The current issue and full text archive of this journal is available at
www.emeraldinsight.com/1066-2243.htm

An empirical study of the uptake of performance measurement by Internet retailers

G. Gunawan
Faculty of Engineering, University of Surabaya, Surabaya, Indonesia, and
F. Ellis-Chadwick and M. King
The Business School, Loughborough University, Loughborough, UK

Received 3 November 2007
Revised 19 May 2008
Accepted 3 June 2008

Abstract

Purpose – The purpose of this paper is twofold: to identify levels of uptake of performance measurement by small and medium-sized retail companies selling goods online, and to determine key factors, which could explain any variation in use of performance indicators. The study is designed to explore these issues by this type of retailer as currently understanding is fairly limited.

Design/methodology/approach – A quantitative mail questionnaire was used to survey UK retailers selling goods online. The questionnaire examined the uptake of performance measurement in conjunction with the business profile of each of the 252 responding companies.

Findings – The results show great variation in levels and extent of uptake of performance measurement by online retailers in the UK. Company profile variables: size and operating format help to account for the variation in the number of indicators measured.

Research limitations/implications – The sample frame has some limitations insofar as the study only focused on small and medium-sized retailers in the UK selling tangible goods. Future research could be extended to include larger and pan-European retailers selling both tangible and intangible goods. Furthermore, the data collection was cross-sectional and, whilst this approach was important at this stage in order to provide a picture of how performance measurement is being applied at a given point in time, a longitudinal study would enable greater analysis of strategic impact of performance measurement.

Practical implications – Currently, retailers' performance measurement activities mainly focus on gathering data using financial and Website functionality indicators. From a strategic planning perspective, this could suggest that retailers are adopting a short-term pragmatic approach towards retailing online. The implications are that performance measurement is being used as a means to ensure that Internet retailing is not having a detrimental effect on business performance rather than driving longer-term strategy development.

Originality/value – The principal contributions of this paper are that it has provided insight into the current status of performance measurement amongst UK Internet retailers and has identified a useful checklist of performance indicators which retailers can apply to gain a comprehensive view of business performance online.

Keywords Internet, Electronic commerce, Performance measurement, Small to medium-sized enterprises

Paper type Research paper

1. Introduction

Internet retailing is one of the fastest growing business sectors in the UK and as a result is having a significant effect on traditional retail provision. According to Interactive Media Retail Group, Internet sales have continued to rise from £14.5 billion

Internet Research
Vol. 18 No. 4, 2008
pp. 361-381

1066-2243
DOI 10.1108/10662240810897781

in 2004 to around £26 billion, in 2006, which represents 10 per cent of total retail sales in the UK (IMRG, 2005, 2006a). The actual number of Internet shoppers has also grown; in 2006 approximately 26 million, over half of UK adults, bought goods via the Internet (IMRG, 2006b). Moreover, the effect of this rapid expansion in consumer demand for Internet shopping is that a greater number of retailers are offering online shopping services. However, the breadth and depth of product range, the extent of delivery and geographical reach and the sophistication of services varies considerably (Doherty *et al.*, 2003). Indeed, if a like for like comparison were done between the virtual and the physical high street, the online high street would be severely limited in terms of product choice and availability of retail brands. Various factors have been found to affect the extent to which individual retailers have adopted the Internet as a sales channel: operational factors (King and Liou, 2004, Ellis-Chadwick *et al.*, 2002), product range (Choi *et al.*, 2006), customer base (Enders and Jelassi, 2000), and strategic approach (Tse and Soufani, 2007). Furthermore, according to Doherty *et al.* (2003) whilst this particular body of literature offers many interesting insights as to the factors affecting retail uptake of the Internet as a sales channel there are some significant gaps in understanding especially with regard to strategic planning and performance measurement.

This paper aims to investigate the gap in the literature by focusing on the uptake of performance measurement amongst Internet retailers in the UK. More specifically, the study aims to identify: the particular performance indicators measured by Internet retailers, the intensity of performance measurement and the factors, which might affect the extent of measurement. The main assertions of the paper are: the uptake of performance measurement amongst Internet retailers in the UK is highly variable and that operational format and business profile factors affect the extent of performance measurement undertaken. The rest of the paper is organized as follows; section 2 discusses key areas of performance measurement in the Internet retail context; section 3 develops a research model to investigate performance measurement and its relation with the business profile of Internet retailers; section 4 specifically describes the design of the survey method; section 5 discusses the findings, and finally section 6 draws conclusions and highlights limitations and implications.

2. Performance measurement in Internet retailing

Performance measurement plays a critical role in understanding how a business is operating; it helps to identify where improvements might be made and ultimately informs the strategic planning process (Bititci *et al.*, 2002; Bourne *et al.*, 2000; Kaplan and Norton, 1996). This level of understanding is becoming very important to online retailers as the Internet has become an established retail channel (Doherty *et al.*, 1999), the online trading environment has become more stable and consumers are more accepting of this as a method of purchasing. Moreover, as increasing numbers of retailers offer online sales rather than simply using the Internet as a marketing communication channel (Agrawal *et al.*, 2001; Ring and Tigert, 2001; Starr, 2003) competitive pressure intensifies and the need for greater understanding of business performance becomes an imperative. Greater understanding of business performance could be achieved by consideration of a range of performance measures. Developing awareness of how a business is performing is especially important for smaller retailers

as they are often the companies most likely to fail but also least likely to have structured performance measurement systems in place.

The Internet has evolved into a well-established trading environment during the last decade and not surprisingly the range and complexity of performance measures available to monitor Internet retail operations have also evolved accordingly. Initially, performance measures centred on monitoring features of web-technology and visitor traffic but over time retailers realised the need for a wider range of measures, to enable greater understanding of business performance (Grewal *et al.*, 2004; Ring *et al.*, 2002; Walters, 1994) due to the different emphasis placed on aspects of the retail experience depending on whether a company is trading on or offline. For example, the performance of delivery services to the individual becomes critical and so fulfilment measures are especially important to both Internet retailers and catalogue retailers because, unlike store-based retailers, they do not have the opportunity to differentiate themselves on variables such as store location, store atmospherics, in-store personal contact, and merchandising attractiveness and rely more heavily on the performance of delivery services for competitive positioning. From the literature, three key areas of measurement can be identified, which are likely to be highly significant to online retailers:

(1) site popularity;

(2) customers' online shopping experience; and

(3) business performance.

Measuring site popularity

In the early days of online trading, site popularity was considered a key performance indicator of online success. Web traffic measures or web metrics were developed, e.g. the number of visitors to a Website or the number of hits on each page and used as indicators of site popularity. Application of such measures encouraged retailers to focus on generating Website traffic often at the expense of profitability. Limayem *et al.* (2000) suggested the dynamic and interactive nature and complexity of a retailer's Website affected a site's popularity. However, whilst popularity was considered as an indicator of positive online performance, it did not necessarily indicate business success; for instance a Website could receive millions of visitors but only a small number might be converted into customers who made a purchase (Betts, 2001). During the development of the Internet as an innovative trading environment, many online businesses failed and whilst it is not possible to solely attribute business failure to poor performance measurement, writers highlighted the importance of understanding the contribution of Internet trading to business strategy. The dotcom crash in 2000 resulted in panic selling of high-tech stocks, investors lost trillions of dollars and lost faith in the future potential of online trading. Porter(2001) explained that during this period of innovation many Internet businesses had failed due to losing sight of the basic principles of operating a successful business. So he reemphasised the importance of understanding three key business issues:

(1) how to generate online revenue streams and apply profitable business models;

(2) the online contribution and how trading via the Internet added value; and

(3) the strategic contribution of online activities.

Consequently, it became apparent that for a company to develop this level of understanding other types of indicators would be needed, as measuring Website popularity was necessary but not sufficient to ensure business success.

Measuring customers' online shopping experience

Despite the business failures Internet retailing continued to expand and Websites increased in complexity. Some retailers offered wide product selections and the more experienced realised that in part online success was determined by the customers' experience of using Internet technologies. Consequently, the customers' online shopping experience has developed as an important theme within the literature (Doherty *et al.*, 2003). Customer loyalty was cited as being critical to online success as acquiring customers through the web is costly; early online transactions are normally unprofitable, and competitors are just a mouse click away (Semeijn *et al.*, 2005; Srinivasan *et al.*, 2002). Web site quality has been found to influence shoppers' attitudes towards purchasing (van der Heijden and Verhagen, 2004), and has the potential to increase customer satisfaction (Feinberg *et al.*, 2002). Researchers have proposed different frameworks to examine customers' experiences and the effect of the quality of the Website on customer satisfaction (e.g. Feinberg *et al.*, 2002; Huang, 2005; McKinney *et al.*, 2002; Srinivasan *et al.*, 2002; Szymanski and Hise, 2000; Tamimi *et al.*, 2003). Offline elements of the online shopping experience have also been found to impact on customer satisfaction especially order fulfilment (e.g. Tarn *et al.*, 2003; Semeijn *et al.*, 2005). Customer expectations have come to mean Websites must provide a suitable description of products for sale but also ensure goods arrive within an acceptable time frame. Over time, measurement of customers' experience has become more robust and attempts have been made to combine on and offline measures into single concepts of online service quality: eTailQ (Wolfinbarger and Gilly, 2003) and e-S-QUAL (Parasuraman *et al.*, 2005). The concept of online service quality was developed from the traditional service quality model (e.g. Parasuraman *et al.*, 1988) suggesting that service quality is associated with customer satisfaction and loyalty. Customer satisfaction towards an in-store retailer refers to the outcome of customers' subjective evaluation of whether a store meets or exceeds their expectations (Bloemer and de Ruyter, 1998). This principle is equally relevant to Internet retailing but the weighting of evaluation criteria vary, e.g. Website usability and level of online service interaction are important to online shoppers but of limited relevance to offline shoppers. Customer loyalty towards an in-store retailer refers to a customer's positive attitude towards the store which results in repeat buying behaviour (Srinivasan *et al.*, 2002). Research revealed that service quality was related to profitability because of customer repurchase and referral (Chenet *et al.*, 1999; Zeithaml, 2000). However, whilst measurement of the customer experience can potentially provide useful insight into how online businesses perform, still more understanding is needed to create a more complete picture of online business performance.

Measuring business performance

Business management literature suggests performance should be evaluated with financial and operational measures (Venkatraman and Ramanujam, 1986). Furthermore, some studies suggest an integrated range of measures should be applied especially when assessing the performance of Internet-based businesses. Agrawal *et al.* (2001) developed the "e-performance scorecard" to measure a Website's

success in attracting, converting, and retaining visitors, based on the efficiency of costs and the effectiveness of a site's operation; Rayport and Jaworski (2003) proposed a "performance dashboard" to measure the progress and health of online business models; Chaffey *et al.* (2006) proposed a framework to assess the effectiveness of the Internet retailing channel; Neely *et al.* (2002) aimed to show the suitability of the Performance Prism for evaluation of online businesses. Such measurement frameworks are important as they focus on various aspects of performance measurement in an e-commerce context but are less clear about exactly which performance indicators are most important to measure or measuring which indicator(s) produces the right type of information to inform an online business's growth and development.

Towards an Internet retailing performance measurement framework

In addition to the need for an integrated approach, Neely(2005) calls for more flexibility in performance measurement and suggests it is important for measurement frameworks to be able to take account of the dynamic nature of organisations and related trading environments. This point is particularly pertinent to online companies as the Internet (albeit rapidly developing) is still an emergent trading arena. This raises questions, especially for SME Internet retailers, as to whether there are particular dimensions of performance measurement, which are more important to consider than others and whether all indicators are equal in strategic relevance? The performance measurement (e.g. Kaplan and Norton, 1996) and business performance literature (e.g., Venkatraman and Ramanujam, 1986) suggests that performance measures for Internet retailers should cover financial aspects of business trading as well as non-financial activities such as operational processes, e.g. delivery and returns. Other, writers have proposed the importance of, web-traffic-related measures (Karagozoglu and Lindell, 2004; Sterne, 2002) and also highlighted the need for such measures to be appropriate for businesses in the early stage of growth as well as being scaleable as online trading grows. Measures have to be developed in order to assess Website usability and customer traffic flows through the lifetime of a business. Similarly, online service quality measures which concentrate on customers' shopping experience, have also been highlighted as significant if retailers are to evaluate the real health of their business (e.g. Srinivasan *et al.*, 2002; Szymanski and Hise, 2000).

In summary, investigation of the literature reveals a need for better understanding of performance measurement in the online retail context in order to be able to develop a comprehensive framework of performance analysis. The importance of understanding various key dimensions of business activity to overall online performance are clear but which specific measures should be applied to provide the greatest insight and which are considered to be the most important in the world of online retailing are unclear. A potential contribution of this investigation is that it will apply a comprehensive framework of online performance measurement, which could have both conceptual and practical benefits.

3. Research model and objectives

This study set out to investigate the uptake of performance measurement by Internet retailers. So far we have discussed the conceptualisation of performance measurement within a retail context. The next step is to consider the linkages between retailers, the

act of performance measurement and the output of performance measurement activities. An exploratory research model (see Figure 1) was developed as a framework to guide the investigation of the uptake of performance measurement by UK Internet retailers.

The model comprises two key elements: business profile and performance indicators. Business profile seeks to categorise Internet retailers using variables suggested by the literature: business size (in terms of turnover); product category; business format (retailers operating solely online, retailers operating Internet shopping in conjunction with a store operation and home shopping operations, e.g. catalogue retailers); maturity of Internet retail operation. The literature has been thoroughly examined in order to substantiate each area of the business profile to be examined and also to identify specific performance indicators, which might be used by Internet retailers. The performance indicators identified by the literature review are shown in Table I.

Performance indicators included in this study focused on a business's performance domain rather than a broader domain of organizational effectiveness (Venkatraman and Ramanujam, 1986). In the business performance domain, indicators include financial measures, and operational measures which lead to financial performance. This study did not include other dimensions of performance such as those related to innovation, employees, suppliers, community or long-term sustainability. Despite the high level of importance of such measures for traditional and large businesses (Maltz *et al.*, 2003), the same was not found to be true for relatively small Internet retailers, where employees, suppliers and support organisations were likely to be known personally to key individuals running the firm. As a result indicators were used, which could be classified into the key dimensions of online business performance: financial, market-sales, customer, web, and process. This was felt to be important, as analysis by dimension could reveal how retailers are or are not using performance measurement to develop their businesses. A total of 32 indicators were identified from literature and academics and practitioners tested the content validity of the indicators and the dimensions.

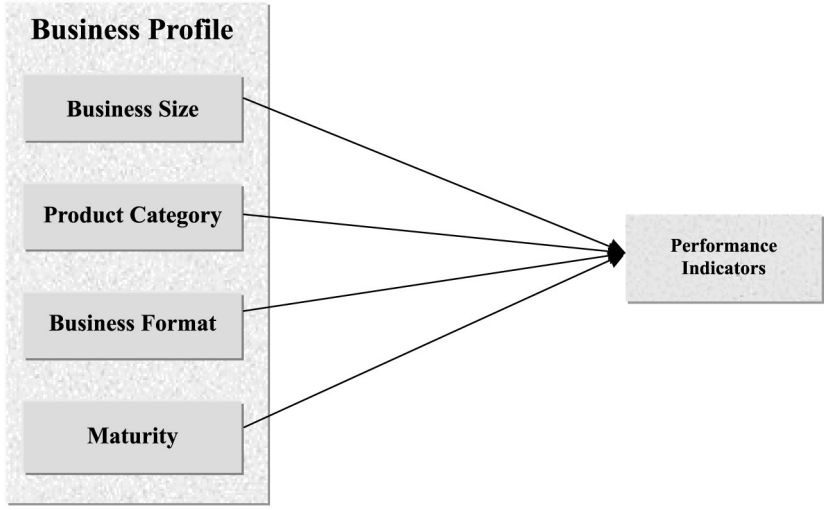


Figure 1.
Research model: business profile of Internet retailer and use of performance measurement

Indicators	Agrawal *et al.* (2001)	Barnes and Vidgen (2002)	Barsh *et al.* (2000)	Bughin (2003)	Chaffey (2002)	Cotter (2002)	Janenko (2002)	Neely *et al.* (2002)	Bailey and Rabinovich (2005)	Rayport and Jaworski (2003)	Tamimi *et al.* (2003)	Lejeune, 2001	Vargas (2004)
Acquisition cost	v				v	v		v		v			v
Conversion rate visitor to registration					v								
Conversion rate visitor to purchase					v	v		v					v
Cost of fulfilment			v										v
Customer churn rate	v									v			
Customer extension												v	
Customer maintenance cost	v							v					
Market share								v					
Number of customers	v			v									
Number of newsletter subscribers										v			
Number of orders (transactions)	v												
Number of visits	v									v			
On-time delivery (promised vs actual)							v	v	v		v		
Online enquiry-to-response time							v						
Page views					v								
Return notification-to-refund time							v				v		
Percentage of error in goods picked and delivered to customer							v	v					

(*continued*)

Table I.
Internet retailing performance indicators

Table I.

Indicators	Agrawal *et al.* (2001)	Barnes and Vidgen (2002)	Barsh *et al.* (2000)	Bughin (2003)	Chaffey (2002)	Cotter (2002)	Janenko (2002)	Neely *et al.* (2002)	Bailey and Rabinovich (2005)	Rayport and Jaworski (2003)	Tamimi *et al.* (2003)	Lejeune, 2001	Vargas (2004)
Percentage of error in delivery destination							v	v					
Percentage of error in charge made to customer							v				v		
Profit margin			v	v	v					v			v
Sales value per transaction	v												
Ratio of online sales											v		
Repeated sales per customer	v							v					v
Revenue per customer	v												
Revenue per transaction	v												
Total sales	v							v					
Unique visitors				v						v			
Website's information quality		v											
Website's service-interaction quality		v											
Website's usability		v											

The underlying assumption of the model was the existence of a link between two components: business profile affects the level of performance measurement in terms of the number of indicators measured. The four predicted relationships shown in Figure 1 were developed from the following rationale.

Firstly, business size has been cited as having an effect on performance. Alba *et al.* (1997) proposed that small companies have the most to gain from adopting the Internet as a sales channel and yet empirical work by Doherty *et al.* (1999) indicated that larger retailers are likely to have more online success. Larger Internet retailers could be associated with a more complex operation because of say offering larger product assortments, dealing with a greater number of orders, and or customers. Accordingly, larger retailer may be more concerned about performance measurement in order to be well-informed about progress and identifying future strategic implications. Therefore, it is possible that there is an association between business size and performance measurement.

Secondly, product activity sector and range are also cited as likely to have an influence; there are suggestions that certain product ranges are more likely to be successful online (de Kare-Silver, 2001; Li and Gery, 2000; Vijayasarathy, 2002). Product categories deemed to be more suitable for online trading could attract many Internet retailers, resulting in greater competitive pressures. Internet retailers offering popular online product categories may be more concerned about performance measurement due to competitive pressures and strategic aims for example a retailer following a cost-leadership strategy and aiming to be the lowest cost operator in a particular product activity sector is likely to be interested in measuring every aspect of the business's efficiency as well as the market opportunities. Therefore, it is predicted that there is an association between product category and performance measurement.

Thirdly, business format is also suggested to affect online success. A retailer adding the Internet as an additional channel to an already established high street operation might out-perform a business operating solely online due to potential advantages such as developed supplier networks, brand equity, superior management capabilities, and well-established trading relationships (Enders and Jelassi, 2000). Pure-play retailers, which are relatively new in the retailing business, might be more concerned about measuring more performance indicators than their counterparts of clicks-&-mortar and home-shopping retailers. The likely reason for this is that it is critically important to track their online business progress, as it is their only retail channel. For those clicks-&-mortar and home-shopping retailers, the success of this Internet channel could be achieved indirectly through the sales increase in their traditional channel. Consequently, it is likely there is an important relationship between business format and performance measurement.

Fourthly, it is expected the longer a retail business trades online the more likely it will be successful and operationally competent. The level of maturity could be associated with the life-cycle stages (Rayport and Jaworski, 2003). A more mature business could be associated with a more complex operation. Internet retailers in the later stages of life cycle may need to measure more aspects of business performance. Consequently, it is likely that there is an association between the level of maturity and performance measurement. As each aspect of the business profile has the potential to affect the success of the online retail operation it is considered likely to influence levels and usage of performance measurement.

The literature review and development of the research model have led to the following specific research objectives for this study:

- to explore current levels and variation in the uptake of performance measurement indicators by SME Internet retailers in the UK; and
- to explore the relationship between the uptake of performance measurement indicators and business profile of UK Internet retailers.

4. Research method

The method was a quantitative, cross-sectional survey which aimed to address the two key research objectives and in doing so provide a picture of the current status of performance measurement amongst Internet retailers. The research instrument was a postal questionnaire. This method was chosen, as it is an efficient and accurate method of polling the opinions of a sample population and is an effective means of collecting quantitative data (May, 2002). Moreover, this approach offers the maximum potential to produce results, which are generaliseable and precise in terms of the population (Firestone, 1987). The issue of validity was addressed by rigorously pre-testing and pilot testing the research instrument through discussions with academics, retail practitioners and selected members of the target sample population. The design of the questionnaire was an iterative process, and finally, a validated instrument was produced for the full survey and this process was completed by July 2005. It should be noted, consideration was given to gathering the data using a web-based survey but the more traditional postal method was chosen due to issues relating to online security and privacy (Hewson *et al.*, 2003), and difficulties in obtaining email addresses of specific key informant from companies in the sample frame.

The target population for the survey was small and medium sized retailers in the UK selling tangible products, not services or digital products via the Internet. The decision not to include intangible goods was taken in order to produce a homogenous set of retailers who would potentially experience similar operational and strategic problems and issues, whilst trading online. Moreover, in order to answer the research questions it was necessary to aim to establish a sample frame that was a good representation of the UK retailer population. Difficulties were encountered whilst compiling a list of the target population, as there was no readily accessible sample frame. Earlier studies have encountered similar problems and the solution was to refer to a combination of reliable sources (Hart *et al.*, 2000). This study adopted this tested approach but also included more recently developed Internet specific directories: Hemming Information Services (2005); TrustUK, Interactive Media Retail Group; Online shopping directories (Shopsafe.co.uk and Kodoshops.com). In total, 1,417 Internet retailers were identified and contacted.

The research model provided the basis for development of the questionnaire. The four aspects of business profile were operationalised using closed-ended questions. Performance measurement was operationalised by asking respondents whether each performance indicator listed in the questionnaire was measured, and how frequently in terms of daily, weekly, monthly, quarterly, and annually basis.

The survey conducted in September and October 2005 produced 252 usable responses giving a response rate of 17.8 per cent. These responses were from Internet retailers with annual sales of less than £10 million, which could be considered as small and medium sized businesses. This level of response was considered very good given

the strategic nature of the survey's content and the managerial position of the target respondents as they handle a broad range of tasks and face significant time pressures in day-to-day management of their companies (Karagozoglu and Lindell, 2004). On the whole, respondents were key informants within the business with 83 per cent reporting they were Owners, Managing Directors, or CEOs. The possibility of non-response bias was tested using a time trend method based on the assumption that persons responding later are more like non-respondents (Armstrong and Overton, 1977). The results suggested that persons who did not respond were not different from those who did respond.

5. Discussion of the results

Neely (2005) stated that in the field of performance measurement there is a "relative paucity of empirical research", which he suggests is in part responsible for the widespread uptake and application of the Balance scorecard. Our study acknowledged Neely *et al.*'s (2005) call for more research, which goes beyond the BSC and in doing so has also aimed to set out foundations for capturing the dynamics of performance measurement in the modern context of Internet retailing. The study has somewhat ambitiously aimed to build an Internet Retail performance measurement framework, based on frameworks draw from literature from different disciplines and empirically tests how the framework is applied in the online retail context.

The results and findings for each of the specific research objectives are considered.

However, before discussing the results in conjunction with the research objectives we will examine the profile of the responding retailers' as this is fundamental to later stages of the analysis and discussion. See Table II for the results of the data collected on retailer profiles.

In Table II we can see there is a good spread of respondents across the main product activity categories. Furthermore, in support of the range of the response in terms of activity sector; retailers in Leisure and Entertainment, Home and DIY, Clothing and Accessories sectors have previously been found to have a relatively high level of online activity whereas Health and Beauty relatively low (Ellis-Chadwick *et al.*, 2002). Additionally, the number of respondents selling groceries is low. This response rate is to be expected as the very large supermarket chains Tesco, ASDA, Sainsbury, Waitrose and Ocado dominate the online food market.

Business profile	Category	Number of respondents	%
Business size	< £1 million	195	77
	£1- < 10 million	57	23
Product category	Leisure-and-entertainment	96	38
	Home-and-DIY	64	25
	Clothing-and-accessories	60	24
	Health-and-beauty	23	9
	Food-and-drink	9	4
Business format	Without-store presence	153	61
	With-store presence	99	39
Maturity	Less mature (< 5 years)	139	56
	More mature (> 5 years)	111	44

Table II. Business profile of respondents

In terms of format, relatively little is known about the numbers of retailers operating each particular format. However, if compared with the number of mail order retailers (Internet retailers are included under this heading by the Standard Industrial Classification System) the percentages of respondents operating with or without a store presence are comparable to those operating traditional mail order businesses using similar operating formats.

In terms of business size, the general population of retailers in the UK is made up of around 25,000 businesses and approximately three quarters of retail turnover is generated by less than 15 per cent of these businesses involved in retailing. Given the profile of the general retailer population and that of many online retail businesses are start-ups it was expected that the majority of the respondents to this study would be small retail operations.

Current uptake of performance indicators by SME Internet retailers in the UK

The survey results confirm that SME Internet retailers (annual sales less than £10 million) in the UK are gathering performance data using a wide range of indicators. Furthermore, there is significant variation in uptake of individual indicators, e.g. total sales and number of orders were frequently measured by 96 per cent of retailers surveyed whereas customer churn rates (withdrawal of customer) were measured by 25 per cent, and customer maintenance costs by 11 per cent (see Table III). Indeed indicators focusing on the customer experience were generally measured by fewer retailers and also much less frequently than indicators associated with financial business performance and Website popularity, e.g. number of visits, page views and customer extension. This is interesting given how researchers (e.g. Feinberg *et al.*, 2002; Tamimi *et al.*, 2003; Wolfinbarger and Gilly, 2003) have stressed the importance of web-quality in terms of the service interaction with the customer. Errors in charges and failure in service delivery are cited as most likely to produce dissatisfied customers and yet it appears that few retailers are gathering data using such indicators. It is possible that web-quality and customer experiences are measured less frequently compared to web-traffic due to the complexity involved in measuring intangibles; a lack of knowledge of customer relationship management issues; outsourcing and or the use of intermediaries for logistics solutions. Table III shows a full list of indicators measured, frequency of data collection, the number and percentage of responding organisations using each indicator, and the frequency of data collection (daily, weekly, monthly, quarterly and annually).

Figure 2 shows the variation in the total number of indicators measured by each retailer. Two companies measured all 30-performance whilst three companies measured no indicators at all. In broad terms, a third of retailers measured 0-12 indicators, a third 13-18, and final third 19-30 indicators. These results again confirm variation in the uptake of total number of performance indicators and whilst anticipated, this is an important finding in so far as it shows the extent of the variation in terms of the range and number of measures used, and frequency of measurement. Furthermore, the survey has shown the list of indicators to be valid and comprehensive as all are measured to some extent by UK Internet retailers and there were only a couple of cases where respondents suggested additional indicators were measured.

Performance indicator	No. of firms	%	Dy	Wy	My	Qy	Ay	Ns
Total sales	242	96	117	45	63	12	4	1
Number of orders	241	96	142	47	40	7	4	1
Profit margin	218	87	41	30	95	27	24	1
Number of customers	209	83	84	44	56	16	8	1
Number of visits	210	83	72	65	56	12	3	2
Sales value per transaction	198	79	63	43	70	16	4	2
Page views	185	74	65	46	55	15	1	3
Unique visitors	182	72	67	49	52	12	1	1
Revenue per transaction	170	69	56	31	57	21	5	0
Website's usability	152	60	36	26	42	34	12	2
Website's information quality	149	59	40	21	43	31	13	1
Conversion rate visitor to purchase	142	57	34	29	58	17	3	1
Fulfilment cost	138	55	18	19	63	16	22	0
Revenue per customer	137	55	28	18	59	24	7	1
Number of newsletter subscribers	135	54	17	22	64	25	6	1
Repeated sales per customer	126	50	15	16	52	22	18	3
Acquisition cost	113	45	16	22	57	12	5	1
Ratio of sales overseas	107	43	15	13	34	31	12	2
On-time delivery (promise v. actual)	109	43	40	39	22	4	2	2
Percentage of error in goods picked and delivered to customer	103	41	38	28	29	6	1	1
Website's service-interaction quality	95	38	23	16	28	18	9	1
Percentage of error in delivery destination	85	34	33	27	17	5	3	0
Conversion rate visitor to registration	82	33	18	17	29	13	5	0
Online enquiry-to-response time	79	31	44	21	11	2	1	0
Return notification-to-refund time	68	27	27	18	20	2	0	1
Customer churn (withdrawal) rate	63	25	17	10	23	7	5	1
Percentage of error in charge made to customer	56	22	28	13	10	1	2	2
Market share	34	14	4	3	12	7	8	0
Customer extension (buy another product category)	35	14	11	4	13	5	2	0
Customer maintenance cost	28	11	1	4	14	6	3	0

Notes: Dy: daily; Wy: weekly; My: monthly; Qy: quarterly; Ay: annually; Ns: frequency not selected

Table III.
Frequency of measurement of performance indicators by Internet retailers in the UK

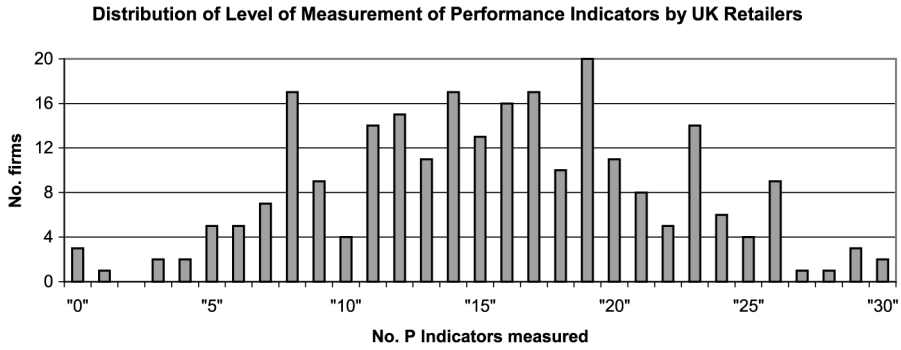


Figure 2.
Variation in the total number of performance indicators measured by individual UK retailers

Variability of performance measurement

Neely *et al.*(2005) suggested that to study performance measurement it is important to consider how indicators contribute to forming a measurement system, which can simultaneously evaluate various dimension of business activity. Fitzgerald *et al.* (1991) studied the service sector performance measurement and suggested it could be divided into two broad dimensions one focusing on financial and competitive performance measures and the other focusing on quality, flexibility, resource utilization and innovation measures. Our analysis of the literature added further dimensions of performance indicators when working in the Internet retail context. Table IV shows the results of grouping the indicators using the key dimensions of performance measurement which emerged from the literature: financial dimension, groups together indicators, which potentially influence profitability; market dimension focuses on indicators that help a company to monitor the status of the market, competition and sales; customer dimension includes indicators which reflect the customers' experiences; web dimension focuses on site functionality and operations; process dimension group

Dimension	Performance indicator	No. of firms	% of respondents
Financial	Profit margin	218	87
	Revenue per transaction	170	69
	Fulfilment cost	138	55
	Revenue per customer	137	55
	Acquisition cost	113	45
	Customer maintenance cost	28	11
Market	Total sales	242	96
	Number of orders	241	96
	Number of customers	209	83
	Sales value per transaction	198	79
	Ratio of sales overseas	107	43
	Market share	34	14
Customer	Conversion rate visitor to purchase	142	57
	Number of newsletter subscribers	135	54
	Repeated sales per customer	126	50
	Conversion rate visitor to registration	82	33
	Customer churn (withdrawal) rate	63	25
	Customer extension (buy another product category)	35	14
Web	Number of visits	210	83
	Page views	185	74
	Unique visitors	182	72
	Usability	152	60
	Information quality	149	59
	Service-interaction quality	95	38
Process	On-time delivery (promised v. actual)	109	43
	Percentage of error in goods picked and delivered to customer	103	41
	Percentage of error in delivery destination	85	34
	Online enquiry-to-response time	79	31
	Return notification-to-refund time	68	27
	Percentage of error in charge made to customer	56	22

Table IV.
Dimensions of performance indicators measured by Internet retailers in the UK

indicators, which provide information on retail processes and the interaction between on and off line aspects of Internet trading.

Grouping the indicators in this manner is interesting as it reveals the extent to which some retailers are taking an integrated approach toward measurement by using a range of indicators from each of the dimensions. Moreover, it shows the relative importance given by retailers to each of the dimensions of measurement. Financial and market being the most measured followed by web and then customer and process indicators. However, looking at the results in this way also shows there is much variation within each of the dimensions as to which indicators are measured.

The next step of the analysis was to explore this variability in uptake of performance measures using factor analysis. The results showed the five dimensions suggested by the literature could be simplified into a single factor as a total number of performance indicators measured (Cronbach's α of reliability test is 0.780). The total number can be used to represent the variable of performance measurement, and it enables the analysis of relationship between performance measurement and other variables such as business profile. Such relationships have rarely been investigated in the online trading context, possibly due to the absence of a performance measurement variable. Consequently, we tested whether this it was possible to explain the variation in uptake of performance measurement by looking at the profile of Internet retailers.

The relationship between business profile and the uptake of performance measurement indicators

The results of testing of the relationship between performance measurement and retailers provides insight into which aspects of a retailer's profile is likely to affect the uptake of performance measurement and in doing so brings together the elements of the research model

Business size. The findings indicate that relatively larger SME Internet retailers measured more performance indicators than smaller ones (t-test: $t(250) = 4.205$, $p < 0.001$). Further investigation revealed the larger retailers were more likely to measure; market share and sales value per transaction and the accuracy of process (e.g. error in goods picked and delivered, delivery destination, and charge made). A possible explanation is these retailers are likely to serve a larger customer base, offer more products, handle more orders, and operate more complex other operations than smaller retailers. This finding supports the work of O'Keefe *et al.* (1998), which identified business size as a critical factor likely to affect online business success of SME's.

Product category. The number of performance indicators measured is not strongly related to product category (ANOVA test: $F(4, 247) = 1.299$; $p > 0.05$). Further investigation of individual performance indicators indicated that nearly a half of Internet retailers served overseas customers, as they measured the "ratio of sales overseas". Those selling clothing and accessories and entertainment and leisure products were more likely to measure this indicator than those selling home and DIY products but the results are not conclusive. This is an interesting finding given that product category is widely cited to influence online retailing Doherty *et al.*, 1999; Grewal *et al.*, 2004; Lee and Brandyberry, 2003;) and therefore would be expected to strongly influence level of performance measurement.

Format. The results indicate Internet retailers without store presence were slightly more likely to measure more performance indicators than those with store presence

(t-test: $t(250) = 2.587$, $p < 0.01$). So far format has generally been considered from a retailer's perspective as part of a range of operational cost-based factors, affecting channel choice and the extent to which a retailer offers goods and services online per se (Doherty *et al.*, 2003; O'Keefe *et al.*, 1998). However, it is highly likely that retailers without a store presence need to measure online performance to ensure the continuing existence and development of the business. The implications are format is a greater influencer of the extent of planning and strategic decision-making activities amongst retailers than previously thought but further work is needed.

Maturity. Levels of uptake of performance indicators is not found to be associated with the maturity (t-test: $t(248) = 0.272$, $p > 0.05$.). The online business sector is characterised as volatile and dynamic and it is suggested there is an opportunity for new entrants to outperform the existing more mature firms. However, from the customers' view, they would expect Internet retailers, regardless of their maturity, to provide an acceptable level of service, such as product information, online payment, on-time delivery, and return policy. This condition means that Internet retailers, regardless of their business's level of maturity, must operate in a similar business environment and provide similar levels of service, which might help to explain the lack of differentiation in terms of the uptake of performance measures between new and established businesses.

In summary, business size and business format are profile variables, which significantly affect uptake of performance indicators. It is perhaps surprising to find that product category and maturity do not have greater influence on the uptake of performance measurement. However, this could be due to a general lack of awareness of the strategic importance and value of performance measurement by smaller business as a whole. Neely *et al.* (2005) found variation in performance measurement amongst SME's due to the cost of the process, which emphasises the importance of having the right measures in place. On one hand this study suggests there is a possibly a lack of agreement amongst retailers as to what should be measured but on the other hand it is also possible that due to the highly flexible nature of online trading that retailers' have applied their own performance measurement frameworks, focusing on different aspects business performance.

6. Contribution, limitations and managerial implications

This was an exploratory empirical study, which aimed to investigate performance measurement in an Internet retailing context and whilst e-commerce and online retailing have been well documented in literature, relatively little attention has focussed on the uptake of performance measurement by online retailers despite extensive coverage of performance measurement in strategic management literature *per se*. This study makes a major contribution in three ways:

(1) it has empirically examined levels of variability in the uptake of performance indicators used to determine online business performance amongst SME Internet retailers in the UK and shown this to be surprisingly high;

(2) it has not only applied a comprehensive framework of performance indicators for measuring Internet retailing which is not only grounded in the literature but also has been empirically tested but also shown how individual indicators represent a single variable of performance measurement. Furthermore, the study has identified the importance of two additional indicators: ratio of sales overseas and customer extension; and

(3) it has mapped out possible dimensions of a performance measurement system, which potentially provide a comprehensive method of reviewing and analysing a retailer's current and potential usage of performance measurement and ultimately levels of online performance.

The suggested dimensions provide a rich resource for further research within both the retail and service context.

In assessing the findings of this study, it is important to interpret the results in the light of some limitations. The findings are limited to small and medium-sized Internet retailers, which sell tangible goods and have annual online sales turnover of less than £10 million. This study is based on a survey, which is cross-sectional in nature, and conducted in the UK, where online shopping has been growing fast and there are a big number of retailers in this sector. Future research may investigate Internet retailers in different circumstances and or using different research methods.

From a managerial perspective, the results suggest Internet retailers primarily use performance measurement as a means of managing and controlling; costs and Website functionality. This implies performance measurement is used in a short-term tactical manner and possibly as a measure to limit exposure to financial risk. Notwithstanding the importance of such information it is also necessary for retailers to develop measurement frameworks which take on board a more strategic focus for instance the customers' online shopping experience is likely to affect retention rates and ultimately business growth, which if ignored could result in business failure. But it is also important to ensure frameworks remain sufficiently focused and do not encourage businesses to collect an overwhelming amount of data, some of which is never converted into relevant and useful information. The potential value of the performance measurement framework discussed in this paper is that it highlights broad areas of a company's activity, which should be clearly understood if a company is to be able to develop and maintain a strategic competitive positioning. Moreover, the framework provides a listing of specific indicators for consideration when looking to improve a company's performance in a particular part of its business activity. For example, number of customer Website visits could be understood in terms of geographical areas or total sales for specific product categories. This information could then be used for developing a company's strategic marketing planning. Currently, the majority of SME Internet retailers are not widely measuring the more strategic performance indicators and in so doing present less of a threat to the major online retailers. Further investigation of the wider strategic impact of performance measurement is currently being explored.

References

Agrawal, V., Arjona, L.D. and Lemmens, R. (2001), "E-performance: the path to rational exuberance", *McKinsey Quarterly*, No. 1, pp. 31-43.

Alba, J., Lynch, J.C., Weitz, B., Janiszewski, C., Lutz, R., Sawyer, A. and Wood, S. (1997), "Interactive home shopping consumer, retailer and manufacturer incentives to participate in electronic marketplaces", *Journal of Marketing*, Vol. 61, July, pp. 38-53.

Armstrong, J.S. and Overton, T.S. (1977), "Estimating nonresponse bias in mail surveys", *Journal of Marketing Research*, Vol. 14 No. 3, pp. 396-402.

Bailey, J.P. and Rabinovich, E. (2005), "Internet book retailing and supply chain management: an analytical study of inventory location speculation and postponement", *Transportation Research – Part E*, Vol. 41 No. 3, pp. 159-77.

Barnes, S.J. and Vidgen, R.T. (2002), "An integrative approach to the assessment of e-commerce quality", *Journal of Electronic Commerce Research*, Vol. 3 No. 2, pp. 114-27.

Barsh, J., Crawford, B. and Grosso, C. (2000), "How e-tailing can rise from the ashes", *McKinsey Quarterly*, No. 3, pp. 98-109.

Betts, M. (2001), "Turning browsers into buyers", *MIT Sloan Management Review*, Vol. 42 No. 2, pp. 8-9.

Bititci, U.S., Nudurupati, S.S., Turner, T.J. and Creighton, S. (2002), "Web enabled performance measurement systems: management implications", *International Journal of Operations & Production Management*, Vol. 22 No. 11, pp. 1273-87.

Bloemer, J. and de Ruyter, K.D. (1998), "On the relationship between store image, store satisfaction and store loyalty", *European Journal of Marketing*, Vol. 32 Nos 5/6, pp. 499-513.

Bourne, M., Mills, J., Wilcox, M., Neely, A. and Platts, K. (2000), "Designing, implementing and updating performance measurement systems", *International Journal of Operations & Production Management*, Vol. 20 No. 7, pp. 754-71.

Bughin, J. (2003), "Finding the path(s) towards profitable e-commerce", *Deutsche Bank Research*, Research notes, Working Paper Series, No. 7, 16 January.

Chaffey, D. (2002), *E-business and E-commerce Management*, Financial Times/Prentice-Hall, Harlow.

Chaffey, D., Ellis-Chadwick, F., Johnston, K. and Mayer, R. (2006), *Internet Marketing: Strategy, Implementation and Practice*, 3rd. ed., Financial Times/Prentice-Hall, Harlow.

Chenet, P., Tynan, C. and Money, A. (1999), "Service performance gap: re-evaluation and redevelopment", *Journal of Business Research*, Vol. 46 No. 2, pp. 133-47.

Choi, S.Y., Choi, B. and Lee, H. (2006), "Categorizing commercial products for customer oriented online retailing", *Computers & Industrial Engineering*, Vol. 51 No. 1, pp. 90-101.

Cotter, S. (2002), "Taking the measure of e-marketing success", *The Journal of Business Strategy*, Vol. 23 No. 2, pp. 30-7.

de-Kare-Silver, M. (2001), *E-shock: The New Rules. E-strategies for Retailers and Manufacturers*, Palgrave, Basingstoke.

Doherty, N.F., Ellis-Chadwick, F.E. and Hart, C.A. (1999), "Cyber retailing in the UK: the potential of the Internet as a retail channel", *International Journal of Retail & Distribution Management*, Vol. 27 No. 1, pp. 22-36.

Doherty, N.F., Ellis-Chadwick, F.E. and Hart, C.A. (2003), "An analysis of the factors affecting the adoption of the Internet in the UK retail sector", *Journal of Business Research*, Vol. 56 No. 11, pp. 887-97.

Ellis-Chadwick, F.E., Doherty, N.F. and Hart, C.A. (2002), "Signs of change? A longitudinal study of Internet adoption in the UK retail sector", *Journal of Retailing and Consumer Services*, Vol. 9 No. 2, pp. 71-80.

Enders, A. and Jelassi, T. (2000), "The converging business models of Internet and bricks-and-mortar retailers", *European Management Journal*, Vol. 18 No. 5, pp. 542-50.

Feinberg, R.A., Kadam, R., Hokama, L. and Kim, I. (2002), "The state of electronic customer relationship management in retailing", *International Journal of Retail & Distribution Management*, Vol. 30 No. 4, pp. 470-81.

Firestone, W.A. (1987), "Meaning in method: the rhetoric of quantitative and qualitative research", *Educational Researcher*, Vol. 16 No. 7, pp. 16-21.

Fitzgerald, L., Jonhston, R., Brignall, S., Silvestro, R. and Voss, C. (1991), *Performance Measurement in Service Business*, CIMA, London.

Grewal, D., Iyer, G.R. and Levy, M. (2004), "Internet retailing: enablers, limiters and market consequences", *Journal of Business Research*, Vol. 57 No. 24, pp. 703-13.

Hart, C., Doherty, N. and Ellis-Chadwick, F. (2000), "Retailer adoption of the Internet – implications for retail marketing", *European Journal of Marketing.*, Vol. 34 No. 8, pp. 954-74.

Hemming-Information-Services (2005), *Retail Directory of the UK – 2005*, Hemming-Information-Services, London.

Hewson, C., Yule, P., Laurent, D. and Vogel, C. (2003), *Internet Research Methods: A Practical Guide for the Social and Behavioural Sciences*, Sage, London.

Huang, M.-H. (2005), "Web performance scale", *Information & Management*, Vol. 42 No. 6, pp. 841-52.

IMRG (2005), *e-Retail 2005 Annual Report Published Today (06/04/2005)*, available at: www.imrg.org (accessed 1 June 2005).

IMRG (2006a), *10% of Retail Sales now Online (24 May 2006)*, available at: www.imrg.org (accessed 21 January 2007).

IMRG (2006b), *Annual Statement 2006: E-retailing: The Year Ahead*, available at: www.imrg.org (accessed 1 August 2006).

Janenko, P.M. (2002), *e-Operations Management*, Amacom, New York, NY.

Kaplan, R.S. and Norton, D.P. (1996), *The Balanced Scorecard: Translating Strategy into Action*, Harvard Business School, Boston, MA.

Karagozoglu, N. and Lindell, M. (2004), "Electronic commerce strategy, operations, and performance in small and medium-sized enterprises", *Journal of Small Business and Enterprise Development*, Vol. 11 No. 3, pp. 290-301.

King, S.F. and Liou, J.S. (2004), "A framework for Internet channel evaluation", *International Journal of Information Management*, Vol. 24 No. 6, pp. 473-88.

Lee, S. and Brandyberry, A. (2003), "The e-tailer's dilemma", *ACMSIGMIS Database*, Vol. 34 No. 2.

Lejeune, M. (2001), "Measuring the impact of data mining on churn management", *Internet Research*, Vol. 11 No. 5, pp. 375-87.

Li, Z.G. and Gery, N. (2000), "E-tailing for all products?", *Business Horizons*, Vol. 43 No. 6, pp. 49-54.

Limayem, M., Khalifa, M. and Frini, A. (2000), "What makes consumers buy from Internet? A longitudinal study of online shopping", *IEEE Transactions on systems, man, and cybernatics: Part A: Systems and Humans*, Vol. 30 No. 4, pp. 421-32.

McKinney, V., Yoon, K. and Zahed, F.M. (2002), "The measurement of web-customer satisfaction: an expectation and disconfirmation approach", *Information Systems Research*, Vol. 13 No. 3, pp. 296-315.

Maltz, A.C., Shenhar, A.J. and Reilly, R.R. (2003), "Beyond the balanced scorecard: refining the search for organizational success measures", *Long Range Planning*, Vol. 36 No. 2, pp. 187-204.

May, T. (2002), *Social Research: Issues, Methods and Process*, Open University Press, Buckingham.

Neely, A. (2005), "The evolution of performance measurement research: developments in the last decade and a research agenda for the next", *International Journal of Operations & Production Management*, Vol. 25 No. 12, pp. 1264-77.

Neely, A., Gregory, M. and Platts, K. (2005), "Performance measurement system design", *International Journal of Operations & Production Management*, Vol. 25 No. 12, pp. 1228-63.

Neely, A., Marr, B., Adams, C. and Kapashi, N. (2002), "Measuring e-business performance", in Neely, A. (Ed.), *Business Performance Measurement: Theory and Practice*, Cambridge University Press, Cambridge, pp. 343-60.

O'Keefe, R., O'Connor, G. and Kung, H. (1998), "Early adopters of the web as a retail medium: small company winners and losers", *European Journal of Marketing*, Vol. 32 Nos 7/8, pp. 629-43.

Parasuraman, A., Zeithaml, V.A. and Berry, L.L. (1988), "SERVQUAL: a multiple-item scale for measuring service quality", *Journal of Retailing*, Vol. 64 No. 1, pp. 12-40.

Parasuraman, A., Zeithaml, V.A. and Malhotra, A. (2005), "E-S-QUAL: a multiple-item scale for assessing electronic service quality", *Journal of Service Research*, Vol. 7 No. 3, pp. 213-33.

Porter, M. (2001), "Strategy and the Internet", *Harvard Business Review*, Vol. 63, p. 78.

Rayport, J.F. and Jaworski, B.J. (2003), *Introduction to e-Commerce*, 2nd ed., McGraw-Hill, Boston, MA.

Ring, L.J. and Tigert, D.J. (2001), "Viewpoint: the decline and fall of Internet grocery retailers", *International Journal of Retail & Distribution Management*, Vol. 29 No. 6, pp. 264-71.

Ring, L.J., Tigert, D.J. and Serpkenci, R.R. (2002), "The strategic resource management (SRM) model revisited", *International Journal of Retail & Distribution Management*, Vol. 30 No. 11, pp. 544-61.

Semeijn, J., van Riel, A.C.R., van Birgelen, M.J.H. and Streukens, S. (2005), "E-services and offline fulfilment: how e-loyalty is created", *Managing Service Quality*, Vol. 15 No. 2, pp. 182-94.

Srinivasan, S.S., Anderson, R. and Ponnavolu, K. (2002), "Customer loyalty in e-commerce: an exploration of its antecedents and consequences", *Journal of Retailing*, Vol. 78 No. 1, pp. 41-50.

Starr, M.K. (2003), "Application of POM to e-business: B2C e-shopping", *International Journal of Operations & Production Management*, Vol. 23 No. 1, pp. 105-24.

Sterne, J. (2002), *Web Metrics: Proven Methods for Measuring Web Site Success*, Wiley, New York, NY.

Szymanski, D. and Hise, R.T. (2000), "E-satisfaction: an initial examination", *Journal of Retailing*, Vol. 76 No. 3, pp. 309-22.

Tamimi, N., Rajan, M. and Sebastianelli, R. (2003), "The state of online retailing", *Internet Research: Electronic Networking Applications and Policy*, Vol. 13 No. 3, pp. 146-55.

Tarn, J.M., Razi, M.A., Wen, H.J. and Perez, A.A. (2003), "E-fulfilment: the strategy and operational requirements", *Logistics Information Management*, Vol. 16 No. 5, pp. 350-62.

Tse, T. and Soufani, K. (2003), "Business strategies for small firms in the new economy", *Journal of Small Business and Enterprise Development*, Vol. 10 No. 3, pp. 306-20.

van der Heijden, H. and Verhagen, T. (2004), "Online store image: conceptual foundations and empirical measurement", *Information & Management*, Vol. 41 No. 5, pp. 609-17.

Vargas, M. (2004), *Decisions, Decisions: Retail e-fulfilment*, available at: //retailindustry.about.com/library/weekly/aa00718a.htm (accessed 26 July 2004).

Venkatraman, N. and Ramanujam, V. (1986), "Measurement of business performance in strategy research: a comparison of approaches", *The Academy of Management Review*, Vol. 11 No. 4, pp. 801-14.

Vijayasarathy, L.R. (2002), "Product characteristics and Internet shopping intentions", *Internet Research: Electronic Networking Applications and Policy*, Vol. 12 No. 5, pp. 411-26.

Walters, D. (1994), "The impact of the recession on retailing management decisions and performance", *International Journal of Retail & Distribution Management*, Vol. 22 No. 4, pp. 20-31.

Wolfinbarger, M. and Gilly, M.C. (2003), "eTailQ: dimensionalizing, measuring and predicting e-tail quality", *Journal of Retailing*, Vol. 79 No. 3, pp. 183-98.

Zeithaml, V.A. (2000), "Service quality, profitability, and the economic worth of customers: what we know and what we need to learn", *Journal of the Academy of Marketing Science*, Vol. 28 No. 1, pp. 67-85.

Further reading

Dennis, C., Fenech, T. and Merrilees, B. (2005), "Sale the 7 Cs: teaching/training aid for the e-retail mix", *International Journal of Retail & Distribution Management*, Vol. 33 No. 3, pp. 179-93.

Dholakia, U.M. and Rego, L.L. (1998), "What makes commercial Web pages popular?", *European Journal of Marketing*, Vol. 32 Nos 7/8, pp. 724-36.

Kald, M. and Nilsson, F. (2000), "Performance measurement at Nordic companies", *European Management Journal*, Vol. 18 No. 1, pp. 113-27.

Lipe, M.G. and Salterio, S.E. (2000), "The balanced scorecard: judgmental effects of common and unique performance measures", *The Accounting Review*, Vol. 75 No. 3, pp. 283-98.

About the authors

George Gunawan studied Internet retailing at the Business School, Loughborough University, for his doctoral thesis. His academic background includes a first degree in Physics from Sepuluh Nopember Institute of Technology, Indonesia, and MBA in management of technology from Asian Institute of Technology, Thailand. His major research interest is in strategy and performance of Internet retailing. He has published in *International Journal of Technology Management*.

Fiona Ellis-Chadwick is a lecturer in Marketing at the Loughborough University Business School and is a member of the Marketing and Retailing Research Group. Fiona had a successful commercial career in retail management and development before joining the Business School in 2000. Her research interests are in the area of e-marketing and e-strategy and she has published and presented widely in the areas of retail Internet adoption and Internet Marketing. Her work on these topics has been published in *Journal of Business Research, International Journal of Retail Distribution and Management, European Journal of Marketing, Internet Research, Journal of Retailing and Consumer Services* plus additional texts and practitioner journals. She is the corresponding author and can be contacted at: f.e.ellis-chadwick@lboro.ac.uk

Malcolm King is Professor of Management Sciences at Loughborough University Business School, where he is the Director of undergraduate. His current research interests include mathematical modelling of recurrent competitive bidding, the impact of IT in small businesses, the interaction between organisational issues and technical factors in information systems development, the problems of failures of systems projects and the application of expert systems in management. Malcolm was the founding member of the Management Science and Information Systems Research Group and has supervised several overseas PhD students with successful projects in this area.

Internet Research: Volume 18 Issue 4

Subjects: Information & knowledge management > Information & communications technology > Internet

ISSN: (International Standard Serial Number.) 1066-2243

Publication date: 1991

Copyright Holder: Emerald Publishing Limited

Open Access: hybrid

Editor:
- Dr Christy Cheung

Subscribe to table of contents alerts RSS feed

Table of contents

Further Information
- About the journal
- Purchase information
- Editorial team
- Write for this journal

2661

Use and gratification in e-consumers

Echo Huang

The purpose of this paper is to present a conceptual model based on technology acceptance with extended antecedent variables (entertainment and irritation) to examine the...

HTML

PDF (227 KB)

Reprints & Permissions

DOWNLOADS

7896

Effects of self-service technology on customer value and customer readiness: The case of Internet banking

Shu-Hsun Ho, Ying-Yin Ko

The purpose of this paper is to investigate whether self-service technology (SST) can enhance customer value (CV) and customer readiness (CR). In addition, it is proposed...

HTML

PDF (256 KB)

Reprints & Permissions

DOWNLOADS

8681

Drastic measures

David G. Schwartz

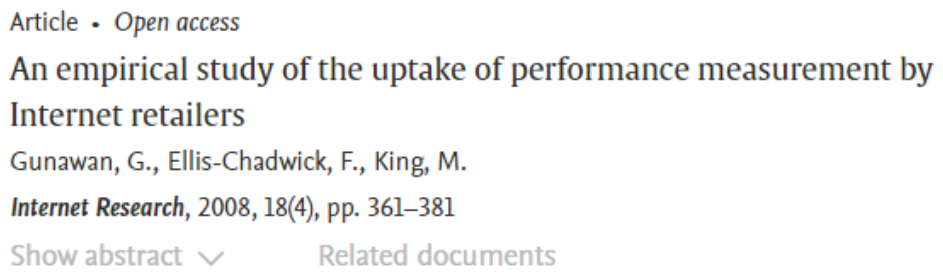
HTML

DOWNLOADS

429

Indexed by Scopus

https://www.scopus.com/authid/detail.uri?authorId=57411056800



Article • *Open access*

An empirical study of the uptake of performance measurement by Internet retailers

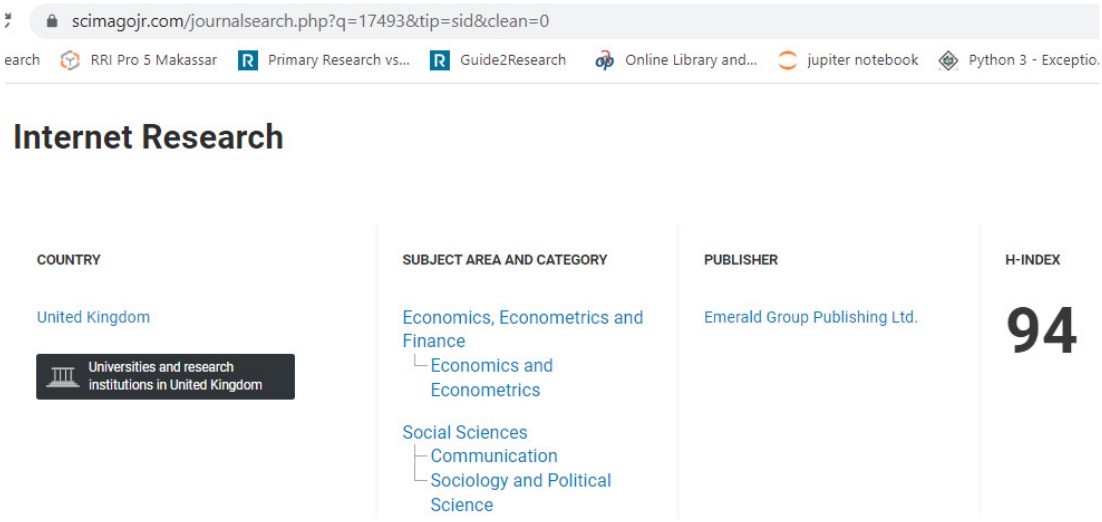
Gunawan, G., Ellis-Chadwick, F., King, M.

Internet Research, 2008, 18(4), pp. 361–381

Show abstract Related documents

Indexed by Scimagojr

https://www.scimagojr.com/journalsearch.php?q=17493&tip=sid&clean=0



scimagojr.com/journalsearch.php?q=17493&tip=sid&clean=0

earch RRI Pro 5 Makassar Primary Research vs... Guide2Research Online Library and... jupiter notebook Python 3 - Exceptio...

Internet Research

COUNTRY

United Kingdom

Universities and research institutions in United Kingdom

SUBJECT AREA AND CATEGORY

Economics, Econometrics and Finance
- Economics and Econometrics

Social Sciences
- Communication
- Sociology and Political Science

PUBLISHER

Emerald Group Publishing Ltd.

H-INDEX

94

Publikasi di Emerald

https://www.emerald.com/insight/content/doi/10.1108/10662240810897781/full/html

Internet Research / Volume 18 Issue 4 / An empirical study of the uptake of performance measurement by Internet retailers

An empirical study of the uptake of performance measurement by Internet retailers

G. Gunawan, F. Ellis-Chadwick, M. King

Internet Research

ISSN: 1066-2243

Article publication date: 15 August 2008

Reprints & Permissions

DOWNLOADS

3214