

Managing Information Technology Assimilation: A Marketing Perspective



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ABSTRACT

Managing information technology (IT) is a major challenge within organisations. Despite the proliferation of IT in business there are still major IT developments needed and barriers that must be overcome before the full potential of IT can be achieved. This paper presents research findings from a recent study into IT assimilation within the marketing departments of a selection of the top 500 companies in Ireland. The study enriches our understanding of IT assimilation in general and for marketing specifically.

At the core of this research study are multi-disciplinary frameworks, one from the IT literature and one from the marketing literature. This research expands and builds on our knowledge of both marketing and IT theory and practice by adding an IT perspective to the transactional to relational marketing framework and within the IT field adds a marketing dimension to the stages theory. The major finding of this study is that despite the enormous pressure on marketers to introduce and utilise a vast myriad of ITs, little is known within this field about the impact of these ITs, optimum usage and how to overcome the major internal and external barriers that exist. The findings suggest that marketers that appreciate the learning curve of IT assimilation and challenge the IT applications to deliver marketing-orientated solutions will ultimately reap the benefits of IT.

INTRODUCTION

Marketing's assimilation of IT is an important and topical research agenda. Much of the hype in the popular press and talk of the dot.com bubble and the technology crash centres on marketing's use of IT at the customer interface and for internal operations. This research, through the use of two frameworks, the stages theory (Nolan, 1973a; 1973b; 1996; Nolan et al., 1993) and the Contemporary Marketing Practice (CMP) Transactional to Relational

Marketing Framework (Brodie et al., 1997; Coviello et al., 1997; 2001a; 2001b; 2002; Coviello and Brodie, 2001) contributes to the ongoing debate in this area and provides empirically supported observations on the reality of contemporary marketing practice and IT assimilation. The core finding is that IT is not the wonder drug of the 90s and IT assimilations take time to mature. Technical revolutions have always taken time to develop fully, as they force people and organisations to change current behaviour and/or learn new skills (Perez, 2002).

This paper commences with a discussion of the role of IT in marketing and reviews the frameworks which were used to research the assimilation of IT within marketing. This is followed by a description of the case study research design chosen for the study. The subsequent section explores the findings from the study, which are documented through the use of two of the research propositions. The paper concludes with the practical and theoretical implications of this study.

THE ROLE OF IT IN MARKETING

IT has played a critical role in business over the past ten years, as its assimilation progressed within and across departments and organisations. The investment in IT during the 1990s can be classed as the pivotal investment made by companies, with IT representing over 45 per cent of all business equipment investments (King, 1998; Margherio et al., 1998). In general, IT implementations have had a dominant automational focus on internal productivity centred on the manufacturing and finance functions, which has seen their efficiencies increase (Sheth and Sisodia, 1995; Galliers and Baets, 1998). Empirical studies reveal that IT use in marketing is also predominantly for productivity or automational purposes (Domegan and Donaldson, 1994; Palihawadana and Delfino, 1994; Bruce et al., 1996; Fletcher and Wright, 1997; Leverick et al., 1997; 1998). Leverick et al. (1997: 91) suggest that "far from the radical transformation of marketing promised by IT, the use of IT for marketing has thus far focused primarily on the routine and tactical activities". Their research findings showed that IT exists, but that it has not been exploited within marketing. Willcocks and Lester's (1996) study also confirmed that the majority of IT investments were aimed at achieving internal efficiencies. The challenge for marketing is to move from the discrete approach (parallel tasks), viewing IT as an administration tool, to a strategic marketing approach with a clear understanding of IT and the way it should be exploited (Holtham, 1994).

Within marketing, there have been limited attempts to classify ITs (McDonald and Wilson, 1999; Brady et al., 2002b). The major difficulty is that there are hundreds of IT applications and a myriad of Internet- and telecommunication-based IT applications targeted at marketing, which could be classed as IT usage in marketing (Holtham, 1994; Marchall, 1996; Leverick et al., 1997).

This research is focused on the totality of IT within the marketing department rather than a study of an individual IT. IT should be viewed as a whole system rather than as separate technologies (Ford and Saren, 1996;

Willcocks, 1996; Galliers and Baets, 1998; King, 1998; MacKenzie and Wajcman, 1999). The trend in isolating and researching ITs individually ignores the collective and cumulative impact of IT in marketing, which a holistic view provides. The majority of current studies focuses on individual ITs and their impact on separate or selected parts of marketing operations. For example, there are articles which focus on the Internet (Kierzkowski et al., 1996; Sahay et al., 1998; Dutta and Segev, 1999; Geiger and Martin, 1999); marketing information systems (Higby and Farah, 1991; Li, 1995; Talvinen and Saarinen, 1995); databases (Fletcher and Wright, 1997; Desai et al., 1998); customer relationship management software (SAS Institute, 1998; Dempsey, 2000; Payne, 2001); and self-service technologies (Freeman and Sudoyo, 1999; Meuter et al., 2000). The findings from these studies confirm that marketers are struggling to assimilate individual ITs and thus it can be assumed that this will be compounded when the ITs are studied collectively.

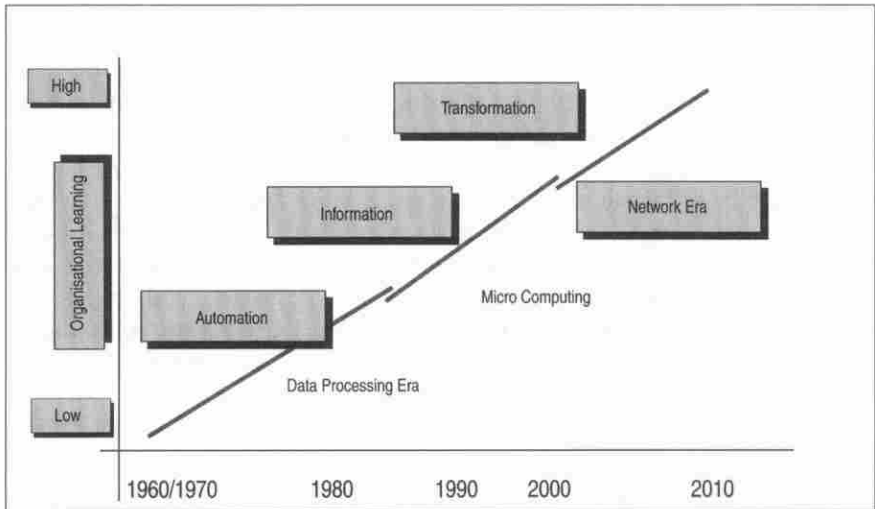
IT is viewed by managers in 'clusters' and it should be researched in that format (Clarke et al., 1995). Willcocks and Lester (1996: 32) observed that in reality this does not happen and they noted as a major finding of their study "that only 20 per cent of organisations surveyed, included the totality of systems availability and capability and the needs of the organisation and department, in their assessment". This is a pivotal issue for marketing, where, due to the multi-operational nature of IT and the nature of marketing operations, a singular IT resource can be used for a variety of marketing operations and across various departments (Barnes, 1997).

As a direct response to the above discussion the research focus for this study included a list of over 40 ITs within marketing, grouped under the following headings:

- Analysis, planning, implementation and control applications;
- Communication devices both internally and to a range of external entities;
- Segmentation and targeting software including databases;
- Self service technologies used by customers;
- Research technologies;
- Sales force related technologies.

STAGES THEORY OF IT ASSIMILATION

To study IT assimilation in marketing, academics must be aware of developments which exist in other disciplines. Much work has been carried out in the area of IT assimilation over the last three decades. There are a plethora of IT evaluation techniques (Brady et al., 1999) and following a review of evaluation and assimilation models, the stages theory of IT assimilation (Nolan, 1973a; 1973b; 1979; Nolan et al., 1993) which offers interesting insights into the assimilation process (see Figure 8.1), was chosen for this study. This is the most cited and empirically tested model in the IT literature (Galliers and Sunderland, 1999).

Figure 8.1 Stages Theory of IT Assimilation

Source: Adapted from Nolan (1973) and Zuboff (1988).

Numerous authors have suggested stages of IT assimilation in companies (Haeckel, 1998; Zuboff, 1988; Davenport, 1993; Cash et al., 1994; Mooney et al., 1995; Farbey et al., 1999) and for marketing purposes (Hammer and Mangurian, 1987; Baker, 1994; Peattie and Peters, 1997), though there has been no empirical study of this framework for marketing purposes.

The stages theory suggests that IT is assimilated over time. Therefore, in order for marketing managers to effectively assimilate IT into their operations, they must understand the defining dimensions of this framework, that there is a diffusion process and that organisational learning is a critical component needed in order to progress the assimilation through the stages. These stages can be linked to the broad eras of technological developments (Perez and Freeman, 1988; Butler et al., 1997) and technological innovations models (Dosi, 1982; Durand, 1992).

Utilising the three stages of automation, information and transformation, coined by Zuboff (1988), at the introduction stage IT will be used for automational purposes, replacing manual tasks, at the second stage for informational purposes, resulting in increased effectiveness, and at the third stage there will be transformation. It is worth nothing that Haeckel (1998), in his development of a stages theory view of IT assimilation in marketing, referred to the third stage as unthinkable, highlighting the level of confusion surrounding the future developments of IT. Reviewing the timeline (see Figure 8.1), it is clear that we are at the informational stage of IT assimilation (Nolan, 1996) rather than the transformational stage, despite the commentary in the popular press and many business journals over the last decade.

CONTEMPORARY MARKETING PRACTICE FRAMEWORK

Researchers have long endeavoured to classify marketing practice and one framework which has achieved academic support is the CMP transactional to relational framework (Brodie et al., 1997; Coviello et al., 1997; 2001a; 2002b; Coviello and Brodie, 2001). The authors suggest that there are four dominant approaches to marketing within companies (transactional, database, interaction and network marketing) and twelve relational exchange and managerial dimensions for each approach (see Table 8.1). This framework, which has been empirically tested (Brodie et al., 1997; Lindgreen, 1999), suggests that there can be a pluralism of marketing approaches within companies (Pels et al., 2000; Coviello and Brodie, 2001).

Table 8.1 Marketing Approaches Classified by Relational Exchange and Managerial Dimensions

	Transactional		Relational	
	Transaction Marketing	Database Marketing	Interaction Marketing	Network Marketing
Relational Exchange Dimensions				
Focus				
Parties involved				
Communication patterns				
Type of contact				
Duration				
Formality				
Balance of power				
Managerial Dimension				
Managerial intent				
Decision focus				
Managerial investment				
Managerial level				
Time frame				

Source: *Adapted from Coviello et al. (1997).*

As evidenced in Table 8.1, there is a lack of an IT dimension to this framework, though in a further development, Coviello et al. (2001a; 2001b) did add e-marketing as a fifth approach. This framework was utilised for the research to ascertain whether IT had a role within marketing approaches.

RESEARCH METHODOLOGY

Following from the literature review the following research objective was developed.

IT assimilation in marketing practice occurs in stages and there is an IT dimension to the (CMP) transactional to relational framework.

This key research objective led to the development of a range of propositions, two of which are discussed in this paper:

- **Proposition One:** There is a major IT component in contemporary marketing practice and the assimilation of IT in marketing is at the informational stage of development.
- **Proposition Two:** There are barriers to IT assimilation in marketing.

CASE-BASED RESEARCH

The research methodology adopted in this study was case-based research, utilising the frameworks discussed to explore the gap in our knowledge in relation to marketing's assimilation of IT. Case study design was chosen as the most appropriate technique for this study to answer the 'how' and 'why' questions in relation to IT assimilation.

Theory-building research utilising qualitative techniques is suggested for research into areas that lack concrete theories (Hunt, 1994; Saren, 2000). As marketing, to some extent, and marketing's use of IT to a greater extent, lacks concrete theories, the qualitative option would appear more optimum. IT is at the formative stage of theory development in both theory construction and practice. Within the field of IT research and due to the developmental state of IT, it is understandable that there have been calls for theory-building research (Holtham, 1994; Galliers and Baets, 1998). In reality, there is a gulf between academic theory and marketing practice. Case-based research allows the reality of the IT assimilation in marketing to be explored. As Brownlie and Saren (1995: 1085) state "there is a wealth of material telling us what to do and how it should be done, but rarely how it is done".

Case selection was aided by a previous quantitative research study (Brady et al., 1999). The respondents (207) to this survey were marketing managers from the top 500 companies in Ireland. Companies in this study were grouped using mean and t tests into companies which had automational impact from IT (group 1) and companies which had transformational impact from IT in marketing (group 2).

Fourteen cases were selected from these two groups. For case selection, this study utilised theoretical replication (Eisenhardt, 1989) and literal replication (Perry and Coote, 1994; Yin, 1994). Also due to the restricted number of cases that one can research and as data are enriched by the purposeful selection of confirming and disconfirming (negative) cases (Pettigrew, 1987; Morse, 1994; Perry and Coote, 1994), maximum variety sampling was utilised. One set of sites were recognised as exemplary assimilators of IT (Cases D, E, G, N, H, I and J) and the other group were expected to be laggards (Cases A, B, C, L, F, K, M), in their assimilation of IT. Information rich cases were selected (Morse, 1994), resulting in a cross-sectional study including both transactional- and relational-marketing-focused companies and companies at various stages of IT assimilation (see Table 8.2).

Table 8.2 Case Selection: Cross-Sectional Design

Sectors	*Transformational ^a Usage of IT in Marketing	Automational Usage of IT in Marketing
Consumer goods manufacturing	Case D and E ^a	Cases A, B and C
Manufacturing (B to B)	Case J	Case L
Services	Case G and N ^b	Case F and K
Professional services (B to B)	Case I and H	Case M ^b

a Reclassified as Informational Usage during Analysis.

b Used for pilot studies.

RESEARCH FINDINGS AND CONTRIBUTIONS

In general marketers are struggling to assimilate IT into their current operations and are encountering barriers to their IT assimilation. The findings from the propositions are documented below.

Proposition One: There is a Major IT Component in Contemporary Marketing Practice and the Assimilation of IT in Marketing is at the Informational Stage

The data analysis revealed that, for cases that were focused on relationship marketing approaches, IT is a major component of marketing practice. Utilising the stages theory, these cases are at the informational stage. For cases that were focused on transactional approaches to marketing, there is a lack of an IT component to marketing practices, with IT assimilation remaining at the automational stage. Table 8.3 presents the findings of the evidence for the automational and informational stage of IT assimilation for both sets of cases.

Table 8.3 Evidence of the Stages Theory of IT Assimilation for the Marketing Department

Evidence	Automational Stage	Informational Stage
Evidence of Automational Stage of Development	Cases A, B, C, D and E	Cases F, G, H, I and J
Centralised IT	[
Standardised company-wide systems	[
Finance orientation of the IT systems	[
Technology focused rather than informational focused	[
Lack of open access to IT	[
Evidence of Informational Stage of Development		
Major criticism of the centralised information system		[
Decentralisation of control of marketing related ITs		[
A dominant focus on new marketing specific IT		[
Company-wide open access to IT		[

Informational rather than technology focus		[
Internal and external focus of IT developments		[
Appreciation of the learning curve of IT assimilation		[
Increased IT skills in marketing		[
Marketing department as drivers of IT developments		[

Cases with an automational focus rely on the IT department for the majority of their IT needs, they are not IT orientated and there is a lack of development of marketing specific ITs. In contrast, the cases at the informational stage of IT assimilation have moved beyond the automational stage and are now focused on the use of IT to increase their effectiveness. They are designing, developing and implementing a range of IT applications with a particular focus on ITs which will enhance their relationship marketing practices.

Proposition Two: There are Barriers to IT Assimilation in Marketing

For cases with a relational perspective to marketing practices and informational IT assimilation they are experiencing a range of major barriers. Marketing's constrained assimilation was predominantly due to the legacy of the finance orientated, centralised automational-based information system. In reality, the main IT source of information lacked marketing-specific information and was quantitative and accounts based.

They are primarily for generating bills. They are designed to enable us to send out invoices so they're not really designed for us to gain a better understanding of our customers. (Case F, Head of Marketing and Business Development)

The major difficulty in obtaining the information dimension of information technology was also a critical factor.

It is a major job, a major, major job ... It continuously needs to be updated and it's probably not. It's being updated by some people and not being updated by other people and then because people feel it's not up to date, they don't use it. So it's kind of like a vicious circle. (Case H, Marketing Assistant)

A central finding is that a pattern composed of the following elements exists in response to the barriers to IT assimilation.

- Development of IT expertise in marketing;
- Outsourcing of marketing's IT requirements;
- The introduction of an IT steering committee to drive through decentralised IT;
- Senior management support for marketing specific IT developments;
- Large marketing budget;
- Circumvention of the IT department's restrictions;
- The determination of marketing personnel to pursue IT developments regardless of the barriers.

The motivation for the informational stage of IT assimilation centred on the recent orientation to a relationship marketing perspective. For the relational-focused cases, IT is viewed as a key enabler of their endeavours to become more relationship-marketing focused, and they were assimilating IT in order to gain knowledge and to increase their effectiveness, in this area. In support of literature in the IT field (Applegate, 1994; Davies and Mitchell, 1994) it was clear that the transactional-focused cases lacked a driver for IT assimilation as they were content with and intended to continue to pursue their successful traditional tactics and strategies. These cases were inherently conservative but very profitable companies and could not foresee how IT would improve or benefit their marketing operations.

THEORETICAL AND PRACTICAL IMPLICATIONS

This study enriches our understanding of IT assimilation in general and for marketing specifically. It also contributes to our knowledge of contemporary marketing practice. From a theoretical perspective, the study confirms that by utilising the Coviello et al. (1997) framework, it was possible to classify cases along the relational exchange and the managerial dimension of the CMP framework. It also confirms the Coviello et al. (2001a; 2001b) finding of pluralism of marketing approaches. Though Coviello et al. added an IT dimension to this framework through the vertical inclusion of an e-marketing approach, this study disagrees with this approach and suggests that IT should be added as a relational exchange and managerial dimension across all approaches rather than as an individual approach (Brady et al., 2002a; 2002b). Within IT, this study provides support for the stages theory framework (Nolan, 1973a; 1973b; 1979; Nolan et al., 1993) for IT assimilation.

The practical reality is that marketers are being asked to understand, develop and implement a variety of IT applications quickly and successfully. There are three issues of interest here. First, though the technology itself can be installed, actual IT assimilation and successful usage takes time. People and processes change over time and it also takes time for the benefits to be observed and appreciated. Second, much of IT assimilation is outside the marketing manager's knowledge and skills base, resulting in marketers who are overwhelmed and confused by the range and impact of these ITs on their marketing practice and ultimate marketing success. Third, IT is not a replacement for marketing, it can simply aid or augment certain marketing practices; the core marketing skills are still needed, probably even more now than they ever were. As advances in IT applications continue, marketers need to be educated to understand the significant role of a vast range of ITs, impacting on all aspects of marketing practices.

CONCLUSIONS

The findings from this theory-building study suggest that though IT requirements are central to marketing practice and particularly relationship marketing practice, there is a myriad of internal and external barriers to

successful IT assimilation. Rather than a 'quick-fit' or a 'one-size-fits-all' solution, marketers need to view IT assimilation from the stages theory perspective and comprehend that organisational learning will occur over time and that the barriers they encounter must be overcome. Marketers and academics must also realise that IT is now a part of contemporary marketing practice and so understanding, appreciation and ability to exploit IT must be part of the skill sets of all marketers. In conclusion, the reality of IT assimilation into marketing is that many of the developments have been tentative and faltering, and though there is perceived potential, there are various challenges that must be overcome before IT will become a normal and supportive part of marketing practice.

Author

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