best practice, use of the maps to understand the path or stages companies follow in the adoption of IS in the marketing domain will be explored. Data collected during the current study suggests that companies concentrate their early applications in the 'deliver value' stage of the process, later extending anti-clockwise around the map to the 'create value' and 'define markets' stages. This early data also suggests that little IT support was directed at monitoring value, a vital step if companies are to ensure that they are delivering to customers the value they require. Further studies might explore if this is indeed an under exploited stage of the marketing cycle and how IS might be used to support this vital feedback operation.

References

Adler A. “Interdepartmental Interdependence and Co-ordination”, *Organization Science*, Vol 6, March/April, 1995, pp.6-18.

Avison, D.E; Eardley, W.A and Powell, P. “Suggestions for Capturing Corporate Vision in Strategic Information Systems”, *Omega*, Vol 26, No 4, 1998, pp.443-459.

Baker, M.J. "The Marketing Book", Institute of Marketing and Heinemann, 1987, London, UK.
Davenport and Nohria "Case Management and the Integration of Labour", *Sloan Management Review*, Winter, 1994, pp.11-23.

Edwards, C; Ward, J and Bytheway, A. "The Essence of Information Systems", Prentice Hall, 1991, UK.

Fletcher, K. "Marketing Management and Information Technology", Prentice Hall, 1995, UK.

Gill, J. and Johnson, P. "Research methods for managers". Chapman, 1995, London.

Hammer, M."Up the ERP Revolution", Information Week, February 8th 1999, p.34.

John O'Connor and Eamonn Galvin. "Marketing and Information Technology", Pitman Publishing, 1997, UK.

Kotler, P. "Marketing Management", Prentice-Hall International Editions, 1998, USA.

Lancaster, G and Massingham L. "Essentials of Marketing" McGraw-Hill Book Company, 1988, London, UK.

Lennox, G. "An Intelligent Approach to Integrating Marketing Databases with other Technologies", in McDonald, M.H.B., Hewson, W. and Wilson, H.N. (eds) 1993, Butterworth Heinemann, UK.

Leverick, F, Littler, D, Bruce, M and Wilson, D. "Using Information Technology Effectively: A Study of Marketing Installations", *Journal of Marketing Management*, Vol 14, 1998, pp. 927-962.

McDonald, M.H.B, "Marketing Plans", Heinemann Professional Publishing, 1999, Oxford, UK.
McDonald M.H.B. and Wilson, H.N. "Exploiting Technique Interrelationships: A model of strategic marketing planning", *Journal of EuroMarketing*, Vol 7, No 3, 1999a, pp.1-26.

McDonald M.H.B. and Wilson, H.N. "e-Marketing: Improving Marketing Effectiveness in a Digital World", FT Publishing, 1999b, London.

Ovum. "Customer Relationship Management", Ovum, 1999, London.

Price Waterhouse. "Technology Forecast", Price Waterhouse, 1998, London, UK.
Semanoff, M. "Meeting the Challenge of Contact Management", *Industrial Distribution*, 85(11), 1996, pp.16-25.

Russell, R.D. "Developing a Process Model of Intrapreneurial Systems: A Cognitive Mapping Approach", *Entrepreneurship Theory and Practice*, Vol 23, No 3, 1999, pp.65-84.

Semanoff, M. "Meeting the challenge of contact management", *Industrial Distribution*, Vol 85, no 11, 1996, pp.16-25.

Tapp, A. "Direct and Database Marketing", Kogan Page, 1998, UK.

Taylor P and Ward J. "Beyond Enterprise Systems Implementation – Realising the Benefits", Cranfield School of Management Report, No. ISRC-99031, 1999.

Willcocks, L and Mason, D. "Comupterising Work", Paradigm, 1987, UK

Wilson, H.N. "EXMAR: Automating Marketing Planning", Proceedings 5th International Expert Systems Conference, June, London, 1989, pp.157-168.

Wilson, H.N and McDonald M.H.B. "Computer Aided Marketing Planning: The Experience of Early Adopters", *Journal of Marketing Management*, 12, 1996, pp.391-496.
Znaniecki, F. "The method of sociology". Holt, Rinehart and Winston, New York. 1934. Reprinted 1968, Octagon, New York.