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Marketing intelligence in SMEs: implications for the industry and policy makers

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### Article information:

To cite this document:

L.A. Cacciolatti, A. Fearné, (2013) "Marketing intelligence in SMEs: implications for the industry and policy makers", Marketing Intelligence & Planning, Vol. 31 Issue: 1, pp.4-26, <https://doi.org/10.1108/02634501311292894>

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# Marketing intelligence in SMEs: implications for the industry and policy makers

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Received 8 May 2012

Revised 28 July 2012

Accepted 10 August 2012

## Abstract

**Purpose** – The aim of this paper is to demonstrate empirically the relationship between firm characteristics and information use within a small and medium sized enterprises (SME) context, proposing that firm characteristics are a catalyst of information use. With marketing information it is intended all data usable within for a marketing purpose.

**Design/methodology/approach** – First, firm characteristics and their impact on information use amongst SMEs were identified in the literature. After that, a quantitative study was performed analysing the data through multivariate data analysis techniques, specifically principal component analysis (PCA), canonical correlation analysis and regression. The results of the analysis are discussed and the paper ends with the conclusions, implications for practitioners and policy makers, limitations of the study and indications for future research.

**Findings** – The results of this study show the importance of the association between firm characteristics and information use amongst SMEs, demonstrating that strategic approach, firm size and resources allocation are catalysts of information use.

**Originality/value** – Different firm characteristics have an impact on information use. Understanding better what firm characteristics are potential catalysts of information use may empower practitioners' with better marketing intelligence and policy makers with a measure to assess potential risk when subsidising small businesses.

**Keywords** SME marketing, Food and drink SMEs, Information, Regional development, Scotland, Canonical correlation, Public funding, Multivariate statistics, Market orientation, Small to medium-sized enterprises, Marketing intelligence

**Paper type** Research paper

## Introduction

Let us suppose governmental agencies, in an attempt to encourage and support entrepreneurship, decide to subsidise small- and medium-sized enterprises (SMEs) marketing activities (e.g. marketing training, subsidised consulting or access to market information in general). We do not assume that some SMEs might be more worthy than others in being supported by public organisations, however, decisions on subsidies should be taken on specific criteria. In this study we propose a firm's ability to use marketing information as potential criterion policy makers might explore. What SMEs would make good use of public subsidies? What SMEs would be more likely to make good use of information to inform their marketing decision making? What SMEs would be less likely to "waste" tax payers' money, therefore contributing to local economies? What SMEs would show the right attitude to engage with market intelligence?

This study contributes, through an effective multivariate data analysis methodology, to the enrichment of the marketing literature on information



utilisation. This paper aims to understand the characteristics of those SMEs that make frequent use of formalised marketing information because in general, companies that are able to identify, collect and analyse information about the external environment can make better decisions (Levy and Powell, 2005); in particular, those SMEs that use marketing information frequently are seen to be more successful than those that do not use that information (Fuellhart and Glasmeier, 2003). SMEs growth is highly valued by governments, because of their socio-economic impact at both local and national level, and the development of local economies and rural regions is at the top of policy makers' agendas (Mitra, 2011). Governments have increasingly implemented subsidy policies over the years in order to develop local economies because growing companies contribute positively to regional and national growth (Kuratko, 2008).

The European Council that took place in Lisbon in 2000 set the basis for European member countries economic development, with particular focus on the importance of SMEs. European SME development policy started focusing on both an improvement of the state-firm relationship through SME-friendly policy making (at local or regional level) as well as a relaxation of administrative and tax-related procedures, and on direct support through access to public funding (European Commission, 2001). Many EU countries embraced the policy, offering several types of public funding for economic development, both at national and regional level, including "direct grants, subsidised loans, [...] specialised types of training and the direct provision of services offering information, advice, and various kinds of practical assistance" (Lambrecht and Pirnay, 2005, p. 89).

The collection of marketing information is possible through marketing intelligence, although information is not always easy to collect (Harrigan *et al.*, 2008). Information could be collected through marketing intelligence from the marketplace. The use of marketing intelligence and the use of marketing information are not synonyms; however, these two activities are closely interconnected. Marketing intelligence is the action of gathering marketing data. From those data, useful information will be extracted (and used) by the firm. Companies engaging in marketing intelligence show better performance (Kirca *et al.*, 2005). In the UK since 2007, as a consequence of local policy making, the Northern Ireland Executive (DARD, 2010, 2004) and the Scottish Government (SEERAD, 2001; Scottish Executive, 2004, 2006) have been subsidising SMEs access to marketing information and consumer insight training. However, governmental resources are not unlimited and the current global economic climate is characterised by high risk, consumers' and industrial uncertainty and financial volatility (Gromb and Vayanos, 2010), along with political challenges at international, national and regional level. Hence, governments are obliged to find the right balance between fostering economic growth at both local and national level, and avoid spending tax payers' money inefficiently. Consequently, there is an increasing pressure on SMEs to develop an effective response to changes in the marketplace. It is recognised (Kirca *et al.*, 2005) that those companies which are making better use of information show an improved ability to develop "an effective response to changes in the marketplace" (p. 25). Thus, it becomes critical for the government to identify those companies that can make better use of subsidised access to formalised marketing information so as to avoid indiscriminate subsidising.

On the other hand, government expenditure has shrunk on all fronts in order to preserve governance (Peters *et al.*, 2011), but affecting local communities and related services, e.g. swimming pools, libraries and so on; more than centralised national

services, such as the health sector (Richardson, 2011). Competition for the accessing of public funding may intensify and SMEs will possibly have to match increasingly tight criteria in order to access public money as already mentioned in some cases (Lenihan and Hart, 2004), hence the need for companies to review processes and business objectives in order to survive these withering times.

This paper proposes an effective multivariate statistical method to analyse the causal links between a set of dependent variables (= information use construct) on a set of independent variables (SME characteristics). Existing marketing literature widely ignored the relationship between firm characteristics and information utilisation in both SMEs and entrepreneurial firms. This study contributes to existing marketing literature with a better understanding of the characteristics of those SMEs that make use of formalised marketing information proposing that firm size, the firm's marketing strategy and the allocation of resources to marketing intelligence may contribute positively to information use in SMEs. This study will suggest alternative characteristics to policy makers and practitioners, who can use them to complement the existing criteria when they, first, make informed decisions on who is more likely to make the best out of governmental business grants; and second, review the company business objectives and processes, providing this way a competitive advantage SMEs can use in these times of economic downturn.

### **Marketing intelligence and SME growth**

SMEs are important to both western and developing countries' economies, as growing companies contribute to regional and national growth (Kuratko, 2008; Ahmed, 2003; Mazzarol *et al.*, 1999). They contribute to the expansion of private ownership through entrepreneurship (Islam *et al.*, 2011), and create employment due to their local presence even in the most rural areas. Unlikely larger companies or corporate, SMEs are not in a position to exit from a market when conditions are adverse in order to focus on a different market (Chen and Hambrick, 1995), hence preserving employment. Despite the level of flexibility in the way SMEs react to changes in the market (Gilmore *et al.*, 2001), SMEs can be managed by entrepreneurs or owner-managers. These differ significantly in their managerial styles and their decision making. Although not all SMEs are managed by entrepreneurs – because there is a distinctive behavioural difference between owner-mangers and entrepreneurs, some SMEs can be lead by entrepreneurs. Entrepreneurs are more inclined to risk taking and this affects their strategic attitudes. Entrepreneurs are opportunity seekers and show less inclination to planning (Hisrich *et al.*, 2005). Furthermore, their decision making shows itself to be “irrational and erratic” (Gustafsson, 2009, p. 285). On the contrary, owner-managers tend to be more rational in their behaviour. They tend to take planning activities into consideration, and they control business processes as well as measuring performance (Brigham *et al.*, 2007). Several studies (Kotey and Meredith, 1997; Perry *et al.*, 1988; Delmar and Davidsson, 2000) have dealt with entrepreneurs' characteristics and more in-depth information can be found in those publications.

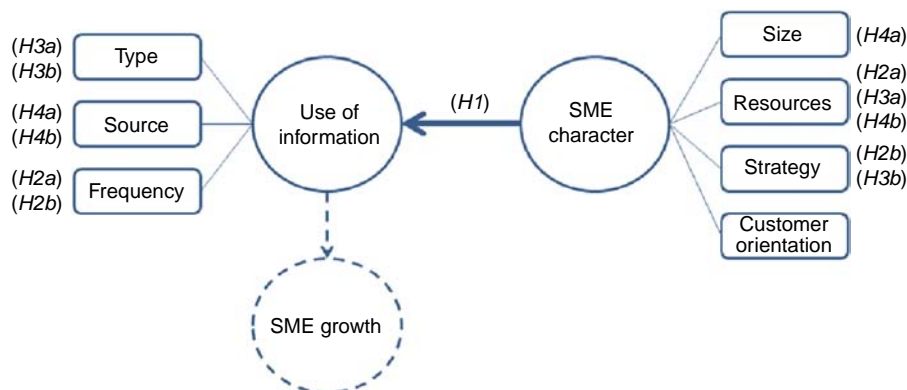
We should not take it for granted that all entrepreneurs are seeking growth as personal motivation can sometimes prove to be the main driver for determining company strategy (Hansen and Hamilton, 2011). It is true that governments are interested in growing companies due to the local and national benefits related to business growth (Kuratko, 2008) but nevertheless, companies often need governmental support in order to be able to start-up, develop and grow. This is especially true in turbulent times.

Marketing allows companies to generate value for the consumer, hence contributing directly to business growth (Fornell *et al.*, 2010). However, several studies have shown that marketing in SMEs is often unstructured or not-fully-understood (McCartan-Quinn and Carson, 2003), that often there is lack of marketing expertise (Levy and Powell, 2005) and that resources are generally limited (Gilmore *et al.*, 2001) and that in this way the potential development of the marketing function may be constrained. An improvement in marketing decision making can be achieved through marketing intelligence (Thong, 2001).

When building a framework for the relationship between firms' characteristics and the use of marketing information (Figure 1), marketing intelligence plays an important role in determining the firm's market orientation. Marketing intelligence enables the company to collect information about both the internal and external environment that can be used to improve the accuracy and precision of the marketing decisions as well as allowing the company to react faster to changes in the market or environment (Kirca *et al.*, 2005). Whether a company engages in marketing intelligence depends on their market orientation (Shapiro, 1988). Marketing-oriented firms tend to make use of marketing intelligence, while non-marketing-oriented companies tend not to collect information through marketing intelligence (Kirca *et al.*, 2005).

Small companies gain knowledge by sharing information (Clark, 2009) collaboratively with companies in their sector or industry in industrial clusters or community partnerships. However, even for marketing-oriented companies there are often difficulties in acquiring information (Yeoh, 2005) as the quantity and variety of information is wide, with data relating to suppliers, buyers, customers or consumers, competitors and socio-economic trends (Peters and Brush, 1996).

Nevertheless, the information collected can help with the identification of opportunities (Westhead *et al.*, 2009), and can reduce uncertainty in business activities (Kaplan and Warren, 2007) because firms can make better informed decisions (Spender and Kessler, 1995). However, not all companies make good use of formalised marketing information and both SME characteristics and owner-managers' personal characteristics may play an important role in explaining the different usage of marketing information.



**Figure 1.** Conceptual model on the characteristics impacting the use of marketing information in SMEs (and relative hypotheses)

*Marketing information use in SMEs: types, sources and frequency*

Current entrepreneurship literature on the acquisition of information and scanning focuses on the sources of information utilised by companies (Stewart *et al.*, 2008). However, the same authors support the idea that further research on the utilisation of information by firms “may clarify issues associated with the recognition and exploitation of economic opportunity” (Stewart *et al.*, 2008, p. 84).

For the purpose of this paper we define formalised marketing information as: “structured data, usable within a marketing context and that has been voluntarily sought and systematically collected”. This includes, but does not limit itself to both internal (related to the organisation, the marketing mix, business and marketing strategies and tactics adopted and internal resources available) and external information (related to customers, competitors, other stakeholders as well as external resources available, market dynamics and economic trends).

Different companies have different market orientations, showing different attitudes towards the use of marketing information. Depending on the types and sources of information acquired, companies with more formalised marketing information available can make better informed decisions (Spender and Kessler, 1995), reduce uncertainty in their business activities and add value to their supply chains (Kaplan and Warren, 2007).

The main types and sources of marketing information used by SMEs are mostly of an informal nature (Johnson and Kuehn, 1987). However, we would argue what SMEs need is formalised marketing information. Formalised marketing information includes data on: suppliers, buyers, competitors and trends (i.e. national, global, economic, socio-cultural and technological) (Peters and Brush, 1996, p. 81). Accurate information should be seen as being helpful to the company (as it is instrumental to its decision making) and therefore also be considered important, but this importance may be influenced by several SME characteristics, such as the type of marketing strategy adopted, the size of the company and consequently the available resources that can be invested in order to acquire information.

In the same way as for the type of information acquired, also the quality and reliability of the source of information used should be instrumental to the SME marketing decision-making process and may contribute to a higher or lower use of information. Thus, this may be true for customer-oriented firms as non-customer-oriented SMEs may not see the value of marketing information. The most frequently used sources of information (often non-formalised) are family and friends (Cooper *et al.*, 1989), customers (Smeltzer *et al.*, 1988) and competitors (Brush, 1992; Brush and Peters, 1992). We support the idea that business-owners need to adopt a systematic, skilful way of collecting, analysing and monitoring certain amounts of quality information from the marketplace in order to minimise risk when planning marketing activities. It seems sensible to us to propose that the more marketing information is used to support decision making, the greater is the probability that the company will make the right choices within their competitive environment, however, we also believe this may be dependent upon the above-mentioned SMEs characteristics.

**Firm characteristics affecting information use in SMEs**

Despite the recognised importance of marketing intelligence to companies in general, some companies present low usage of formalised marketing information. This area appears to have been understudied and untested for the past decade – according to the existing literature relating to entrepreneurship and marketing.

Contributions were made by previous studies (Deshpande and Zaltman, 1982; Hutt *et al.*, 1988; Menon and Varadarajan, 1992; Mohr and Nevin, 1990; Moorman *et al.*, 1992; Moorman *et al.*, 1993), investigating the effects of organisational characteristics on the use of marketing information, however, these studies were not directly linked to an SME marketing context. Some other studies looked at firm characteristics in the context of the relationship between marketing planning and performance, finding that more independent (Rudelius *et al.*, 1989), bigger (Stoner, 1983) and high-growth companies (Andrus *et al.*, 1987) tend to perform better.

The questions to be considered in this study are the following: is there a correlation between the use of marketing information in SMEs and their characteristics? And, if there is a correlation, are all characteristics impacting the type, source and frequency of information use of the same nature? None of the above-mentioned studies has focused on marketing intelligence; however, some studies (referred to in the next few paragraphs) on both entrepreneurship and marketing, have indicated that there are several clear company characteristics impacting on marketing practices, marketing intelligence and performance. These characteristics are: the size of the company, the resources available to the SME, the business and marketing strategies as well as the SME customer orientation. All these characteristics are derived from existing marketing literature and summarised visually in Figure 1, the dashed line indicates a relationship that is not tested in this paper because it falls outside the main scope of this study. The main focus of this study is the effect of SME characteristics on the use of information. Although we do not believe these characteristics are exhaustive of all firms' characteristics, we chose the following ones because are the most relevant characteristics found in existing literature. Hence, the first hypothesis we address is the following:

*H1.* There is a significant correlation between the use of marketing information and firm characteristics.

*The effect of firm size and resources availability on the use of marketing information*  
Firm size appears to be important with regard to both marketing and entrepreneurship literature. Size affects growth in SMEs. Previous studies on SMEs growth rates show larger enterprises grow faster than small ones (Olomi, 2001), whereas smaller firms or micro-businesses appear to be weaker in terms of growth potential (Satta, 2003). This is not surprising as small companies do not have all the resources (both human and financial capital) which is available to larger organisations. These larger firms can formally access marketing information and have trained personnel available to analyse data and extract relevant information. Carson and Cromie (1990) indicate that size should not be determined according to the relative "quantitative" size as defined by standard classifications[1] because more qualitative characteristics other than mere size metrics should be taken into consideration in order to gain a clearer idea of a firm's size. Among the qualitative characteristics indicated by the authors are: "the scope and the scale of operations, the independence and the nature of their ownership arrangements, and their management style" (Carson and Cromie, 1990, p. 6). The more resources a firm has, the higher is the likelihood that information is used frequently; however, the frequency of information might also be affected by the usefulness of the information acquired:

*H2a.* The frequency of use of information in SMEs is positively affected by the level of resources allocated to marketing intelligence.

*H2b.* The frequency of use of information in SMEs is positively affected by the firm's adoption of a specific targeting strategy.

In addition to the fact that firm size affects SME growth rates (Kristiansen *et al.*, 2005), it may also impact on access to information, as suggested by some authors (Wong and Merrilees, 2005; Hill, 2001; Carson *et al.*, 1995). The current lack of empirical evidence of the effect of firm size on the use of marketing information in those SMEs that use marketing intelligence generates disagreement in current entrepreneurship literature. It is not clear whether size really affects, in any way, SMEs information use. Stewart *et al.* (2008) support the view that firm size does not influence information use; however, these authors draw their conclusions from analysis of a very heterogeneous sample of firms operating across different sectors and industries in different countries. On the other hand, Mohan-Neill (1995) confirms that larger enterprises make greater use of information than smaller ones. It is possible that size affects information use because of its relationship with the availability of resources in larger firms. Keh *et al.* (2007, p. 594) report that "while large firms typically have the resources to conduct extensive market research to gather [such] information, it is not clear to what extent small and medium-sized enterprises (SMEs) engage in information acquisition and utilization".

Several authors (Su *et al.*, 2011; Li and Zhang, 2007) point out that often small firms are also new ventures while larger firms are often more established companies. Smaller firms often lack social legitimacy and social ties which often makes the availability of resources a challenge (Li and Zhang, 2007). Resources are necessary to foster markets and satisfy customers' needs (Park and Luo, 2001), and a lack of resources may restrict access to information acquisition and analysis in particular, and information utilisation in general. This last point is confirmed by several authors who support the idea that resources are of strategic importance to the potential accessibility of information (May *et al.*, 2000). Meanwhile, the monetary cost or the lack of availability of information (Masten *et al.*, 1995) as well as the lack of expertise in identifying the sources of information (Callahan and Cassar, 1995; Pérez-Cabañero *et al.*, 2012) limit SMEs' information acquisition and utilisation. Hence, firms with no marketing expertise might find difficult the identification of the type of information needed:

*H3a.* The ability to discern amongst types of information is positively affected by the level of resources allocated to marketing intelligence.

*H3b.* The ability to discern amongst types of information is positively affected by the firm's adoption of a specific targeting strategy.

Also the lack of time to focus on information acquisition and analysis, if we want to consider it as a resource, may hamper information use. Zahra *et al.* (2002) support the view that the time and the cost that the SME should invest in order to obtain enough information to enable them to better inform their decision making may simply not be considered feasible. This may be particularly true in smaller firms rather than larger organisations, due to their lack in human capital (expertise, know-how and dedicated personnel) and financial capital (cash availability). Furthermore, the legitimacy of the firm in the environment and their level



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of expertise might be a barrier to the identification of the right sources of information:

*H4a.* The ability to discern amongst sources of information is positively affected by the level of resources allocated to marketing intelligence.

*H4b.* The ability to discern amongst sources of information is positively affected by the firm's size.

*The effect of strategy and customer orientation on the use of marketing information*

The scope and scale of operations (including distribution) are not only affected by the resources the company has available (financial and human capital, and marketing know-how), but also by the business strategy. Business strategy affects the choice of marketing strategy that is adopted. In SMEs quite often the marketing strategy is not reflected in a traditional theoretical marketing framework and marketing activities are "simplistic, haphazard, often responsive and reactive to competitor activity" (Carson and Cromie, 1990, p. 16).

Marketing decisions taken by the owner-manager or entrepreneur are often based on intuitive ideas and common sense rather than on formal data. Current entrepreneurship literature indicates that entrepreneurs and owner-managers differ in their strategic approach, due to differences in motivation, attitude and cognition (Mitchell *et al.*, 2002; Shane, 2003; Stewart and Roth, 2001). Nevertheless, SMEs are not totally incompatible with marketing (Wong and Merrilees, 2005): despite the fact that the owner-manager is often a generalist without much marketing expertise (Gilmore *et al.*, 2001) SMEs have higher flexibility when it comes to adapting quickly to changes in both the market and the competitive environment. However, should the company manage to procure marketing expertise (e.g. marketing personnel or external consultants) in order to better inform their marketing decision making then, a specific targeting strategy (i.e. the conscious decision to aim to the satisfaction of needs and wants of chosen market segments) helps companies gain competitive advantage (Karami *et al.*, 2006); furthermore, Fuller (1994) suggests that higher marketing quality in SMEs often generates higher performance. However, information is of critical importance to SME marketing strategy (Butler *et al.*, 2000) and at the same time an appropriate marketing strategy is based on marketing information. Beal (2000) proved that the frequency of use of information is positively related to the SMEs strategic alignment with their environment (about which they need information to operate).

Also Moorman (1995) supports the idea that SMEs can achieve competitive advantage when using marketing information to inform their decision making; however, this advantage can be achieved just by SMEs engaging in information acquisition. SMEs without a strategic approach may not consider the acquisition of information and this may be an indication of a lack of customer orientation. The customer is the starting point for good value creation practices and a valuable asset regarding marketing productivity (Keller, 1993). Market-oriented companies generate greater marketing intelligence (Morgan *et al.*, 2009), as through marketing intelligence they can gain "a deep understanding of customers, such as their purchasing habits, psychological makeup and lifestyles [and] can [...] conduct better market segmentation and find new niche markets" (Keh *et al.*, 2007, p. 607). Furthermore, customer-oriented firms demonstrate a stronger focus on the customer or consumer and need marketing information in order to differentiate their offering for

consumers as well as position themselves against competitors (Keh *et al.*, 2007). Hence, our last hypothesis is:

H5. Customer-oriented firms make use of marketing information.

In Figure 1, the descriptors in the square boxes are the variables belonging to the “SMEs’ characteristics” and “use of information” constructs adopted in this study. In parentheses are the hypotheses that are tested.

## Methodology

### *Sampling and measures*

A non-probability sampling technique (Bryman and Bell, 2007; Collis and Hussey, 2003; Crotty, 2004) was used to collect observations both through online and postal surveys. The data collection capitalised on the existence of established food and drink networks for the recruitment of the respondents. The final sample consisted of 296 complete responses from key informants (Kumar *et al.*, 1993) consisting of owner-managers, managing directors and marketing managers. The response rate set at 25.6 per cent. The response rate is in line with published expectations for a web and mail administered survey, as indicated by Kaplowitz *et al.* (2004).

In order to allow representativeness of the different sectors of the food and drink industry an invitation to take part in the survey was sent by the main Scottish food and drink networks to their network members. Overall, the SMEs in this study are both small (52 per cent) and medium-sized (48 per cent), considering the former ones have typically < 100 employees and turnover < £500k, while the latter are considered when the number of employees is > 100 but < 500 and the turnover > £500k but < £10m. Table AI shows the composition of the sample in more detail.

The sampling adequacy ratio should not fall below 5 as indicated by Hair *et al.* (2009). We recognise some contingencies rising from the heterogeneity of the sample, as the data collection might have been biased by the data deriving from such different samples (different food and drink industries as well as different sectors: producers and processors). However, the responses/variables ratio for this sample was 11 (i.e. 296/27) well above the minimum expected value for reliable statistical modelling. A Mann-Whitney’s test was performed to check for response bias. The test revealed that from a total of 27 variables 82 per cent of them showed no differences that were statistically significant ( $p < 0.05$ ). These results indicate there is no substantial difference between respondents and non-respondents, thus suggesting the sample is not affected by response bias.

The dependent variables were identified in the following variables: the importance given to the type; source of information; and the frequency of use of the information. These variables were derived through principal component analysis (PCA) and originally collected using an adapted version of O’Reilly’s (1982) information usage scales, as this author is the only author who created specific scales for measuring firms’ information utilisation. Respondents were asked to state whether they agreed or disagreed with some statements on the importance of different types and sources of information, as well as the frequency of use of that specific type and sources. The questions asked were: how important is for your business the following type of information? how important is for your business the following sources of information? and how often do you use the following types of information? The scale was a ten points Likert scale (1 = strongly disagree, 10 = strongly agree); the Cronbach’s  $\alpha$ ’s are

reported in Table AII. The scale was adapted by using as scale items the results of semi-structured in-depth interviews with 13 firms in the food and drink industry. The interviews were aimed at the identification of types and sources of information firms would use in their everyday marketing routines. Table I summarises the variables used in this study.

The characteristics of firms hypothesised as impacting on the use of information are: (a) the business size and (b) the available resources (that are factors derived with PCA). Size indicates the size expressed as a multicomponent made of turnover, total employees and personnel dedicated to the marketing function. The variable has been dichotomised, splitting the observations into small- and medium-sized firms. The median was used as cut-off point. Available “resources” is a multicomponent made of the percentage of turnover allocated to market research, in-house marketing expertise and use of consultants. High values indicate a higher dedication of resources whereas low values indicate the company does not dedicate resources to their business. The presence of (c) a specific targeting strategy (that is a dichotomous 0/1 variable) is used as a proxy for the presence/absence of a marketing strategy. We used a dichotomous dummy in order to compensate the high variability of data deriving from a heterogeneous sample. The (d) level of customer orientation was derived through PCA but developed from an adaptation of Deshpande *et al.*'s (1993) customer orientation scale. High values indicate high customer orientation. Table AII reports the number of items and the Cronbach's  $\alpha$  levels for the modified scales.

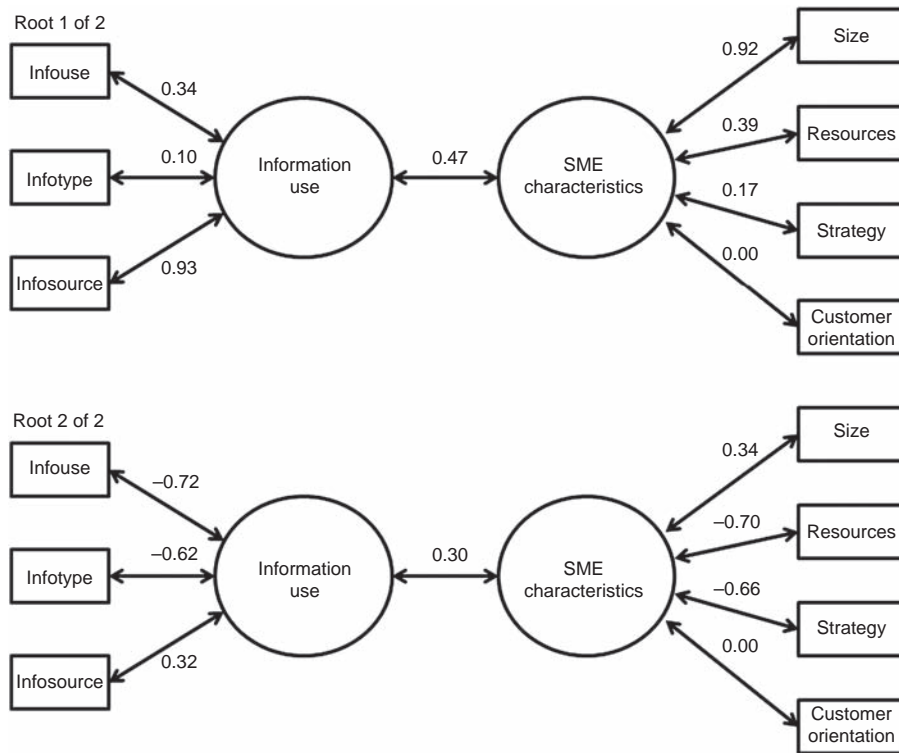
### Analysis and results

A first correlation analysis showed that only 20 per cent of the variables was correlated (Table AIII) and the highest correlation was 0.4, hence indicating the chosen variables were suitable for the analysis. The analysis was aimed at identifying whether there is an effect to recognise from firms' characteristics regarding information use in SMEs. This analysis was performed through canonical correlation, given the complexity in regressing multiple dependent variables on their predictors. Canonical correlation is a technique that uses correlations (to measure associations) and regression (to test causation). It differs from simple regression analysis in the sense that CCA is a form of structural equation modelling that uses Pearson's correlations rather than covariance. The set of dependent variables included the information-use-related variables whereas the set of independent variables included the firm-characteristics-related variables. The canonical correlation (the set of dependent variables with the set of independent variables) generated two significant roots of variates (Wilks test approximate  $F$  value = 8.36437,  $df = 12$  and significance = 0.000). Each root represents the optimal correlation amongst variables. Each root refers to the maximised correlation of each set of variables with their explanators. These roots of variates cumulatively account for 99 per cent of the total shared variance. Figure 2 shows the correlation between the two sets of variables are 0.47 for root 1 and 0.30 for root 2. These indicate a statistical significant correlation between the two constructs, accepting there is a significant correlation between the use of marketing information and firm characteristics ( $H1$ ).

The effects of the single dependent variables (type, source and frequency of use) on the dependent canonical variable (information use) are all significant at the 0.05 level, indicating these variables are good explanatory dimensions of information use. Furthermore, the correlations between single dependent variables and the dependent canonical variable (information use) in roots 1 and 2 show the association of the set of explanatory variables with the dependent (latent) variable, i.e. information use.

**Table I.**  
Summary table  
of variables

Variable name	Description	Type	Categories	References
<i>Dependent variables</i> Infotype	Relevance level of the proposed types of information to the company	Continuous	Minimum: irrelevant; maximum: critically important	O'Reilly (1982)
Infosource	Relevance level of the proposed sources of information to the company	Continuous	Minimum: irrelevant; maximum: critically important	
Infouse	Frequency of use of the proposed types of information to the company	Continuous	Minimum: irrelevant; maximum: critically important	
<i>Independent variables</i> Size	Size of the company	Continuous	Minimum: small; maximum: medium sized	Liberman-Yaconi <i>et al.</i> (2010)
Strategy	Whether the company targets specific consumer segments, hence showing having a marketing strategy	Ordinal	0: no specific declared strategy; 1: specific declared strategy	Gilmore <i>et al.</i> (2005); Fuehlhart and Glasmeier (2003)
Resources	Factor composed by the percentage of turnover allocated to market research, in-house marketing expertise and use of consultants for marketing decisions	Continuous	Minimum: small; maximum: medium sized	–
Customer orientation	Customer orientation level	Continuous	Minimum: no orientation; maximum: customer oriented	Deshpande and Webster (1993)



**Figure 2.**  
Canonical correlation roots 1 and 2

Loadings  $< 0.3$  are generally ignored in the interpretation (Kinnear and Gray, 2007). The highest loadings found are 0.93 (infosource) in root 1 and  $-0.72$  (infouse) and  $-0.62$  (infotype) in root 2. By looking at the redundancy index, the set of dependent variables in root 1 so far described accounts for 33 per cent of the variance in the latent dependent variable (information use), whereas in root 2 it accounts for 67 per cent of the variance. Figure 2 shows the maximised correlations amongst variables.

The effects of the single independent variables (size, resources, strategy and customer orientation) on the independent variable (SMEs' characteristics) show particularly high loadings on size (0.92) and resources (0.34) in root 1 and on resources ( $-0.70$ ) and strategy ( $-0.66$ ) in root 2. By looking at the redundancy index, the set of independent variables in root 1 account for 26 per cent of the variance in the latent independent variable (SMEs' characteristics), the same figure (26 per cent) is found for root 2 as well. Root 1 shows that size and source of information are highly positively correlated. Whereas, root 2 shows resources and strategy are highly positively (double negative sign) correlated with type of information and frequency of use. Table II shows what single independent variables are significant to the prediction of the single dependent variables, while Figure A1 reports the regression model specifications.

Resources and strategy are the independent variables that contribute to the frequency of use of information (significance  $\leq 0.001$  and  $0.05$ , respectively). Hence, *H2a* and *H2b* are accepted. They have a direct and positive effect on the frequency of use of information: the allocation of resources to marketing and the presence of a marketing strategy increase information use frequency in SMEs. Resources and

strategy also have a direct and positive effect on the type of information used (significance  $\leq 0.05$  and  $0.010$ , respectively). *H3a* and *H3b* and therefore accepted. The allocation of resources to marketing and the presence of a marketing strategy correspond to an improved ability to discern what type of information is relevant to the firm. On the other hand, the importance given to the sources of information is positively affected by firm size (significance  $\leq 0.001$ ) and resources (significance  $\leq 0.05$ ). Hence, *H4a* and *H4b* are accepted. Medium-sized firms that allocate resources to marketing intelligence are better able at discerning relevant sources of information. Customer orientation was not significant in any relationship, hence *H5* is rejected.

### Discussion

Current entrepreneurship and marketing literatures does not agree on whether firm size affects information use in SMEs. Stewart *et al.* (2008) support the idea that size does not influence information utilisation; however, Mohan-Neill (1995) are of the opinion that larger companies make a wider use of information in their business activities. The results of this study show that size indeed has an effect on the use of information. In a more specific way, firm size affects the sources of information. Smaller firms seem not to be giving any importance to the difference between sources of information, showing their inability at discriminating between relevant and irrelevant sources of information. This may be due to the smaller firm's lack of marketing expertise (Callahan and Cassar, 1995). Choosing the wrong source of information may be highly misleading for an SMEs' marketing decision making. However, the owner-managers' lack of marketing expertise may hamper the identification of information needs for the SME.

On the other hand, medium-sized firms pay more attention to the relevance of each individual source of information – suggesting in this way that there exists a difference in behaviour between firms of different sizes. The difference in behaviour is not random, as the relationship between firm size and the relevance of the source of information is significant at the 0.001 level.

Another possible explanation of this difference in behaviour between smaller and larger firms may be due to the availability of resources, as posited by Keh *et al.* (2007) and May *et al.* (2000). Our study shows that resources do, in fact, affect information use in all its components. A higher availability of resources contributes to a higher frequency of information use, as well as better abilities regarding identifying and accessing the relevant types and sources of marketing information. SMEs with personnel dedicated to marketing can identify with less difficulty their information needs than SMEs without marketing expertise. With marketing expertise SMEs can

Dependent Independent	Info use			Info type			Info source		
	<i>B</i>	SE	<i>t</i>	<i>B</i>	SE	<i>t</i>	<i>B</i>	SE	<i>t</i>
Size	0.0627	0.058	1.070	-0.0321	0.060	-0.538	0.4410	0.054	8.135
Resources	0.1924	0.057	3.269***	0.1473	0.059	2.457**	0.1055	0.053	1.935
Strategy	0.1562	0.119	2.628**	0.1114	0.124	1.841*	-0.0303	0.112	-0.551
Customer orientation	-0.0332	0.058	-0.563	-0.0268	0.060	-0.445	0.0085	0.054	0.156

**Notes:** \*\*\*, \*\*, \*Significant at 0.001, 0.05 and 0.10 levels, respectively

**Table II.**  
Canonical correlation  
regressions results

identify what types and sources of information are more relevant to their decision making and they can better decide on the amount of information that is needed. SMEs with the financial resources available for them to engage in marketing intelligence can purchase both primary and secondary data to support their decision making. Furthermore, SMEs with sufficient financial resources can also acquire information more frequently than SMEs with less available capital. This confirms Carson's *et al.* (1995) idea that SMEs are characterised by a lack of resources and supports Zahra's *et al.* (2002) opinion that SMEs' access to information is constrained by a lack of both human and financial capital.

The lack of allocation of resources to marketing intelligence, however, does not necessarily correspond to a lack of available resources in SMEs. There are SMEs with not much financial and human capital available, yet there may be SMEs with financial availability that are not willing to invest any of their capital in marketing intelligence. The willingness to engage in marketing intelligence may partly depend upon the SMEs' marketing strategy. Some authors support the idea that marketing in SMEs does not follow a structured approach (Carson and Cromie, 1990) and some others suggest owner-managers are generalists without much marketing expertise (Gilmore *et al.*, 2001) who would arguably be helpful in the formulation of a marketing strategy. Furthermore, strategy is informed with acquired information (Beal, 2000); however, the presence of a specific strategy focuses the information needs in the SME (Butler *et al.*, 2000). This is supported by our findings. Strategy has a positive and direct effect on both information type and the frequency of its use. Those SMEs with a marketing strategy use marketing information more frequently. Furthermore, these firms are also better able to discriminate between what types of information are more relevant to their needs. It is possible those SMEs that do not have a marketing strategy may not consider acquiring or using information in a first instance, as they may not see the value of it or they may simply not know how different types of information may be helpful to them. This last point is also supported by Zahra *et al.* (2002), as the effort involved in acquiring information whose value is not perceived may hamper information acquisition.

Despite the fact that both the presence of a specific marketing strategy along with resources dedicated to marketing are factors affecting the use of information in SMEs, current literature points out the importance of customer orientation in driving marketing strategy. Marketing-oriented firms engage in marketing intelligence (Morgan *et al.*, 2009). This does not show itself to be relevant in our study, as customer orientation seems to be playing no relevant role in determining information use in SMEs, as no significant direct relationship has been identified. This last finding is contrast to the current view of some authors (Keh *et al.*, 2007) who put forward the idea that customer-oriented SMEs' need information to support their marketing decision making.

### Conclusions and limitations

This study has demonstrated that SMEs using formalised marketing information have different characteristics from those SMEs that are not engaging in marketing intelligence. The SMEs most likely to use marketing information are medium-sized firms. These follow a specific marketing strategy and dedicate resources to the identification, collection, analysis and use of marketing information. The findings of this study contribute to increasing clarity about whether firm size (and related factors)

influences information utilisation as diverging results were found in the current entrepreneurship literature (Stewart, 2008; Mohan-Neill, 1995).

Firm size does indeed have an effect on the use of information; however, size appears to be affecting the way SMEs determine the relevance of their sources of information: smaller firms give less importance to the source of information they use. This inability to determine what source of information is relevant to their marketing decision making may be related to the scarcity of resources available to SMEs. SMEs with less marketing expertise (either because of a lack of in-house know-how or because of the monetary constraints in hiring marketing expertise) may be less able to identify their information needs and this lack of expertise may be more significant in smaller companies. The resources invested in identifying, collecting and analysing marketing information also play an important and statistically significant part in the frequency of use of information as well as the SMEs' ability to identify the most relevant types and sources of information. Smaller firms invest fewer resources in their marketing intelligence activity as smaller firms have fewer resources available. This hampers their use of marketing information. Furthermore, SMEs often lack strategic approach in their marketing activities. SME marketing decision making should ideally be based on the availability of marketing information; however, SMEs do not have a structured approach to marketing, as suggested by Carson and Cromie (1990). Information is often used just by those SMEs pursuing a specific marketing strategy, as has been shown in our study.

The more information SMEs use, and the better the quality of the information available, the better the decision making taking place in firms should be. However, the characteristics of SMEs determine the quality and quantity of information use. Hence, what are the implications for both SMEs' owner-managers and policy makers? First of all, policy makers have to foster local economies growth through different subsidising activities. However, in times of poor national and international economic performance tax payers' money should be spent much more carefully. In programmes such as the ones mentioned in the introduction to this study, governmental agencies provide SMEs with subsidised access to marketing information to provide them with a competitive advantage. Identifying which SMEs are more likely to make better use of information is paramount if we are to maximise the potential benefits deriving from responsible public expenditure. A second implication for policy makers consists in the provision of marketing training. SMEs with relevant marketing know-how can identify their information needs better and they can lean towards a more structured approach to marketing overall. However, this also bears implications for SMEs' owners: SMEs' owner-managers should try to invest in relevant marketing training so as to be able to improve their marketing decision making. SMEs with higher marketing expertise may be more likely to engage in using marketing intelligence and may see the value of acquiring information in order to better inform their marketing decision making, influencing in this way their marketing strategy.

Despite the statistically significant results obtained in this research, before acting on any of the above-mentioned issues, policy makers and SMEs' owner-managers should be aware of the main limitations of this study. The results can be applied to this sample only: the findings are true and generalisable in respect of Scottish food and drink SMEs only. We cannot state with statistical certainty whether these results may apply to other world regions or sectors.

Suggestions for further research include the need to investigate in detail information use in SMEs in order to gain a better understanding of the processes



taking place to identify, collect, gather and analyse information. Academic advancement could be achieved by enriching the literature with studies on what leads to an improvement in an SMEs' marketing decision making. Finally it could provide policy makers with information relating to those characteristics of SMEs that can serve as guidelines which would enable us to gain a better understanding of what type of SME could make more effective use of governmental training or marketing-related subsidies. SMEs could also be encouraged by policy makers to pursue further training and perhaps to adopt a more strategic approach in their marketing. By a theoretical point of view, this study contributes to enrich the entrepreneurship literature on information utilisation proposing an effective methodology for determining the causal links between a set of independent variables (e.g. SMEs' characteristics) and a set of dependent variables (e.g. the information use construct).

#### Note

1. These authors refer in their paper the "Committee for Economic Development".

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	Frequency	Per cent	Valid per cent	Cumulative per cent
<i>Sector</i>				
Animal production	117	39.5	40.9	40.9
Fruit and vegetables, milk	108	36.5	37.8	78.7
Processed food	58	19.6	20.3	99.0
Unknown	3	1.0	1.0	100.0
Total	286	96.6	100.0	
<i>Category</i>				
Producer	162	54.7	54.7	54.7
Processor	88	29.7	29.7	84.5
Wholesaler	23	7.8	7.8	92.2
Retailer	23	7.8	7.8	100.0
Total	296	100.0	100.0	
<i>Size</i>				
Small	153	51.7	52.2	52.2
Medium sized	140	47.3	47.8	100.0
Total	293	99.0	100.0	
<i>Position within the company</i>				
Marketing manager	30	10.1	10.1	10.1
Owner-manager/MD	266	89.9	89.9	100.0
Total	296	100.0	100.0	

**Table A1.**

Frequency tables showing the sample composition split by sector of activity, industrial category, company size and position of the respondent within the company

$$\text{Infouse} = \beta_{\text{size}} * \text{Size} + \beta_{\text{resources}} * \text{Resources} + \beta_{\text{strategy}} * \text{Strategy} + \beta_{\text{custor}} * \text{Customer} + \varepsilon;$$

$$\text{Infotype} = \beta_{\text{size}} * \text{Size} + \beta_{\text{resources}} * \text{Resources} + \beta_{\text{strategy}} * \text{Strategy} + \beta_{\text{custor}} * \text{Customer} + \varepsilon;$$

$$\text{Infosource} = \beta_{\text{size}} * \text{Size} + \beta_{\text{resources}} * \text{Resources} + \beta_{\text{strategy}} * \text{Strategy} + \beta_{\text{custor}} * \text{Customer} + \varepsilon;$$

**Note:** Where  $\beta$  are the coefficients of estimation of the variables and  $\varepsilon$  is the error term.

**Figure A1.**

Regression models specifications

PCA factors	No. of items	Items	Factor loading	Cronbach's $\alpha$			
Infosource	10	finalcust	0.552	0.825			
		distr	0.605				
		suppl	0.503				
		comp	0.677				
		consul	0.689				
		m_report	0.773				
		stats	0.757				
		gov_agent	0.747				
		cat_assoc	0.719				
		press	0.636				
Infotype	8	m_share	0.62	0.828			
		cust_penetr	0.572				
		repeat_purch	0.817				
		purch_freq	0.783				
		cons_opinionbrand	0.526				
		cons_opinionprod	0.522				
		cons_profile	0.522				
		sales_growth	0.419				
Infouse	8	m_share	0.662	0.820			
		cust_penetr	0.727				
		repeat_purch	0.81				
		purch_freq	0.802				
		cons_opinionbrand	0.519				
		cons_opinionprod	0.469				
		cons_profile	0.652				
		sales_growth	0.642				
Custor	12	cust_pref	0.815	0.857			
		cust_opinion	0.723				
		cust_think	0.666				
		cust_feedback	0.622				
		cust_ask	0.621				
		cons_opinion	0.599				
		cons_pref	0.572				
		cons_feedback	0.528				
		cons_knowbrand	0.485				
		cons_ask	0.438				
		Resources	7		mark_employ	0.696	0.658
					consul	0.533	
budget_ad	0.858						
budget_mr	0.829						
budget_pr	0.755						
budget_promo	0.753						
size	0.822						

**Table AII.**  
PCA factors, single  
items with factor  
loadings and scale  
reliability measure

**Table AIII.**  
Correlation among  
variables: Spearman's  $\rho$

Variables ( $n = 296$ )	1	2	3	4	5	6	7	
Strategy	1	1						
Resources	2	0.170**	1					
Firm size	3	0.055	0.013	1				
Infosource	4	0.038	0.087	0.424**	1			
Customer orientation	5	0.115	0.051	-0.036	-0.002	1		
Infouse	6	0.185**	0.206**	0.067	0.055	0.062	1	
Infotype	7	0.083	0.144*	-0.062	0.002	-0.015	0.022	1

**Notes:** \*\*, \*Correlation is significant at 0.01 and 0.05 levels, respectively (two-tailed)

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