Evidence Base Review of Business Travel Behaviour to Inform Development of a Segmentation of Businesses: MAIN REPORT

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TABLE OF CONTENTS

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Note the following reports from this study are also available:

- Anable, J., Darnton, A., Pangbourne, K., Lane, B., Banks, N. and Henry, N. (2015) *Evidence Base Review of Business Travel Behaviour to Inform Development of a Segmentation of Businesses: Executive Summary*. Report for the Department for Transport. March 2015.
- Pangbourne, K., Lane, B and Anable, J. (2015) *Evidence Base Review of Business Travel Behaviour: Report on Qualitative Interviews*. Report for Department of Transport, April 2015.

SECTION 1: INTRODUCTION

1.1 Background

As employers, suppliers and transport providers, institutions (e.g. public, private, third sector) are responsible for the direct and indirect generation of the vast majority of flows on the transport network. Yet, with the exception of the commuting activity they generate and some aspects of freight and logistics transport, the significance to overall mobility of travel generated by businesses is poorly understood. Most importantly, the *determinants of* these travel and transport movements, including the decision making processes within organisations, have been the subject of relatively little empirical research and systematic review to date.

This lack of knowledge contrasts with a large body of work undertaken over the past decade or more which has developed a theoretical and applied evidence-base relating to individual travel behaviour. The Department for Transport's Climate Change and Transport Choices study directly built on this evidence base to produce a segmentation of individuals in relation to *how and why* they tend to travel as they do (Thornton et al., 2011). This has opened up new ways of thinking about travel demand and assisted the design and evaluation of transport policy.

The purpose of this study is to explore whether such a segmentation approach could also be developed in relation to business travel behaviour. It asks whether it might be feasible and/or desirable to attempt such an exercise. As well as the potentially vast array of types of travel and related behaviours that this might attempt to cover, such a model would also need to capture how 'businesses' make decisions. It therefore requires a multi-disciplinary approach which combines the substantial body of literature on business management and strategy, with a more disparate evidence base on what, how and why business travel is generated.

Therefore, the purpose of this study is to:

1) Review the existing evidence base on business travel, paying specific attention to *sustainable* behaviour at both the individual employee and organisational levels
2) Determine the feasibility and desirability of developing a segmentation of businesses in relation to their travel behaviours.

1.2 Scope

This project has adopted a wide definition of business travel to include all travel movements undertaken by all kinds of organisations. It is therefore necessary to be clear about the scope of the project and the terminology used in the remainder of this report as follows:

- When we say '**business**' – we include any 'organisation' in the public, private and third sectors[1]
- When we say '**travel**' - we mean the **flows/movements** that organisations generate in four broad domains[2]:
    - *Business ('Briefcase travel' e.g. personnel travelling to all kinds of meeting including business to business (B2B) and business to customer (B2C)*
    - *Customer (non-business consumers-to-business only (C2C) – e.g. shoppers to retail, tourists to leisure attractions; children to school)*
    - *Commuting (workers getting to work)*
    - *Logistics (deliveries to other businesses & private customers)*
- When we say '**business travel behaviour'** – we mean both[3]:
    - *Behaviours* undertaken by *individuals* in an organisation (e.g. mode choice, car sharing, ecodriving, videoconferencing)
    - *Behaviours* undertaken by the *organisations themselves* in the form of *procedures* that are adopted at an organisational level (e.g. travel plans; driver training; expenses policy; procurement policy)

The four domains of travel and the list of employee and organisational-level behaviours will be expanded upon in Section 2.

1.3 Study approach

1.3.1 Conceptual framing and research questions

For this study, an initial project structure was set out through six 'Conceptual Packages' each led by a different member of the project consortium with the appropriate expertise. These packages represent themes we believed at the outset are most likely to underpin the development of a model of business travel ranging from the contextual drivers determining business practices in general, to specific aspects of business travel decision making, to best practice in segmentation methods and principles. The six packages included:

1. Drivers of business growth and sustainable practice
2. Subdividing the business population
3. Business travel-related practices
4. Company cars, fleets, transport operators and freight

[1] Note that in the remainder of the report we simply use the term 'business(es)' to refer to all types of organisation.
[2] Note that in the remainder of the report we simply use the term 'business travel' to cover this wide variety of movements whereas in some contexts it may be more appropriate to make a distinction between 'travel' and 'transport'.
[3] Note that in the remainder of the report we simply use the term '[business travel] behaviour' to refer to both individual behaviours and organisational procedures etc.

5. The cross-over between commercial energy use and travel practices
6. Effective segmentation methods and principles.

Although the review was structured by these six packages, they were brought together through a common set of research questions developed for the purposes of undertaking the review to ensure consistency in analytical approach. These research questions relate to the stages of research and analysis defined by the project team as necessary to achieve the development of a segmentation model. Bearing in mind that the purpose of this study was not to perform the actual segmentation of businesses, **Table 1.1** summarises those stages and the corresponding Research Questions and indicates the extent to which this project has contributed to each stage.

- RQ 1: How can business travel be defined and categorised? (Section 2)
- RQ2: Which business travel behaviours exist? (Section 2)
- RQ3: What are the key factors which determine business travel behaviours? (Section 3)
- RQ4: Is a segmentation model of businesses in relation to their travel behaviour feasible and desirable?
- RQ5: What are the key evidence gaps that need to be filled before a segmentation model can be developed? (Section 4)

In addition the report concludes on the recommended next steps to achieve model development (Section 5).

Table 1.1: The steps to segmentation and progress within this project

Steps to segmentation	Research Question	Completed in this study?
Define and categorise business travel	RQ 1: How can business travel be defined and categorised?	Yes (Section 2.1)
Identify business travel behaviours at the individual and organisations levels	RQ2: Which business travel behaviours exist?	Yes (Section 2.3) although we would not claim this list to be exhaustive.
Identify the determinants of these behaviours (including how/why behaviour differs across the population of businesses)	RQ3: What are the key factors which determine business travel behaviours?	Partially (at a macro level, but not systematically for individual behaviours). A conceptual model to capture important determinants has been developed and each component evidenced with reference to specific behaviours where possible (Section 3.2). Evidence gaps have been identified in Section 4.2.
Assess the feasibility of a segmentation model including the most meaningful parameters on which to segment	RQ4: Is a segmentation model of businesses in relation to their travel behaviour feasible and desirable?	Partially. The case has been made for a segmentation model and the evidence used to suggest the possible parameters upon which a model or models may be developed (Section 4.1). Whether or not a quantitative segmentation model is indeed feasible will only be determined after survey data is analysed.
Design fieldwork to collect information on the determinants of business travel to allow a segmentation of businesses	RQ5: What are the key evidence gaps that need to be filled before a segmentation model can be developed?	No. However, the study has recommended the evidence gaps that need to be filled and the key metrics to be elicited in future surveys (Section 4.3) with corresponding research activities in Section 5.2.

1.3.2 Evidence Base Review (EBR) approach

The aim of the Evidence Base Review (EBR) was to find studies that have their main focus on at least one of the research questions listed above. These included both theoretical and empirical insights as well as seeking out datasets which may support these. As the range of evidence to be examined is

very wide, and the amount of literature potentially very large, but unbalanced across the topics included, the EBR adopted a hybrid methodology.

- Firstly, team members contributed lists of titles already known by them as experts in their topic area. This elicited both academic and non-academic ('grey') literature sources. This 'informal' process continued throughout the main phases of the project. This list started with 141 items.

- Secondly, a systematic search of the academic literature was carried out using a long list of 'keywords' first established in discussion with all project partners, including the DfT. There were 95 unique combinations of search term, using the default search parameters in SCOPUS. This search term matrix was used sequentially to conduct literature searches, until saturation was reached. When there were more than one thousand items returned for a given combination of keywords, bespoke search restrictions were applied to focus the search return more narrowly. More than 8000 items were found by this method, which were further filtered manually on the basis of judgement according to title, publication, authors' keywords and abstract, and for duplicates appearing in more than one set of search results. The resulting list of 2179 items was then subjected to a five-point prioritisation process and the highest priority items (of which there were 122) were allocated to the most relevant Conceptual Package. A more detailed breakdown of these metrics and the search term matrix is included as Annex 1.

- Thirdly, as gaps were identified during the analysis, further focused searches were carried out, using both Google and SCOPUS, and more than 100 additional items were found for assessment.

- The final total of items in the database considered for full or partial review is 363 out of which 96 went through to a full or partial review.

When assessing whether or not an item should be reviewed, we sought to ensure that there was a balance of material addressing the following criteria:

- theory papers which describe the latest thinking in the field/conceptual package and which set the agenda for future research

- papers describing how behaviours at the organisational level have been implemented and evaluations of those, where such papers exist

- papers or studies which partially address something within the research questions developed for this project (e.g. relating to energy efficient business practices more generally) when more focused travel-related papers could not be found

- papers or studies which are reviews of others' primary research. There may also be some papers which describe secondary analysis. This was needed to get a sense of the broad sweep of the evidence and research gaps
- international evidence was in scope with a focus on the UK where possible.

Pieces of literature earmarked for a full review were evaluated using a proforma[4]. Evidence from each item was extracted using the research questions outlined above to structure the findings and provide a common evaluation framework.

1.3.3 Interviews with umbrella and trade bodies

To complement the desk-based evidence review, interviews were conducted with umbrella bodies (rather than individual commercial or public sector employers) to probe travel and transport-related issues and behaviours across the range of activities and sectors of interest to the EBR.

The objectives of the interviews were to:

1. Fill gaps in the evidence base across the Conceptual Packages using qualitative research with 'expert' respondents.
2. Understand the role of a range of umbrella bodies as intermediaries in the relationship between the community of employers and government
3. Understand the role such bodies could play for government in engaging with employers on travel and transport behaviour issues.

A total of fifteen telephone interviews were completed between September and November 2013, with a key representative of the organisation concerned, and generally lasted 45-60 minutes. The results are reported fully in a separate report (Pangbourne et al., 2015), but the findings are drawn upon in this main report where appropriate.

1.4 Structure of this report

This report is split into four further sections. Section 2 (Understanding Business Travel) categorises the types of travel which are generated by organisations and the behaviours related to these travel flows. It also discusses what is known (or not) about the relationship between business travel, sustainable business travel behaviour and micro or macro-economic growth.

[4] Note that sets of similar surveys were combined into a single proforma, therefore the total number of proformas will be lower than the final number of pieces sent for full review.

Section 3 (Understanding Decision Making Relating to Business Travel) presents the bulk of the evidence review by firstly summarising some core business studies literature on business decision making, and then offering a conceptual model of decision making related to business travel behaviour. The evidence to support each component's inclusion in the model is then presented by taking each component separately.

Section 4 (Assessing the Feasibility for a Segmentation Model) presents reasons why a segmentation model would be desirable and then reflects on the evidence review to offer some practical steps to how this may be done. The evidence needs and associated gaps in the evidence are also summarised.

Section 5 (Conclusions and Recommendations) firstly summarises the key points to come out of this review and then finishes with a set of research recommendations and recommendations for the next steps towards the development of a segmentation of businesses in relation to their travel behaviour.

Notes on the **reporting conventions** used in this report:

1. References in the text refer both to those pieces that have been reviewed *in depth* as part of the review, as well as supporting and 'snowballed' references. The references at the end of the report make it clear which is which.
2. This study has produced some of its own 'evidence' in the form of qualitative interviews with umbrella bodies. This has been incorporated by treating the key findings of this research as yet another source of evidence. This source of information is referenced as *Pangbourne et al., 2015* referring to the report published alongside this main report.
3. We have not structured this report by the travel behaviours that can be undertaken by organisations or individuals, but have instead structured it by the determinants of those behaviours (Section 3). However, in order to be able to quickly locate evidence on specific behaviours, where a behaviour is referred to, it is highlighted in **blue-bold text.**

SECTION 2: UNDERSTANDING BUSINESS TRAVEL

Key findings

- **Business travel as defined in national statistics and in the majority of the literature concentrates on 'Briefcase Travel'**, that is: trips in the course of work for inter or intra company meetings. This, in itself, comprises very diverse types of activity.
- **'Business travel' can be categorised into four domains: 'Briefcase travel', Commuting, Customer and Logistics.** A distinction can also be made between the travel behaviours undertaken at the individual level (e.g. car sharing) and at the organisational level (e.g. implementing a car sharing scheme).
- There are separate (and large) bodies of literature on commuting and freight/logistics transport. However, **most data has been collected at the level of the individual or at an aggregated level, but not at the level of the workplace.**
- **At the level of the organisation, evidence on the relationship between business travel and economic growth is scarce.** Existing evidence on the relationship concentrates on macro-economic effects.
- There is only **partial, fragmented and complex evidence for how 'business travel' is incorporated within the potential 'decision-making framework' of a business** otherwise driven by issues of R&D, innovation, operations, customer service, finance, overheads.
- Travel management is principally a means of balancing cost control of business travel with the need of businesses to perform their main purposes. But, for most, **sustainable business travel does not rate in even the top 5 strategic considerations.**
- A firm's relationship to the natural environment is, and will increasingly become, a source of competitive advantage. **Evidence does exist of a positive relationship between the bottom line and 'greening' of business practices and there is increasing realisation of this link by business.**
- However, the 'energy efficiency paradox' whereby cost effective, low risk investments in energy efficiency are not undertaken in the private and public sectors, is prevalent and demonstrates that **the adoption of energy efficient practices involve additional factors to the consideration of profit or growth alone.**
- Most importantly, **energy efficiency including sustainable business travel will be associated with green growth only to the extent that it is perceived as having strategic value** and this, in turn, is about *long term* strategic advantage and not *short term* profit.
- **There is no recognised segmentation model of businesses** based on their potential to grow, let alone in terms of their potential for green growth or a 'travel practices for green growth' model.
- **This review identified around 50 travel behaviours** encompassing indirect (e.g. expenses policy) or direct (e.g. fleet management) organisational procedures and individual behaviours (e.g. mode choice for a business trip).
- For some categories of business travel, it is not clear which organisation (or whether any organisation) is the sole 'owner' of the travel in question. **Organisations generally do not consider commuting or customer travel as their responsibility.** Travel planning is the only formal means of including commuting within business thinking.

- Various energy and **carbon reporting frameworks** are now applied to private and public sector organisations. Many of these **have the potential to influence organisations** as business travel may be included directly or indirectly in the reporting frameworks.

2.1 Defining and categorising business travel

2.1.1 Introduction

In order to develop a meaningful segmentation model of businesses to policy with respect to business travel, it is necessary to understand 'business travel' and to identify the 'behaviours' which influence the amount and nature of this travel.

As a starting point, this study took a very broad definition of the term business travel to include many more flows of travel or transport movement than is commonly considered in the literature. The most common types of movement included under the umbrella of business travel in the literature relate to travel undertaken in the course of work for inter or intra company meetings of a variety of kinds. This project, on the other hand, includes all the flows of movement for which businesses or organisations can be seen to be the 'originator' or can be regarded as responsible. The Tender Specification for this project talked about 'travel-related business practices[5]', and specifically mentions the following as being included (noting that there may also be others):

1. Commuting – employee travel to/from organisation's business site(s)
2. Business travel – employee travel to conduct the organisation's business
3. Procurement, use and delivery of freight/transportation of business goods and services through the entire supply chain – DfT included employee travel to/from customers and travel/transport related to corporate services under this item.
4. Accessing services/products – travel by customers/service users to obtain or use an organisation's products or services
5. Corporate (fleet) vehicles – selling, purchasing, leasing and use
6. Site location – decision-making criteria for relocation [and presumably the impact a business's location has on its overall amount of travel]

[5] The term 'practices' has been removed from the defining terminology in this study and replaced by the term 'business travel'. The term 'practice' has specialised meanings, particularly in the field of sociology, to relate to bundles of activities which are performed due to a combination of social relations, material infrastructures and context. In this view, pro-environmental actions are not seen as the result of individuals' attitudes, values and beliefs constrained by various contextual 'barriers', but as embedded within and occurring as part of social practices (Hargreaves 2011; Shove 2010,Warde, 2005). This report is interested in both the individual behaviours (and individual and organisational level decision making) and wider practices but most of the material is at the level of 'individual' behaviours. Hence the change in terminology.

This list is a mixture of (i) travel 'flows' (e.g. #1, 2, 4) and (ii) behaviours conducted at the individual and organisational levels (e.g. #3, 5, 6). In this section, we distinguish between these two elements and propose a typology of business travel (the 'flows') before identifying a long list of 'behaviours' in Section 2.3.

Firstly, Section 2.1.2 will briefly summarise how business travel is typically defined in the literature. Section 2.1.3 will then propose a typology of business travel using the inclusive approach outlined above.

2.1.2 The definition of business travel in the literature

In the UK National Travel Survey (NTS), 'business travel' includes "personal trips in course of work, including a trip in course of work back to work. This includes all work trips by people with no usual place of work (e.g. site workers) and those who work at or from home" (DfT 2012, p10[6]). This definition includes a number of work-related but distinctly different purposes for which people may be travelling during the course of work such as for internal meetings, external meetings with other businesses or with customers, attending conferences, providing services, procuring/buying things. Nevertheless, this definition can be expanded further to include a number of additional work-related journeys (e.g. commuting or the commercial delivery of goods or transportation of passengers). The definition can also be refined to distinguish between important characteristics such as who is undertaking the journey, its origin and destination (between businesses, customers, home and whether national or international) and its duration (long term vs short term assignments).

The category of 'business travel' and the associated definition used in the NTS is relatively standard across (national) travel surveys. Most academic and grey literature uncovered using the search term 'business travel' addresses inter-business and intra-business travel for meetings ('briefcase travel'). Much literature breaks this type of travel down into many activities or practices including 'internal' face-to-face meetings, 'external' face-to-face meetings', making sales calls and trips, attending and participating in conferences and trade shows, managing client relationships and providing services. For instance, for the RAC Foundation & British Chambers of Commerce (2007), 'business travel' encompasses a whole range of activities including visiting customers, making service calls, holding internal meetings and taking part in educational events. Their report recognises the diverse nature of business travel, but primarily focuses on the UK 'briefcase' traveller, who, they claim, has the potential to make the most significant travel savings - although the increased presence of the 'white van man' on UK roads is also highlighted throughout the report.

[6] Department for Transport (2012) National Travel Survey: 2012. Notes and Definitions.

For Gustafson (2012b), business travel is white collar travel: "travel in order to participate in internal and external meetings, visit customers, suppliers or other partners, attend conferences and trade fairs and so forth" (p203). Other papers by this author (2006, 2013a) do not treat business travel as an end in itself, but as a *practice* in that it is purported to become an important part of an individual's work that requires knowledge and ability ('travel competencies') to perform effectively, and is associated with both positive and negative experiences. He points out that business travel is linked to other developments in working practices: flexibility, deregulation and individualisation of work (2012).

Millar and Salt (2008) identify the following types of business travel largely relating to the duration of the activity:

- *Business travel*: a trip of up to 30 days. A highly flexible form of corporate mobility and an upward trend in global companies. Motivation is generally the need for face-to-face and/or project related meetings.
- *Short-term assignments*: employee assignment to a particular location for a medium time-limited period (between 3 and 12 months), involving a residence change for the employee though not necessarily the whole family.
- *Extended assignments*: long business trips of between 30-180 days.
- *Long-term assignments*: employee assignment to a particular location for a time-limited period (between 1 and 4 years), involving a residence change (potentially for the whole family).
- *(International) commuting assignments*: a relatively new phenomenon, where the employee is assigned to a distant location for short periods but not involving a residence change (i.e. weekly commuting for a period of a few months, though even up to a couple of years).
- *Rotation*: particular to extractive industries[7]. Cycles of long shifts (i.e. several weeks on, several weeks off), either offshore or in remote locations, could be domestic or international.
- *Virtual mobility*: movement of knowledge without physical movement. Reliant on tools: teleconferencing, databases, collaborative systems. Involves a complex relationship with physical mobility as both substitution and complementarity can be identified.

Similarly, using a case study of the software industry in Dublin, the authors Wickham and Vecchi (2009) differentiate between different types of travel requiring different amounts of novelty (new places visited) and reach (number of places visited). The authors are also interested in these groupings with respect to the different amounts of face-to face interaction due to the need to maintain relationships:

[7] i.e. mining, quarrying, dredging and oil & gas extraction.

- *Travellers who are commuters* (who travel frequently from their home to a limited range of regular destinations)
- *Explorers* (who travel frequently to a broader range of destinations at least some of which are new)
- *Nomads* (who are continually on the move and have no clear home)
- *Missionaries* (who travel to customers to disseminate knowledge) and visiting tradesmen (who work on customers' sites).

Breure and van Meel (2003) also identify 'nomadic workers as they focus on mobile work, i.e. those who do most of their work on the move, without an office. This is also called 'third place working' (ZZA, 2011). Nomadic workers are included in the NTS definition as 'having no usual place of work'. The authors are interested in the rise of new businesses that tap into the demand for equipment and space to work outside traditional fixed offices, i.e. short term occupancy spaces, pay as you work facilities, hotel wired network, coffee shop Wi-Fi. Similarly, Cohen (2010) is concerned with 'mobile work' and, by drawing on the UK Labour Force Survey, develops a three-part typology by major occupational group: 1) Mobility *as* work (cycle couriers, truck drivers, pilots, bus drivers), 2) Mobility *for* work (district managers, migrant labour, plumbers/trades, direct-sellers, maintenance engineers and 3) Working *while* mobile (place is unimportant, use of time is).

Several sources broaden out the definition beyond inter or intra company travel. Firstly, in the guidance on calculating carbon emissions of work-related travel (DEFRA/DECC, 2009; DfT/DEFRA/JMP, 2011), there are two categories of 'work-related travel' – commuting and business travel ('travel during the working day'). However, this guidance considers freight and visitor[8] transport/travel as outside the scope of the guidance for calculating carbon emissions of work-related travel, and highlight that there is separate guidance for calculating carbon emissions for freight.

Anderson (2003) identified four types of transport connected to the activities of companies and, in this case, freight travel is included:

1) *the movement of goods to and from a production facility* - this includes the transport of raw materials into the production facilities and the distribution of finished products to the customers.

[8] In the DfT/DEFRA/JMP guidance, this is defined as 'travel by an external party to your offices, sites or events to engage with company employees or undertake a task'. The guidance goes on to say: 'The issues and procedures involved differ significantly from those relating to commuter and business travel, particularly for visitor-based organisations and attractions.' (p12)

2) *the internal transport in the company* – this type of transport encompasses the person and goods transport within a unit and between the different units of the company.
3) *business travel* - the travels made by the employees to meetings, seminars and conferences are also a type of transport work that is generated by a company's activities.
4) *travel to work* (commuting).

The last category here (commuting) has a large body of literature attached to it quite separately from the business travel literature. However, official guidance on greenhouse gas reporting and some authors regard commuting as a direct form of work-related travel (DEFRA/DECC; 2009; Anderson, 2003; Badland et al., 2010), whilst others at least acknowledge it to be a borderline activity between work and personal life, even if the responsibility for transforming commuting behaviour is obscured (Cox et al., 2012) (see Section 2.5).

Hebes et al. (2013) offers some further useful definitions around service-related transport, refining and enhancing a model first proposed by Steinmeyer (2004)[9]. This is the only paper found which focuses on service-related traffic. The authors split this into two categories: service trips, defined as "Hybrid form of freight and passenger transport where, besides the person who provides a service also tools, spare parts or other materials are transported.", and business trips, defined as "Change of location due to job-related obligations, to meet internal and external partners personally." In addition to service-related transport, the authors also identify three other categories of 'commercial transport'. One, freight transport, is divided into two sub-categories – freight transport for hire or reward (i.e. the service offered by freight and logistics companies) and freight transport on own account (i.e. in-house freight transport fleets). Their second category of 'commercial transport' is 'passenger transport', defined as "Transport of person(s) other than oneself between spatially distributed origin and destination" (presumably this encompasses buses and taxis). Their final category is "Transport of Government & Public Safety", defined as "Transport of government and public safety, e.g. policy, customs, fire service, emergency rescue services and civil protection."

We consolidate this literature in the next section where we propose a typology of business travel to be used in the remainder of this report and, we recommend, in any further work undertaken to develop a segmentation of businesses in relation to these behaviours.

2.1.3 Proposed typology of business travel

In this section, we are interested in the physical movements of a person or object across space ('flows of movement') that are linked in some way to the operations of commercial or non-commercial

[9] Steinmeyer, I. (2004) Kenndaten der Verkehrsentstehung im Personenwirtschafts- verkehr. Analyse der voranschreitenden Ausdifferenzierung von Mobilitaets- mustern in der Dienstleistungsgesellschaft, Muenchen.

organisations. Given the complexity involved in the myriad of potential movements accounted for by businesses and the many potential points of focus, we propose a typology which can be used to categorise businesses (according to their dependency on each of these flows (see Section 3.2.4) and against which to map the various behaviours which influence these flows (Section 2.3.2). This typology has been informed by the evidence-base reviewed in the previous section and is based on the following principles:

- At some level, most journeys are linked in some way to organisations, but not all of them are. For example, taking the car to go for a picnic cannot be regarded as travel related to a business (though there will be predecessor practices that have enabled the picnic – such as going to a food shop or having food delivered, ensuring that the vehicle is fuelled).
- This typology is based on the function of the journey in terms of purpose as well as whom or what undertakes the journey. In doing so, it does away with the need to distinguish between public/private or third sector organisations.
- The term 'travel' is used to include both the movement of people and the physical transport of freight/goods even though it would be more appropriate for the latter to be considered as 'transport' rather than 'travel'.

Given this complexity, the remainder of this report and any subsequent segmentation exercise would benefit from a more simple classification of 'domains' of travel undertaken by businesses, the actors involved and what is being transported. The typology developed from the EBR involves these three dimensions:

1. Firstly, four travel 'domains' were identified: Business, Commuting, Customer and Logistics.
2. Secondly, each of these was further broken down according to whether the movement takes place between businesses, between a business and its customers, between the workers (i.e. home) and the business, or is cross-cutting (relevant for passenger transport operations).
3. Thirdly, whether the movement primarily involves people, services, goods delivery or passengers.

This led to the definition of 9 types of business travel as shown in **Table 2.1**.

Table 2.1: Typology of Business Travel Flows developed for this project

Domain	Travel between …	Movement of …	Acronym	Description
Business	Business to Business	People	B2B_P	Personnel travelling to all types of meetings (intra-business and inter-business sometimes substituted by virtual meetings). Often called 'Briefcase Travel' (e.g. training, conferences, business meetings, sales meetings)
	Business to Business	Services	B2B_S	Personnel travelling to other businesses to perform services (e.g. maintenance engineers, training delivery, auditors, other types of contractors)
	Business to Customer	Services	B2C_S	Personnel travelling to customers to perform commercial or non commercial services (e.g. plumbers etc. going to homes; mobile hairdressers; health visits to homes; breakdown recovery (= mobile workers)) including transport of government and public safety services (e.g. police, customs, fire service, emergency rescue services and civil protection)
Customer	Customer to Business	People	C2B_P	Customers to any type of business (public or private) (sometimes substituted by e-shopping) (e.g. shoppers to retail outlets; patients to hospitals; pupils to schools; visitors to tourist attractions; customers to restaurants)
Commuting	Worker to Business	People	W2B	Employee commuting; sometimes substituted by tele-working
Logistics	Business to Business	Goods deliveries	B2B_D	Supply chain activities (e.g. obtaining raw materials or components and distributing products to wholesale or retail outlets or other business customers). Could be undertaken in-house or by external (freight and logistics) contractors
	Business to Customer	Goods deliveries	B2C_D	Home delivery of shopping; Postal services
	Customer to Business	Goods deliveries	C2B_D	Return of mail order goods by customers (e.g. return of faulty goods or sending goods for servicing)
	Crosscutting	Passengers	X_PT	Transport of person(s) other than own personnel between origin and destinations (e.g. by bus, rail, taxi, air)

The use of these categories provides a framework to structure the evidence collation for the remaining research questions in this study.

2.2 Data sources on business travel behaviour

Any eventual segmentation model will want to be used by policy makers to influence the amount and composition of business travel and to decide how to design and target interventions. However, without knowing what elements of business travel are growing, reducing and, most importantly, what organisational level practices and decision making factors are driving these trends, it will be difficult for policy makers to target their engagement and interventions to achieve desired policy objectives.

As part of the evidence review for this study, existing data sources were identified and assessed for their potential contribution to (i) understanding trends in business travel and (ii) the development of a segmentation model. The data sets uncovered in the review and their scope are summarised in **Annex 2**.

From this review it is clear that there is difficulty in accessing data to perform necessary steps towards any segmentation. Data is required (i) to prioritise behaviours using the criteria outlined in Section 4.2.2. (ii) to characterise individual businesses based on their behaviour and motivations/decision making processes leading to this behaviour. We will return to these fundamental issues in Section 4 of this report and provide research recommendations in Section 5.

2.3 Business travel and growth

2.3.1 Introduction

If any segmentation model and related policy activity is seeking to change business behaviour whilst meeting the dual objectives of environmental and economic sustainability, then it is necessary to review the evidence on the relationship between these three elements (business behaviour, economic growth and environmental impact). However, the relationship between economic growth and sustainable outcomes at the level of the economy and the business population is hotly contested. Using the term 'green economy', 'grey economy', 'low carbon economy' or any other term which seeks to 'couple' growth and sustainability in different relationships does not overcome this. There is a trade-off between the costs and benefits and the on-going debate about de-coupling emissions and growth is high level and substantial.

There is only partial, fragmented and complex evidence for how 'business travel' is incorporated within the potential 'decision-making framework' of a business or organisation which are otherwise driven by issues of R&D, innovation, operations, customer service, finance, overheads. The question is whether 'greenness and sustainability' (and consequently an activity such as business travel) is an explicitly identified driver or barrier for most businesses in their competitiveness strategies; put

another way, for most businesses does it rate in even the top 5 considerations when undertaking strategy and business planning?

2.3.2 Relationship between business travel and growth

Transport has an important role in enabling economic growth. Transport is a major employer in its own right – recent figures show that there are some 1.7 million transport related jobs. This study was interested in the role played by routine or essential business travel in business growth and the consequent environmental and social impacts of this travel. It also set out to understand the motivations for and impacts of *environmentally sustainable* business travel. However, this distinction is not always obvious as businesses may be motivated to implement environmentally sustainable practices (e.g. the installation of cycle parking) by factors other than environmental protection. Hence, it was necessary to understand the determining factors of business travel in all its guises and, from this, understand the degree to which environmental sustainability is a motivating factor in those business decisions.

Businesses benefit from more efficient logistics, access to new markets for their goods and services, improved productivity and the ability to draw on a wider pool of labour (DfT, 2011a). Benefits of sustainable travel can include reduced congestion, reduced carbon emissions, business benefits such as improved productivity, staff retention and recruitment, as well as reduced travel costs and overheads, strengthened communities through increased home working and improvements to quality of life (ibid.). It is also possible to convert time spent by not travelling on business (e.g. through substitution by virtual travel) into cost savings. In a survey of 16,000 businesses (internationally), Regus (2012) reports that 'flexibility drives productivity' and that just under three quarters of the businesses report that increased productivity is a direct result of flexible working practices and more than two thirds (68%) declare that it has led to staff generating increased revenue. The Energy Saving Trust estimates that a driver doing 10,000 business miles a year will spend 250 hours a year at the wheel, which equates to approximately 17% of their working time. This, in turn, can be converted into a financial cost saving using average salaries (GAP, 2013; EST/DfT, 2012).

Much literature demonstrates a link between economic growth and the *rate* of business travel. For instance, Davies and Armsworth (2010) describe business air travel as 'bouncing back' since the beginning of the recession, speculatively more than other types of business travel. Similarly, the RAC Foundation and British Chamber of Commerce (2007) used qualitative research to assess the degree to which business travel is 'a choice or a necessity' and both rural and urban focus groups viewed travel as one of the main drivers of economic growth and regeneration, with very little travel undertaken 'unnecessarily'. In a survey of over 158 of the top 500 FTSE companies in 2010,

WWF/Critical Research found over half of the companies had claimed the total amount that their company had spent on business travel over the past two years had reduced, although 30% said it had increased.

Business travel is argued by some to be a driver of economic growth, not simply a 'follower'. According to the World Travel and Tourism Council (WTTC, 2011), approximately one third of the growth in global trade over the past decade has been driven by international business travel. Growth in business travel from 2000 to 2007 facilitated the creation of over 40 million jobs through related increases in trade and productivity. This represented almost 20% of the growth in global employment over the same period. If business travel were cut by 25% over two consecutive years, global GDP would be 5% lower than would otherwise be the case after a five-year period. This would result in 30 million fewer jobs than forecast under baseline assumptions for the same period – an average loss of 1% of global employment.

However, the WTTC document was the only evidence found as part of the review that provided such a clear and bold account of this relationship between business travel (for the largest multinationals) and economic growth for nations and regions, notwithstanding certain limitations of the study and that it should be noted that WTTC represent a particular part of the stakeholder community. A similar note can be observed from the qualitative interviews with umbrella organisations undertaken as part of this study (Pangbourne et al., 2015) whereby the Guild of Travel Management Companies and the freight/road haulage representatives were the only stakeholders who explicitly acknowledged the added value that business travel provided to a business rather than focusing on travel and transport as a cost to be reduced.

Whilst the literature on the relationship between travel and transport investment and economic growth at the macro level is vast (and beyond the scope of this review), this study set out to understand the relationship between business travel and growth at the level of individual organisations. The evidence for this uncovered in the review focuses mainly on business attitudes to *transport in general* (i.e. congestion, infrastructure, reliability) rather than *business travel behaviours* more specifically, and even less on *sustainable* business travel. This evidence, as reported by a review for the DfT by Lyons et al. (2009), is often biased. Lyons et al. draw on an evidence base review of 97 studies: 29 general business surveys; 26 transport surveys; 16 organisational views on transport issues; 9 parking/travel plans; 8 business location studies; 5 logistics studies; 2 Information Communication Technology (ICT) studies and 2 road pricing studies. Most of the studies were to 1) gain information/attitudes from members of the public/employees and 2) lobby government, engage in public affairs. Reports are usually framed by the latter purpose, and purport to represent the 'voice of businesses. Research design in relation to businesses and transport has been biased as a result, being

less disciplined than research on individual travel behaviour, with a lack of well-established theoretical frameworks for understanding attitudes, when applied to the corporate views of a commercial body. In essence, many of the business attitudes reports are framed as lobbying material yet, paradoxically, there can be considerable ambiguity attached to the meanings of business attitudes that, in turn, can be partially attributed to doubts as to whether responses represent individual or corporate attitudes. The weighting of economic issues in the minds of business can be an artefact of research design, which focuses on economics. As a result, it is very difficult, from the existing evidence, to interpret a clear and coherent view or set of views of business on transport issues.

Indeed, it is not always clear what the business lobby is assuming mobility is *for* when pressing for infrastructure improvements. For instance, Cohen (2010) makes the distinction between working while mobile, mobility as work (mobile workers) and mobility for work. He claims the former (working while mobile) has been well researched and the relationship between productivity gains and business gains is well understood for this type of mobility behaviour. However, the latter (mobile workers and those who need to be mobile to conduct their work) is less represented by 'white collar' workers and relatively neglected in terms of research. Also, several authors have found no relationship between the mobility measures introduced by the workplaces and the mobility problems they state that their employees face (Van Malderen et al., 2012; Roby, 2010; Rye, 1999). Instead, organisational level transport policy seems to be a tool for fulfilling demands outside the field of transport. For instance, a variety of studies make the link between business travel being regarded as a 'necessity' by organisations to achieve organisational objectives and the desire to manage costs and encourage employees to be economical (Gustafson, 2012a & 2013b; Limtanakool et al., 2006). In a study of stakeholders involved in corporate Travel Management, Douglas and Lubbe (2006) find this to be a means of balancing cost control of business travel with the need of businesses to perform their main purposes. Research carried out by the RAC Foundation and the British Chamber of Commerce suggests that 'the majority of businesses (55%) spend between 0-10% of their annual budget on business travel, and a further 33% spend between 11-20% of their total budget on business travel' (RAC/BCC, 2007). In a survey of over 100 businesses, GAP (2013) demonstrated that carbon emissions were cited relatively frequently as a motive to reduce business travel, (see **Table 2.2**, Section 2.4.2). Again, this does not suggest 'local' and immediate mobility related concerns are the main motivator for the implementation of travel management.

In the freight sector, there is an incessant pressure on transport operators from customers to squeeze costs while maintaining and improving effectiveness (Davies et al., 2007). As a result they find it very difficult to pass cost increases on when they are incurred through factor inflation, such as increases in vehicle costs, fuel prices, insurance premiums, or drivers' wages. In her literature review preceding a

study of a change in business travel policy, Roby (2011) cites data from the expenses data of over 150,000 UK-based employees [10] showing an estimated annual cost to the economy (when extrapolated) of business travel of £3.5bn, comprised of £5.8m for car travel, £11m for rail, £7.9m for taxi fares, £5.81m for air travel, and £10m for overnight accommodation. **However, what is a cost for one business is a profit for another business** although social health and environmental costs are not included in these figures.

In light of these 'costs', several studies argue (albeit largely without empirical data) that a reduction in business travel or its substitution by virtual travel will lead to savings or productivity-related benefits in a number of business areas (Banister et al., 2007; WWF/Critical Research, 2011; Gustafson, 2012b; Pangbourne et al., 2015):

- an increased speed and intensity of collaborative communication through teleconferencing, though that may have economic growth benefits that stimulate further travel
- in increased productivity (partly because teleworkers work longer hours), better morale, less stress, improved work-life balance and improved concentration
- cost savings form faster decision making, faster recruitment, staff retention and being able to work during travel disruption
- the provision of green growth opportunities through green innovations such as car clubs .

However, there remains little depth to many of these positions – for example, there is a complex relationship between teleconferencing and business travel. Banister et al., 2007 report a study [11] pointing to a deep seated view that having staff physically present in the office serves to guarantee more productive work - 29% of the 200 senior decision makers surveyed did not allow teleworking because they were concerned about less work and time input from teleworkers, and it was perceived by some teleworkers (30%) that there would be less promotion opportunities for them.

2.4 Business travel and Green Growth

2.4.1 Introduction

The concepts of 'greenness', 'green growth 'and 'green economy' have been subject to various definitions, but those currently being used by international organisations have a lot in common (GGKP, 2013). Green growth seeks to fuse sustainable development's economic and environmental pillars into

[10] GLOBALEXPENSE (2009) Employee Expenses Benchmark Report 2009, GlobalExpense Limited, London, KELSO CONSULTING

[11] Mitel (2006) Lack of trust stalls uptake of teleworking, Report based on data collected by Continental Research, February 2006

a single intellectual and policy planning process, thereby recasting the very essence of the development model so that it is capable of producing strong and sustainable growth simultaneously (Samans, 2013). It aims to foster economic growth and development, while ensuring that natural assets are used sustainably, and continue to provide the resources and environmental services on which the growth and wellbeing rely (OECD, 2011). It is growth that is efficient in its use of natural resources, clean in that it minimises pollution and environmental impacts and resilient in that it accounts for natural hazards (World Bank, 2012). Green economy aims for improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities (UNEP, 2011).

Green Growth is a strategy for promoting economic growth with the goal of adding an ecological quality to existing economic processes and creating additional jobs and income opportunities with a minimal environmental burden. This primarily means seeking a relative or absolute decoupling of economic growth and environmental degradation, depending on the local context. It is also essential to take into account the risks involved with future changes in the environment, e.g. by adapting to climate change and international obligations within the framework of an environmentally qualitative policy (GTZ, 2010).

2.4.2 Business models, growth and 'greenness'

Understanding the causal specificities of 'why businesses grow' is very difficult. The Department of Business, Innovation and Skills (BIS) has been able to identify the attributes of SME companies which are most strongly associated with growth ('growth critical factors'). These include, for example, seeking external access to finance, using business support services, investment in training, strategy. Where these are present, a company is likely to grow. However, there is no recognised segmentation model of businesses in terms of their potential to grow; the difficulty in producing a stable 'growth segmentation' of businesses is then heightened by the aim of producing a 'green growth' model, and even further a 'travel practices for green growth' model.

A review for this study of 11 business surveys[12] conducted in 2011-2012 across the UK and at the international level revealed the most frequently cited drivers of and barriers to growth. These surveys reveal business *perceptions*, rather than hard evidence, of the barriers and drivers of growth.

The perceived barriers to growth were:

[12] SME Business Barometer (2012); Business Perceptions Survey (2012); BIS Small Business Survey (2012); Federation of Small Businesses (2012); NESTA (2011); Enterprise M3 LEP (2012); Greater Manchester (2012); Heart of the South West LEP (2013); Leicester and Leicestershire LEP (2012); Oxfordshire LEP (2012); West of England LEP (2012)

- **Infrastructure** – the term infrastructure covers a range of specific barriers faced by businesses. The most commonly cited of these include transport issues, availability and cost of premises and poor broadband speed or availability.
- **Access to finance** – access to finance is an essential requisite for the sustainable growth of any business and the lack of available finance was cited as a major obstacle to growth across the surveys. This barrier is of particular importance for small businesses and for high-growth firms. For high-growth firms, access to finance and recruitment / skills shortages are disproportionately significant obstacles.).
- **Cash flow** – for growing firms a particular aspect of access to finance as they require short-term liquidity to fund both on-going activities and expansion. This problem is particularly acute for high growth firms and for small businesses, which often struggle to manage cash flow.
- **Regulation** – the growing burden of regulation is cited as a major concern in several of the surveys of small businesses, as well in each of the regional studies. Increasing product market regulation raises barriers to entry (as compliance becomes a cost of entering and supplying the product) and therefore will be expected to raise the minimum average size requirements of firms in the industry.
- **The economy** – the current economic climate was the most frequently cited barrier to growth across the surveys. Specifically, many businesses mentioned a recent contraction in demand for their products / services and uncertainty about future demand as a key obstacle to growth. Other barriers related to the economy include the rising costs of energy, fuel and raw materials and unfavourable exchange rates.
- **Recruitment / skills shortages** – as firms recruit staff to expand, this is when both recruitment problems and skill shortages become acute. Lack of managerial skills can also be a problem for smaller businesses, especially those experiencing rapid growth.
- **Taxation** – the burden of taxation was cited as an obstacle by more than half of firms in the Small Business Survey (2012). This figure has increased since the 2010 survey, with the most commonly cited tax being VAT, which was increased to 20% at the start of 2011.

The perceived drivers of growth were:

- **Innovation and productivity** – innovation and productivity are seen by many businesses as the key drivers of growth. Increases in productivity can be broken down into three sources: initiatives to improve productivity and efficiency; links to sources of innovation and new ideas; better performance from suppliers.

- **Workforce and skills** – having a skilled workforce was cited by just under half (48%) of businesses as a main driver of growth in the Greater Manchester business survey. It was also mentioned as an enabler of growth by 25% of businesses in the Enterprise M3 survey.
- **Business support** – businesses recognise that external support can be a key driver of growth. The Small Business Survey (2012) shows that 45% of businesses in England had sought some form of business support in the last 12 months. Of these, 30% were seeking advice on how to grow, which was the most common reason.
- **Access to markets and opportunities** – access to markets and opportunities, both nationally and internationally, is a key driver of growth. Many businesses view expanding their export markets as a way of compensating for a lack of domestic demand.

Importantly, related terms such as 'Greenness', 'sustainability', 'resource efficiency' were not cited specifically as a barrier or driver to growth in any of the business surveys. Aspects may be implicit in responses around infrastructure and regulation but this key finding still remains.

Achieving the 'greening' of business practices through compliance may be considered under the 'burden of regulation' barrier. According to Hart's natural-resource-based theory of the firm (Hart, 1995), the limitations of the natural environment will become an increasing barrier to growth in the future. Appropriately mitigating risk can lead to significant business value as environmental stewardship improvements also result in differentiated products, more efficient operations, and a more sustainable world (Olson, 2009). Consequently, a firm's relationship to the natural environment is, and will increasingly become, a source of competitive advantage – and the recent move to 'reshoring[13]' is partly argued to be a risk management response (of 'resilience') to the fragility of globalised supply chains given increasing environmental unpredictability.

Generally though, business surveys have not considered 'greenness' or 'sustainability' as a driver / barrier to growth and, consequently, there is little evidence from these surveys as to what proportion of businesses perceive it as such. The annual Barclaycard Commercial Business Survey does look at this link, however. In its 2008[14] report, it showed that the deciding factor in driving down business travel costs is not long term environmental impact, but short term responses to the (then) current business climate. They report that, of the 15 per cent of business travellers who anticipated travelling less in the forthcoming year, three out of five respondents (57%) would be doing this in response to declining business or cost issues and only one per cent as a result of a company environmental policy.

[13] Returning business functions or manufacturing to the UK where previously they had been outsourced to another, cheaper, country.

[14] http://www.newsroom.barclays.co.uk/content/Detail.aspx?ReleaseID=1592&NewsAreaID=2. This is based on a survey of ~2500 companies but the original report on the findings could not be found. This is the link to the press release

They comment on this by saying: "2009 will see the environment make gains as business travel is trimmed back in the face of economic uncertainty. But it is sad that this is not due to firm policies putting sustainability at the heart of the business process. These policies would ensure that we crystallise long-term gains: both for the environment and for businesses in terms of bottom line and improved competitiveness. It makes commercial sense to nurture green shoots."

Another indicator of this 'disconnect' is reported in a Carbon Trust report from 2011[15] (cited in GAP,2013) which demonstrates how low a strategic priority travel is for FTSE100 companies based on their publicly stated environmental targets as whilst 132 carbon targets and 58 waste targets were identified, only 8 targets relating to transport were found.

Interestingly, however, in their own questionnaire survey of over 100 businesses, GAP demonstrated that carbon emissions were cited relatively frequently as a motive to reduce business travel, second only to cost as an issue, but higher than regulation and productivity (GAP, 2013) (Table 2.2).

Table 2.2: Factors contributing to a desire to reduce business travel by senior managers

What factors make senior management in your organisation want to reduce business travel?							
	Cost	**Carbon emissions**	**Meeting legislation**	**Employee health**	**Air quality**	**Greater productivity**	**Major disruptions**
A little	17%	41%	42%	55%	42%	48%	47%
A lot	79%	51%	21%	32%	18%	36%	21%
Not at all	4%	7%	38%	13%	40%	16%	32%
N=	111	111	106	110	107	108	106

Source: Adapted from GAP 2013, p29

In a similar study of 158 of the top 500 FTSE companies, WWF/Critical Research (2011) found 86% of companies were either reducing their carbon footprint from business travel or intended to do so with the main benefits recorded as: significant savings to travel budgets, reduction in companies' carbon footprint; increased flexibility for staff and improved work-life balance; ability for staff to continue working during a disruption and new culture of working and collaborating – questioning the need to travel.

Therefore, evidence does exists of a positive relationship between the bottom line and 'greening' of business practices (e.g. Babiak and Trendafilova, 2011; Bansal and Roth, 2000; Nidumol et al., 2009) but it is a clear secondary motive to cost reduction as one of the key drivers of the adoption of sustainable behaviour (including travel). In addition to the evidence cited above, evidence for this also

[15] Carbon Trust Advisory Services Limited (2011) Raising the Bar, desk based research by Carbon Trust Advisory Services Limited, April 2011.

came through strongly from the qualitative interviews undertaken with umbrella bodies as part of this study (Pangbourne et al., 2015). In the interviews, the most common reason mentioned by interviewees regarding motivations for *changing transport and travel practices* was the potential to ultimately reduce business costs and be more efficient. When other issues were mentioned (such as a regulatory or environmental issues), they still tended to be either linked to costs or considered subservient to the economic imperative. It was clear from the interviews that changing private sector business practices for purely environmental reasons rarely occurs but, despite the environment not being a leading driver of behavioural change *per se*, the interviews revealed that many organisations (of all types) realise that environmental performance and cost reduction are inherently linked. In addition to cost reduction, environmental improvement is generally considered as a subsidiary benefit; creating a win-win situation that also addresses changes required by regulation.

This apparently clear relationship between efficiency and cost savings suggests a business case for fuel and energy efficiency and broader resource efficiency strategies yet, in reality, many studies find a more complex picture. For example Banks et al. (2012) analyse a number of papers which explore the "energy efficiency paradox" whereby cost effective, low risk investments in energy efficiency are not undertaken in the private (and public) sectors. The adoption of energy efficient practices involve additional factors (such as upfront costs and impact on cash flow, disruption during installation and 'bedding in' time, skills and know-how; image and reputation) to the consideration of profit or growth alone and this could partially explain this paradox. In fact, the evidence suggests that companies are not necessarily the rational utility maximisers of neo-classical economic theory – i.e. the idea that actors will act fully upon detailed weighing up of all the monetary costs and benefits. This is not to discount the importance of price signals and costs in organisational decision-making, but only to situate these kinds of reasoning and drivers within a larger context where other factors also come to play.

Banks et al. (2012) suggest that organisational behaviour is better understood using theory which understands company behaviour as "social-technical" in character i.e. companies, and the supply chains in which are they embedded, are constructed from individuals and groups of individuals who act in ways which make sense in the context of their local business culture, the social relationships they share and the material and technical infrastructure which guides choice and opportunity. Therefore energy efficiency practices (including sustainable business travel) are not as strongly associated with the practice of green growth as would be expected from a neo-classical economic account of organisational behaviour. Rather, energy efficiency will be associated with green growth to the extent that it is perceived as having a strategic value. Strategic value is considered to be

primarily about longer term competitive advantage and may not involve growth in the short or medium terms or even profit over those periods.

Evidence on the role of perceived long-term competitive benefit to the organisation *vis a vis* profit is reviewed further as part of the Conceptual Model components proposed in Section 3.2.6.

2.4.3 Achieving Green Growth through business travel behaviours

We are, then, interested in the direct and indirect behaviours taken at the individual and organisational level which result in the various flows of movement identified in our typology of business travel movement/flows outlined in the previous section. In the light of our broad definition of business travel, the associated behaviours are numerous and can be classified according to whether the actor undertaking the behaviour is the individual employee or the organisation themselves. How these behaviours fit within business decision-making – and any decision-making driven by issues of sustainability - is very far from clear. It is the decision making processes behind these 'behaviours' which need to be understood and measured in order to develop a segmentation of businesses and this is the focus of Section 3.

During the course of the evidence base review, 50 separate behaviours were identified as being linked to the four domains of travel behaviour identified in our typology[16]. **Table 2.3** comprises the 'long list' of behaviours identified in this study. These are split into behaviours which are decided upon and applied at the organisational level, and those undertaken by and largely decided upon at the individual (employee or customer) levels. Organisational behaviours largely take the form of company policies or *procedures*. These could be further categorised into those with a direct relationship to one or more of the four domains of business travel (e.g. travel planning or fleet management) or indirect relationship (e.g. working hours, expenses policy or health and safety policy). The direct/indirect distinction has not been indicated in the table as the distinction is not necessarily always clear.

[16] In the creation of this list, decisions had to be made about the level of detail to include. For instance, 'cycle facilities' could include many separate measures including: cycle parking, cycle storage, showers, bicycle repair facilities, cycle information; 'parking cash out' could include payment for cycling to work etc; and 'expenses policy' could include the rate paid for business trips undertaken by different modes. Hence, this list contains many items which themselves could include many individual measures.

Table 2.3: Individual and organisational level travel behaviours and the travel domains to which they apply

	Business	Commuting	Customer	Logistics
ORGANISATIONAL PROCEDURES				
Backhauling (filling empty loads on return journeys)				✓
Car sharing scheme	✓	✓		
Carbon management	✓	✓	✓	✓
Company car policy	✓	✓		
CSR Strategy	✓	✓	✓	✓
Cycle facilities	✓	✓	✓	
Cycle-to-work scheme	✓	✓		
Cycle 'pools' for work trips	✓			
Delivery policy			✓	
Delivery slots				✓
Driver training (incl. ecodriving)	✓	✓		✓
Driving hours				✓
Environmental Management System	✓	✓	✓	✓
EV charge points	✓	✓	✓	✓
Expenses policy (incl. mileage allowances)	✓			
Fleet management (incl. grey fleet)	✓	✓		✓
Flexible/remote working policy	✓	✓		
Public transport provision (free or subsidised)		✓	✓	
Free fuel	✓	✓		
Health and safety policy	✓	✓	✓	✓
Location (of offices/ outlets/ distribution centres etc.)	✓	✓	✓	✓
Logistics systems/ ICT			✓	✓
Omnichannel retailing			✓	✓
Opening hours		✓	✓	
Overtime policy	✓	✓		✓
Parking cash out		✓		
Parking management	✓	✓	✓	
Procurement policy				✓
Providing mobile devices	✓	✓		
Relocation policy		✓		
Returns policy			✓	
Risk management policy	✓	✓	✓	✓
Season tickets		✓		
Stock management				✓
Supply chain management	✓			✓
Teleconferencing (investment in)	✓	✓		
Travel management company (use of)	✓			
Travel planning	✓	✓	✓	
Travel policy	✓			

Videoconferencing (investment in)	✓	✓		
Working hours (incl. shift work)	✓	✓		✓
INDIVIDUAL BEHAVIOURS				
Car choice (own or car pool)	✓	✓	✓	
Car sharing	✓	✓	✓	
Ecodriving	✓	✓		✓
Flexible working		✓		
Internet shopping			✓	
Mode choice	✓	✓	✓	✓
Tele/Videoconferencing	✓	✓		
Teleworking		✓		
Vehicle / fuel choice	✓	✓		✓

As well as categorising these behaviours as to whether they take place at the individual or organisational level, these behaviours could potentially be classified in a variety of other ways, including whether they are 'push' or 'pull' measures[17] (Van Malderen et al., 2012), or according to the 'avoid, shift or improve' three-fold taxonomy[18]. In any case, given the limited space on future questionnaires and the need to focus future engagement strategies, the long list of behaviours identified in Table 2.3 will need prioritisation. We return to this in Section 4.2 with the associated research recommendations in Section 5.2.

2.5 Attributing responsibility for travel behaviours to businesses

Segmentation of businesses in relation to their travel will require an understanding of the decision-processes commonly associated with each type of travel. However, in some categories of travel identified in our typology (e.g. goods deliveries, commuting or customer travel), it is not clear which organisation (or whether *any* organisation) is the (sole) "owner" of the travel flow in question and therefore who makes decisions regarding it. For instance:

- **organisations generally do not consider commuting or customer travel as their responsibility** (travel planning is the only formal means of including commuting within business' thinking; parking management is the only procedure which brings both elements directly into an organisation's focus). This is akin to the notion of 'personal responsibility' in the literature on individual behaviour change which demonstrates a relationship between feelings of responsibility and pro-environmental or health behaviours (Halpern et al., 2004).

[17] i.e. based on introducing a new cost or regulation (pushing people or organisations to change behaviour) or on introducing an incentive to make a behaviour more attractive (a 'pull' measure)

[18] 'avoid' referring to reducing the need to travel; shift referring to encouraging the most energy efficient transport mode; 'improve' focuses on fuel efficiency through eco-driving and optimisation of vehicles).See UNEP Transport: http://www.unep.org/transport/about.asp

This is important because it has a bearing on how to engage with organisations (and develop legislation/policies). So, the notion of 'responsibility' may be an important part of corporate mission or senior management values and a segmentation variable (see Section 3.4).

- **responsibility can be difficult to identify** – e.g. is the transport of a firm's products using a third party logistics firm the responsibility of both the logistics firm *and* the company producing the products?

Thinking about the second issue requires a systems perspective that situates an organisation's activities within its supply chain. Such thinking has been undertaken with respect to allocation of Greenhouse Gas (GHG) emissions (principally carbon dioxide emissions) for the purposes of carbon accounting and reporting. Government guidance on this issue is derived from the procedures developed by the World Resources Institute in their Greenhouse Gas reporting protocol. Specialised guidance has also been developed for freight transport operations by the DfT and DEFRA [19].

The Greenhouse Gas reporting protocol distinguishes between different sets of emissions (termed Scopes) based on different degrees of 'ownership' of them by an organisation as follows:

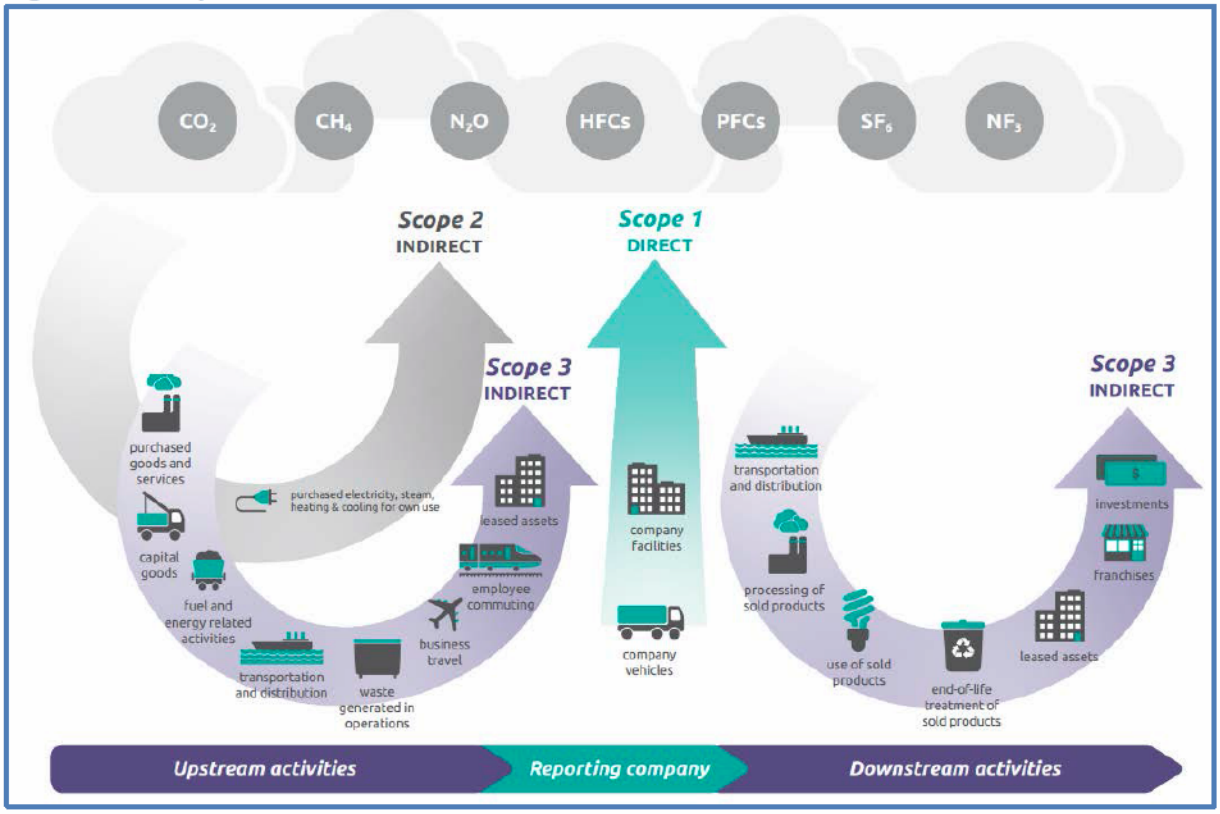
- **Scope 1 emissions** are directly emitted GHG emissions arising from burning fuel in vehicles that are owned or under the direct control of an organisation. This includes emissions from organisation-owned fleet vehicles (including vehicles on finance leases). Importantly for transport emissions this would include fugitive refrigerant gas emissions from refrigeration plant on vehicles and in buildings (such as cooled distribution warehouses)
- **Scope 2 emissions** are direct emissions from consumption of electricity where that electricity is generated and transported by others to the reporting organisation
- **Scope 3 emissions** are 'other' emissions which are not under the direct control or ownership of the reporting organisation. This includes the indirect embodied emissions in the goods and services consumed by the organisation (upstream emissions) and the emissions that are created as a result of the consumption and disposal of an organisation's products and services (downstream emissions). Emissions resulting from commuting are Scope 3 emissions as is business travel where the means of business travel is not owned or controlled by the reporting organisation. For example, when an employee flies somewhere on business using an airline the emissions from the flight are classified as Scope 3 for the reporting organisation. For the airline itself they are Scope 1 emissions. Similarly, if an

[19] Guidance on measuring and reporting Greenhouse Gas (GHG) emissions from freight transport operations. www.gov.uk/government/uploads/system/uploads/attachment_data/file/218574/ghg-freight-guide.pdf

employee uses a vehicle that is wholly owned or controlled by their organisation for business travel, such as a pool car, then the emissions from that trip are Scope 1 to the reporting organisation. The emissions could be reported as Scope 3 by the organisation employing the services of the business in question and therefore creating the need for the business trip.

The guidance on allocation of carbon emissions recognises these distinctions in its categorisation of Scope 3 carbon emissions as shown in Figure 2.1.

Figure 2.1: Scopes 1,2 and 3 emissions



Source: World Resources Institute (2013). Note this categorisation of emissions does not explicitly identify emissions from customer travel to procure products. This should be included as a downstream source of emissions. This source of emissions could be considered a sub-category of "transportation and distribution".

This separation of emissions into three Scopes ensures that the same source of Scope 1 emissions is not allocated to two separate organisations at once and thus provides a means of allocating responsibility. For instance, the emissions from the transport of an organisation's products using a third party logistics firm should not be allocated to both the logistics firm *and* the company that produced those products.

In regard to Scope 3, DfT guidance recommends that only emissions from the vehicles themselves should be reported, not emissions from the wider system supporting the transportation of goods. For

example, the emissions generated by the offices of the logistics company or from the refrigerated warehouse where the goods are stored prior to being transported on the next stage of their journey are not considered necessary to report for the purposes of calculating Scope 3 emissions from freight transport. The WRI guidance recognises 15 different categories of Scope 3 emissions that could be allocated to the organisation both upstream and downstream of the organisation in question. Most of these will have a transport or travel component. So using this perspective a number of classes of business travel and transport can be discerned:

- **A travel flow that is wholly "owned" or controlled by the organisation** where the organisation owns (or controls such as in a leasing arrangement) the transport vehicle or mechanism. For example where an organisation delivers the products that it manufactures using its own vehicles
- **Travel flows that are attributable to an organisation where it does not own the means of transport.** For example business travel where the traveller uses public transport or where a manufacturer employs a logistics organisation to transport its products
- **Travel flows that are induced by the organisation upstream or downstream in the supply chain.** For example, upstream from suppliers; downstream to waste service providers or through the supply chain to the end-consumer or even post-consumer for final disposal or recycling.

Organisations will need to determine which Scope 3 emissions are significant. A complete dataset on which to base Scope 3 work-related travel emissions may be difficult to identify. This could be due to a lack of data being available for practical or commercial reasons, such as the time and cost involved in obtaining the data. Nevertheless, this means of allocating grades of ownership is very useful for policy and reporting purposes. To illustrate how the allocation and ownership of emissions, including transport emissions, has been transposed into various energy and carbon reporting frameworks a summary of these is shown in Table 2.4.

Table 2.4: Carbon reporting frameworks and the inclusion of transport emissions

Scheme	Qualification	Relevant to transport?
Energy Performance Certificates (EPC) and Display Energy Certificates (DEC)	EPCs required on construction, sale or rental of all non-domestic buildings DECs required for all buildings occupied by public authorities over 500 m2	No direct relevance to transport. Indirect relevance in raising the salience of an organisation's carbon emissions
Carbon Reduction Commitment and Energy Efficiency Scheme (CRC EES)	Compliance required for organisations consuming >6000 MWh electricity via half hourly meters in 2008.	No direct relevance. Emissions from energy used for transport purposes is excluded from the CRC. This includes electricity for charging electrical and hybrid vehicles. As for EPCs, there is an indirect relevance in raising the salience of an organisation's carbon emissions
EU Emissions Trading Scheme (EU ETS)	Applies to UK's largest emitters of CO2 from direct combustion of fuels	No direct relevance to transport at the moment. However legislative process underway to include aviation emissions in EU ETS in the near future. Amendments to EU ETS are expected to be agreed by the commission in mid-2014. Indirect relevance in raising the salience of an organisation's carbon emissions
Mandatory Carbon Reporting as part of the 2006 Companies Act	For all large companies listed on London Stock Exchange from Oct 2013. May be extended to smaller companies in due course.	Yes. Covers Scope 1 and Scope 2 emissions (electricity) Scope 1 includes emissions from transport where vehicle is owned or controlled by the company.
Environmental Rating Schemes for Non Domestic Buildings	Voluntary assessment for environmental performance using accredited schemes such as LEED[20] and BREEAM[21]	Yes. Both LEED and BREEAM have travel related criteria for low carbon commuting. These include credits for provision of equipment for cycling to work and proximity to public transport routes.
Certified Environmental	E.g. ISO 14001[22], EMAS[23]	Yes. If emissions from transport are judged to be significant according to the rating systems established

[20] Leadership in Energy and Environmental Design is a third-party certification process
[21] Building Research Establishment Environmental Assessment Method or BREEAM is an environmental assessment method and rating system for buildings and large-scale developments (www.breeam.org)
[22] ISO14001 is the International Standards Organisation standard for environmental management
[23] EMAS is the European Eco-Management and Audit Scheme.

Management Systems (EMS)		by the EMS, then, in order to maintain the EMS's accreditation it must demonstrate that it is monitoring transport emissions and has procedures in place to manage them.
Sector agreements and initiatives e.g. the Higher Education Funding Council for England (HEfCE) requirement for a Carbon Management Plan	Varies by scheme/sector. E.g. the HEfCE scheme covers all higher education establishments eligible to apply for HEfCE funding	Potentially yes – depends on the scheme. The HEfCE scheme covers Scopes 1,2 and 3 emissions -i.e. emissions from vehicles owned by the organisation (Scope 1) and indirect emissions from business travel and commuting (Scope 3 where vehicles are not owned or controlled by the organisation).
Emissions from local authority own estate and operations (former National Indicator 185)	All local authorities must report on this indicator on an annual basis	Yes. Involves a calculation of CO2 emissions from analysis of the energy and fuel use in local authorities' buildings and transport – Scope 1 and 2 emissions. Discretionary whether to report Scope 3 emissions including emissions from business travel and commuting (where the local authority does not own or control the vehicle).
Cleaner Road Transport Vehicles Regulations (2011) (former EU Cleaner Vehicle Directive, 2009)	Public sector organisations must consider potential lifetime vehicle energy consumption and environmental impacts when purchasing or leasing vehicles.	Yes. Every time public sector organisations purchase a vehicle (including for public transport services, but military are exempt), they must account for energy consumption and whole lifetime costs. As part of the Government Sustainable Procurement Framework, Government buying standards have been developed for a variety of goods and services including motor vehicles (LES, 2011).
Greening Government Commitments scheme (Defra 2010, 2011)	In 2010, UK Government departments - operations and procurement - were set targets of reducing GHG emissions by 10% 'from the whole estate and business related travel'	Yes - required to report on emissions and expenditure from official business travel and delivery and distribution via transport not owned by the organisation. This *excludes* international rail and air travel, but this may be included on a voluntary basis. There is a target to cut domestic business travel flights by 20% by 2015 from a 09/10 baseline. "Best practice reporting would also include a breakdown of expenditure between different types of travel". The Treasury says, "Whilst, for some organisations, [business travel emissions] may be relatively small in relation to the overall carbon footprint, they have a significant role to play in changing the culture of an organisation in terms of carbon management. It is for this reason that they have been included as part of the

		minimum requirements for public sector reporting." (HM Treasury, 2014, p17)

Table 2.4 indicates that transport emissions are a feature of some schemes and regulated reporting requirements so long as these are Scope 1 emissions - i.e. the organisation owns or controls the vehicle. However, all schemes bar the HEfCE and the Greening Government Commitments schemes place reporting of Scope 3 emissions as a *discretionary* option. This will generally include business travel and commuting and the upstream emissions associated with transport of goods and services to an organisation as well as the downstream emissions associated with consumption and disposal of an organisation's goods and services.

These distinctions of grades of ownership of emissions are relevant to thinking about the segmentation of businesses in relation to their travel for two main reasons.

1. This offers a means of categorising all emissions and consequently the travel flows that are causing those emissions. A policy targeted at an organisation's travel will have a greater influence if it targets travel flows causing Scope 1 emissions – i.e. where the vehicle is owned or controlled by the organisation. Of course, one organisation's Scope 1 emissions are another's Scope 3 - so by tackling Scope 1 across the piece, we are also tackling Scope 3. However, for most sectors, an organisation's travel emissions are often Scope 3 as organisations frequently do not own or control the means of transporting their services, goods or staff as these are catered for by the freight, logistics and passenger travel sectors. So, by only tackling Scope 1 emissions, this means the responsibility for shouldering reductions in the nation's Scope 3 travel and transport emissions entirely fall on the freight, logistics and passenger travel sectors – albeit that policy targeted on these sectors will be more tractable and easy to deliver.
2. Secondly, these distinctions of grades of ownership are relevant because they impact decision making. The categorisation has been used to create policy, regulation and to define reporting requirements, hence organisations will be factoring consideration of Scopes 1 and, to a lesser extent, Scope 3 emissions from travel flows into their decision making. Given that the various reporting frameworks apply to different sectors, this has a bearing on the segmentation. For example, emissions, and hence travel flows, from company owned vehicles will be more salient to very large 'listed' companies as a result of the reporting requirements of the

Companies Act 2006. In the public sector, Local Authorities are also compelled to consider their Scope 1 travel emissions as a result of the former NI 185[24] annual reporting requirement.

2.6 Conclusions – Section 2

So far we have established that the topic of business travel, taken to be the scope of this review, encompasses a very wide range of end behaviours. We have offered a typology of these flows and a long-list of behaviours related to business travel at the organisational and individual levels. We have also highlighted that there is very little, and highly partial, material on the relationship between business travel and growth, particularly at a level which allows us to understand differences between organisations. Reports from organisations themselves need to be interpreted in the light that they have usually been produced for a particular constituency and *"there may be a tendency to present the facts selectively in order to make a particular point (that the company has met its obligations, that it is actively engaging with a community campaign, that it is helping its customers, that it is a good employer, that it is acting to maximise profit….)"* (Bonsall, 2009). But most importantly, the evidence is generally plagued by a large number of unquantified cost and savings estimates and a lack of empirical data so that it mainly offers qualitative accounts of how business travel and certain 'green' behaviours are related to (perceived) productivity and growth at the organisational level.

In the following section, we present an overview of the main bulk of the evidence review which attempted to understand the determinants of business travel and the decision making processes which underpin them.

[24] Under National Indicator NI 185, local authorities were required to calculate the carbon emissions of their buildings and services on a yearly basis and report the results to DEFRA. This information sharing process still exists, administered no by DECC. See: https://www.gov.uk/sharing-information-on-greenhouse-gas-emissions-from-local-authority-own-estate-and-operations-previously-ni-185

SECTION 3: UNDERSTANDING DECISION MAKING RELATING TO BUSINESS TRAVEL

Key findings

- **No evidence was found for a commonly reported typology of the business population in relation to determinants of business travel.**
- **A Conceptual Model of decision making for business travel has been produced from this review.** This balances both the external foci of organisations with their internal and resource-based issues, whilst also acknowledging that **business travel may ultimately be dictated first and foremost by the nature of the business.**
- **The concept of 'travel dependency' - how salient travel is to an organisation defined by the amount of travel undertaken as a proportion of turnover or carbon footprint will have a pivotal role in any segmentation model.**
- **Other core constructs in the model include: operating environment (including firmographics), organisational strategy (including corporate mission and values), organisational resources, place-based factors and people's motivations.**
- **The diversity of transport (and energy) behaviours has some patterning by size, sector and the interaction between the two**. However, any segmentation along these lines would be too coarse grained to be meaningful given the diversity in behaviours and determinants within these parameters.
- **Organisational factors, especially the corporate mission, structure of the organisation and management values are more instructive than external factors to understand why specific businesses behave as they do.**
- **In turn, organisational structure and culture are more important than individual attitudes in the implementation of successful sustainable travel strategy.** In any case, whilst there might be both organisational and personal reasons for individuals' behaviours, the values of employees are not independent of those of the organisation as the two are not simply randomly assigned to each other.
- **Organisational culture is the pattern of shared assumptions within an organisation and captures 'the way things are done'.** However, it is difficult to measure as distinct from corporate mission and management values/attitudes.
- Corporate mission will determine orientations around profit and social responsibility but, regardless of the focus, **sustainable transport issues have to be integrated into business strategy decisions in order to support long-term thinking rather than short-term profit maximisation.**
- **Making energy use visible and salient is an important first step on the way to energy efficiency becoming a strategic objective.**
- **Several important structuring factors are consistently found to influence business travel** including through supply chains: **decision support systems** (travel information management, expenditure management, whole cost accounting, environmental management systems); **corporate travel policies; corporate travel manager** (with status) and **outsourcing travel management.**

- **Budgetary and decision making responsibility can be spread across different departments with distinct orientations and values,** resulting in no one having an overview of whole financial impact and taking responsibility.
- **Whilst company policy is important, it is only effective if supported by senior management** although the role of individual concerns of senior management is disproportionately more important in SMEs.
- **Up to three quarters of employees are responsible for choosing how they travel. If employees themselves decide which mode to choose for travel, the average distance per year increases.**
- **However, over rigid rules can lead to non-compliance. Thus, employee involvement in decisions is also key: encouraging individuals in businesses to make sustainable transport choices requires a** balance between allowing them the discretion to act and centralising, formalising and embedding the travel policies.
- **Commuting and customer travel is typically seen by senior managers (and possibly commuters/ shoppers themselves) as almost entirely outside the formal responsibility of the employer.** Sense of responsibility relating to these travel domains could be an important differentiator of businesses.
- **Most emerging business travel trends are underpinned by developments in ICT.** These, in turn, require resources including finance, skills, knowledge, prior learning and networks.
- **Organisations tend to be risk averse in approving investment in new equipment which will deliver 'gains' but will devote more resource to *avoiding losses*.** This means companies can fail to account for the true cost of failing to make sustainable transport investments if the advantages of doing so are framed incorrectly.
- **Transport-related factors are important in business location decisions but are not the top factor, and appear to be diminishing in importance in favour of the labour force, innovation culture and quality of life.** This review found very little evidence that links transport or digital communications as a location decision making factor to the actual travel behaviours undertaken by that business, especially briefcase travel.
- Whilst the evidence hints at the relative importance of the constructs in the Conceptual Model, the interactions, dependencies and relative importance needs to be explored in relation to specific behaviours and validated through empirical research.

3.1 Business decision making

3.1.1 Introduction

A segmentation of businesses to inform targeted engagement and policy relating to business travel will only partially be based on *what* they do (the four domains of travel and associated behaviours outlined in Section 2). Instead, a meaningful segmentation will cluster businesses according to *why* they do what they do. Hence, this section reviews the evidence relating to organisational decision making processes relevant to business travel.

This understanding has been developed through systematic searches of academic and grey literature which address issues of sustainable and energy efficient behaviour as well as business travel behaviour primarily at the organisational level. As such, it offers a framework of decision making for business travel which balances both the external foci of organisations with their internal and resource-based issues, whilst also paying attention to the fact that the amount of business travel may ultimately be dictated first and foremost by the nature of the business.

In a nutshell, the final amount of travel in each of the 4 domains in each organisation and its energy/CO_2 intensity is determined by:

- the **nature of the 'business'** undertaken and its operating environment (e.g. sector, size, position in supply chain, market location, regulation)
- many different **organisational factors** which determine the *procedures* an organisation adopts and the final *behaviours* undertaken by employees.

In the following sections, we suggest '1' determines broadly how *dependent* an organisation is on each of the 4 domains of travel, but '2' determines why organisations with the same levels of dependency might adopt different procedures and their employees might adopt different travel behaviours.

3.1.2 Existing approaches to the segmentation of businesses

The evidence review has shown that there are a number of suggested issues which are important in understanding business behaviour. Indeed, **there is a rich body of theoretical and empirical literature that identifies the key dimensions on which to classify businesses.** Nevertheless, no studies provide an illustration of a segmentation model that fully demonstrates how this could be carried out for the full population of firms (small/large/public/private). And more specifically, it remains of some conjecture how these would relate to sustainability behaviour and even more speculative as to how these relate to business travel behaviour.

It is not the purpose of this section to review all the parameters on which businesses have been distinguished in the literature. The *relevant* evidence in this regard is reviewed in Section 3.2 – 3.6. The important point is that it will be necessary to connect the suite of potential macro, meso and micro 'drivers of business behaviour', i.e. the specific combination and balance between external/internal aspects for the company in 'doing what it does'. Any basic text book on strategic management says a company deals with the macro-environment (political, economic, social and

technical – hence sometimes see PEST analysis[25]), the operating environment (competitors, markets, customers, regulatory agencies, stakeholders) and the internal environment (e.g. employees, managers).

As an overview of this literature, a review done for the Department of Business, Innovation and Skills (BIS) by ICF GHK (2012[26]) identified five parameters upon which firms could be segmented in relation to any area of their practice or operations:

- **Firmographics**: the relatively easily quantifiable characteristics of the firm such as its size, age, sector and location;
- **Organisational culture**: covers the purpose and orientation of the firm as a whole, related to its corporate structure arrangements and ownership;
- **Psychographics**: seek to dig deeper into the psychology, motivation, background and experience of the owner / entrepreneur;
- **Absorptive capacity**: The collection of factors affecting a firm's ability to acquire and use different types of knowledge and resource, thus capturing a firm's ability to effectively deal with change; and,
- **Operating environment**: to the external dimension: the market position of the firm; the regulatory environment it operates within and competitive structure of its product market.

What is clear is that the limited (case) studies of businesses in the literature come out with a 'basket' of factors which influence behaviour and **that the evidence highlights the immense complexity that sits behind business decision making.** A list can be created from this but there is a) diversity from study to study and b) this list is shown to vary in content and balance by sector/size but rarely in a common and repeated manner. These are almost self-evident theoretical propositions but the problem is that the 'balance' is clearly an empirical question – and the material reviewed for this study shows that there is no comprehensive and population level empirical material on how the external/internal combine to determine business behaviour in relation to business travel.

In the remainder of this section, we highlight the research which connects how to relate business behaviour to decision making frameworks and feed this into a conceptual model which we propose to capture those constructs and relationships most relevant to business travel behaviour on which future research can be based.

[25] Political, Economic, Social and Technological analysis) describes a framework of macro-environmental factors used in the environmental scanning component of strategic management

[26] Customer Insight – SME Growth Segmentation Scoping. Review of literature and business surveys

3.1.3 Existing frameworks to understand sustainable business behaviour

In the review for this study, no evidence was found for a commonly reported typology of the business population in relation to business travel. Also, no evidence was found of any comprehensive sub-division in terms of the relationship between economic growth, greenness and organisational travel. However, an extensive and theoretically rich (though somewhat less empirically rich) body of literature was uncovered which addresses *dimensions of sustainability* more broadly from which we might inform a model of decision processes related to business travel behaviour. The remainder of this section is used to summarise the methods and results from a subset of 8 studies (Table 3.1) to represent the breadth and depth of the evidence base and to provide an overview of the decision making frameworks and constituent factors that emerge in this body of work.

These 8 studies were the only pieces in the review which tried to identify the determinants of business related pro-environmental behaviour whilst at the same time were deemed to have used a robust methodology. Nevertheless, caution must be applied to the results due to the generally small sample sizes used in the studies with the possible exception of the first one (Bansal and Roth 2000). The majority of the studies (5) are purely qualitative either using interviews with a cross section of firms or taking single case studies, but in either case relying on very small sample sizes in all but one of the studies. Only two of the studies used quantitative data, with only one of these offering a robust sample size. One is a systematic literature review. The majority investigate corporate environmental behaviour in broad terms, although one focuses specifically on green supply chain management.

In summary, the studies together offer a suite of concepts that come through as important determinants of pro-environmental business behaviour. Key points:

- Whilst the distinction is not always made explicit, all conclude that behavioural outcomes are **a product of external and internal/organisational level factors**, although the degree to which higher level macro factors are deemed noteworthy (e.g. 'the political system' Lynes & Dredge (2006) or 'foundational factors' (climate change) Olson (2009)) differs.
- A common thread is the issue of **competitiveness** either through cost efficiency or product differentiation. The idea is that the motivation to gain competitive advantage through 'green' products or actions, or the belief that it can be achieved by this route, is what will differentiate one business from another.
- **Regulatory context** is also identified as important. Here the differentiating factor is the motivation to either avoid regulation or comply with it, captured by Bansal and Roth's concept of 'legitimation'. The inference is that not all companies are equally driven to

deliver or exceed expectations in this area which in itself may reflect norms in any given sector.

- Linked to both of the above factors, the **role of stakeholders** and associated questions of image and pressure to perform in a certain way is seen as either an external driver or a reputational risk to be mitigated.
- The influence of powerful individuals and **individual values** also emerges as an important factor, although having the mechanisms in place to act on this concern ('the degree of discretion possessed' (Bansal and Roth, 2000) is also acknowledged.
- None of the studies suggest there is just one or two overriding factors but instead that all the drivers are independent and reinforce one another. For instance, if competitive pressure from rapidly changing consumer preferences toward ''green'' products is high, the reputational risk for businesses that do not take steps to be more efficient and ''green'' will also be higher.

All of these factors are essentially captured by the model presented by Bansal and Roth (Figure 3.1) which incorporates each of the key factors, even though this model is less clear on the difference between internal and external drivers than some of the other studies. However, Bansal and Roth identify two factors not captured in other studies. This includes *issue salience*, which itself will have a bearing on the level of motivation to comply with regulation and manage reputation, and *field cohesion* which is about the degree to which an organisation is networked with other organisations.

Figure 3.1: Model of corporate ecological responsiveness by Bansal and Roth (2000)

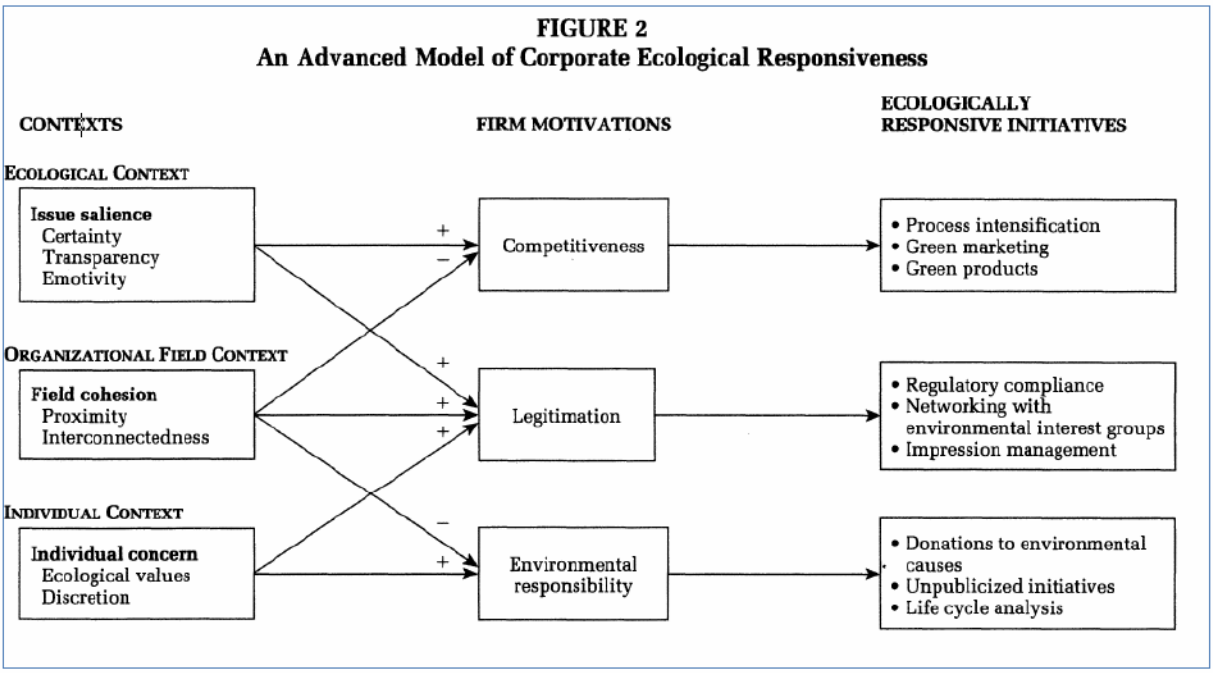


Table 3.1: Summary of 8 studies offering insights into sustainable business behaviour

Reference	Type of study	Relevant findings

Bansal & Roth (2000)	Qualitative
	53 firms in the UK and Japan
	Analytic induction applied to survey data to develop a model of corporate ecological responsiveness
		Propose a framework of 'corporate ecological responsiveness'. Talks of three motivations for corporate 'greening':
		• **Competitiveness** (the potential for ecological responsiveness to improve long-term profitability through, for example, increased **resource efficiency**, enhanced **reputation** with customers and enhanced reputation in the labour market).
		• **Legitimation** (the desire of a firm to improve the appropriateness of its actions within an established set of regulations, norms, values, or beliefs e.g. complying with legislation, establishing an environmental committee or environmental manager position to oversee a firm's ecological impacts and advise senior management, developing networks with local community representation, conducting environmental audits, establishing an emergency response system and aligning the firm with environmental advocates)
		• **Environmental responsibility** (a motivation that stems from the concern that a firm has for its social obligations and values. E.g. the redevelopment of previously used land to green areas, the provision of a less profitable green product line, using recycled paper and the replacement of retail items or office products with ones more ecologically benign). Firms motivated by ecological responsibility often pointed to a single individual who had championed their ecological responses. The decision process was often based on the values of powerful individuals or on an organisation's values rather than a widely applied decision rule.
		• Three contextual dimensions influenced the overarching motivations for sustainable business practices:
		  ○ **issue salience** (the extent to which a specific ecological issue has meaning for organisational constituents determined by certainty, transparency and emotivity). The more salient an issue is (i.e. a business practice with easily measurable impacts that can be attributed to the firm and engage public interest) the more likely firms motivated by competitiveness or legitimation are to address it.
		  ○ **field cohesion** (the intensity and density of formal and informal network ties between constituents in an organisational field.

		○ individual concern (degree to which organisational members value the environment and the **degree of discretion they possess** to act on their environmental values) These "contexts" are stronger or weaker depending on the size of the organisation and the sector in which it operates. For example the oil industry has high issue salience for energy issues and also high field cohesion – the supply chain is intensively networked – companies build up long standing and trusted relationships with one another frequently using one another's services. Staff will often move from one of these companies to others further strengthening formal and informal ties and connections. In the case of the oil and gas industry, these two factors (high issue salience, high field cohesion) will tend to create an environmental motivation based in the need for "legitimation".
Lynes & Dredge (2006)	Qualitative + review of published and unpublished literature Case study of Scandinavian Airlines (SAS)	Suggests the drivers of environmental practices fall into 1 of 4 systems: • the market system • the political/institutional system • the scientific system • the social system. Organisational level influences on company policy relate to: • reducing **cost** and increasing **efficiency** • avoid or delay **regulatory** action • gain a **competitive** advantage • enhance or reinforce a positive **image** • **comply to pressure** imposed by banks, insurers, clients, suppliers, the public • boost **productivity**. Other influences may include: • industry structure and level of **competition** • **legal** requirements • **market advantage** and PR [same as above] • perceived importance of **cost savings** • **moral obligations**. In SAS, the drivers for developing environmental policies were: the financial cost-benefit of environmental management; the regulatory setting; the desire to be a good corporate citizen;

		airline image and relationship with the airline community. This paper shows that government policy is just one factor in influencing environmental outcomes. Socio-technical environment and business operating environment also have an important role to play. **Political culture and regulatory setting is as important as hard legislation.**
Olson (2009)	Literature review Develops a framework for the drivers of environmental stewardship	Explains the drivers of sustainable business practices as a 'topography' as: • **Foundational drivers** (climate change and population growth) • Impacts that influence the global community (**security and safety concerns, public concern and pressure**) • **Risks** that need to be mitigated (**economic, regulatory, market, reputational, operational and supply chain**)
Preuss and Perschke (2010)	Qualitative and Quant analysis (N= 4 senior managers (interviews) & N = 200 customer and 66 employee surveys. Analysis of the CSR strategy and performance of a single case study (medium-sized fashion retailer in the UK)	Rather than the number of employees or turnover, use a qualitative approach to distinguish between small, medium and large businesses through their respective differences in the nature of the firm. This approach is based on Agency Theory[27] and resource-based views[28] and uses the following dimensions: • Ownership • Role of capital markets • Monitoring • Interaction with stakeholders • Managerial expertise • Organisational structure • Business objectives • Market type
Runhaar, Tigchelaar, & Vermeulen (2008)	Qualitative and Quant analysis (N= 17 firms in the Netherlands)	Suggests that **environmentally responsible behaviours can be quite differently motivated**. They differentiate 3 "types" of environmental leader: • large organisations who are green because their customers demand it

[27] Agency Theory deals with corporate governance, trust and accountability - specifically the relationships between the principal actors (ie shareholders who own the company) and agents (i.e directors who control the company).
[28] In contrast to looking at a firm from the product side. Looking at the resource position focuses on the strengths and weaknesses of the firm.

		• SME type A – green from an ideological perspective • SME type B - green because it is a commercial opportunity Each type sees barriers and incentives to environmental leadership slightly differently depending on their general orientation described above. This general distinction is then cross-cut by a) what sector the organisation operates within (this will influence perceived barriers and incentives) and b) the unique characteristics of the organisation. **So the adoption of green behaviour is motivated by a configuration of sector and the "type" of environmental leader (i.e. motivated by stakeholders, as a commercial opportunity and because it's the right thing to do).**
Walker et al. (2008)	Qualitative: interviews (N=7, private and public sector) Literature review Investigation of drivers and barriers of green supply chain management	Investigates the factors that drive or hinder organisations to implement green supply chain management initiatives. Identifies several drivers and barriers to environmental supply chain management and groups them into internal and external factors. • Internal drivers: organisational factors such as the **influence of key individuals** within the organisation and the **desire to reduce costs** by reducing waste and increasing efficiency • External drivers: regulation; customers; competition; societal pressure; suppliers • Internal barriers: costs; lack of legitimacy • External barriers: regulation; poor supplier commitment; industry specific barriers Whereas more external than internal drivers are identified, **the majority of barriers to green supply chain management tend to be internal rather than external** (key internal factor being costs). This study explored large private and public sector organisations and found, consistent with the lack of previous research, that **suppliers are not a significant driver of green supply chain management** projects. However, given the large size of the organisations interviewed, it would be overreaching to interpret the findings as relevant for small and medium organisations.
Williams & Schaefer (2013)	Qualitative: interviews with pro-environmental but 'normal' SMEs (N=9)	Suggest reasons for engaging or not engaging with environmental and climate change issues in general fell into the three categories of motivations (cf Bansal and Roth 2000) • the business case/win–win (**competitive** motivations) • the external business environment, including **regulation** (legitimation motivations) • personal engagement/values (ecological **responsibility** motivations)

Williamson et al. (2006)	Qualitative: interviews (N=31 manufacturing SMEs)	Suggests segmentation could be carried out in relation to the following main drivers of environmental business practice which is dominated by market-based frames: • **Motives**: business performance and/or regulation • **Business processes:** inputs and outputs.

3.2 Factors influencing business decision making relating to travel

3.2.1 Introduction

This section systematically addresses the question of what determines behaviour/ decisions in relation to business travel and what factors constrain or enable organisations to change practices and behavioural outcomes. The purpose of asking this is to identify the most meaningful parameters on which to segment businesses in relation to their travel behaviours.

Whereas in the previous section the overarching empirical evidence relating to business management and decision making was reviewed with special focus on sustainable behaviour in general, this section begins by highlighting some studies which have attempted to understand why some businesses behave differently to others in relation to their travel.

We then offer our own conceptual model of business decision making in relation to travel which has been developed as a bespoke output for this study. Each component in the model is based on the evidence review (including the qualitative interviews carried out for this study reported in Pangbourne et al. (2015). The bulk of this section therefore takes each model construct in turn and summarises the evidence to justify its inclusion and the potential survey questions that could capture this information in any further research towards a segmentation model.

3.2.2 Summary of studies on business travel decision making

Table 3.2 summarises eight studies identified in the review which were deemed to have both robust methodologies but also offers evidence on why organisations differ from each other according to some aspect of business travel. They comprise of two literature reviews, two primary data quantitative studies, two secondary data analyses and two mixed method studies. They range from talking about briefcase travel, to corporate travel policy and fleet management.

There are some striking similarities in the findings. Firstly, almost all studies separate the determinants of the travel behaviour by internal and external factors with further distinction between corporate and individual factors. However, the relative strength of these factors differs and it is difficult to generalise from these studies. The travel behaviour and the method of data collection will each have an important bearing. These studies are used in the next section (among others) which reviews the evidence on each of the constructs in the Conceptual Model.

Table 3.2: Summary of 8 studies offering insights into sustainable business travel behaviour

Reference	Type of study	Relevant findings
Aguilera (2008)	Literature review	Employee business trips (and tele/videoconferencing) are differentiated by company factors of sector, size and organisational features, as well as by personal factors such as job position, income and gender. These can be summarised in terms of the four following categories: • Internal (multi-unit companies and internal communication structures; nature of the knowledge to be exchanged) • external factors (internationalisation of the market and client relationships' geographical proximity) • process (reporting tools) • personal (position in the hierarchy, income, gender) He concludes that size and sector are not the most appropriate parameter by which the need for business travel should be judged. He also suggests the use of information and communication technology (ICT) may even be an incentive for business trips insofar as they allow organisational strategies which necessitate remote teamwork
Bjorklund (2011)	Quantitative survey of Swedish companies within food and forestry (N=50)	Uses a factor analysis to examine the drivers and barriers to adopting green procurement/ environmental purchasing of transport services. The environmental purchasing of transportation services are, according to the findings of this study, greatly influenced by: • **Management** • **Company image** • **Customers** (environmental demands, priorities) • **Suppliers** (availability, knowledge, awareness, ambitions) • **Means of control applied by government** and other authorities. Most factors with a great influence are to be found in the surrounding business environment of the company. **There seems to be more external factors as opposed to internal factors influencing the environmental purchasing of transport services**. Furthermore, this study also suggests that it is not only the number of factors, but also the size of the impact that makes the external factors influence greater than the internal.
Douglas and Lubbe (2009)	Literature review	In a study of corporate travel policy, the authors utilised the Modes of Managing Morality mode of Rossouw and van Vuuren (2003) to explain the role of organisational culture in influencing individual behaviour. Focus is on model-building to understand compliance/non compliance with

		travel policy. The starting point is a **distinction between corporate factors and individual factors**. The model has 5 types of business: • Immoral • Reactive • Compliance • Integrity • Totally Aligned Authors cross-tabulate this with three types of travel policy management: high control, medium control and low control. A 'Compliance' mode business is likely to have a high control TP, whereas an integrity mode business is more likely to have a medium control policy, expecting employees to internalise the ethical code. However, 'Reactive' would also have a medium control policy as a 'lip service' to codes of practice. 'Immoral' and 'Totally Aligned' would both have low control policies for opposite reasons.
Hebes et al. (2013)	Quantitative (secondary data analysis) – two data sets in Germany (i) commercial traffic data using drivers' logs (N=77,000 vehicles) (ii) Survey of service related traffic in firms (N=1250)	Empirically subdivides the business population by travel behaviour, **identified 4 categories of firm based on timing, distance and location** using cluster analysis of the drivers' logs. He then explains these clusters using a regression analysis. Travel patterns and behaviour are explained by: • Internal process (**who makes the decisions, use of ICT, autonomy of staff**) • External structure (**spatial setting including location of customers**) Overall, the study **shows that the characteristics of firms have a significant impact on service related traffic**, with internal factors having more influence than external factors.
Mason and Gray (1995)	Quantitative survey of air travellers at Stansted airport (N=827)	Attitudinal survey of short haul and international business travellers. Factor analysis identified constructs on flying experience, reservation process, ticket prices, scheduling. Three segments were identified: • The schedule driven segment • The corporate cog segment • The informed budgeter segment This study does not relate the behaviour to the organisation generating the behaviour.
Nesbitt and Sperling (2001)	Qualitative (focus groups (59) + interviews (39)) & Quantitative	Proposes a typology of organisations based on their fleet decision making processes. The authors use two dimensions to classify U.S. private and public sector organisations – according to the level of *centralisation* (with respect to organisational structure), and level of *formalisation* (with

	(mail (n=2708) and telephone surveys N=2711)	respect to internal administration), of the organisations' decision-making processes. The result is four organisational segments differentiated according to receptiveness to measures designed to incentivise cleaner vehicle adoption.
Oberhofer & Fürst (2012)	Literature review + analysis of 30 company websites + Quantitative survey (N=180, 43% from the transport for hire or reward group) + Qualitative (expert interviews)	Study of environmental practices in the Austrian road freight transport sector. Suggests a model of influences on environmental management: • "General" (**size and sector**) (though small and large companies share similar attitudes towards sustainability, large companies perform better) • Internal (**attitude and profitability**) • External (**regulations and stakeholders**) **Although decision-makers' attitudes have a significant influence on the companies' actual environmental performance, firm size and sector affiliation are shown to have a far greater influence**. They find sustainable energy practices and travel practices load on the same factor of environmental management but are also conceptually distinct supporting the notion that **organisations tend to think about green energy saving behaviours and travel behaviours in similar ways**. They suggest that the managers of large companies, with better environmental performance are similar to those of smaller companies who perform less well environmentally. The paper suggests that **targeting individuals to change attitudes may be less effective than external policy intervention** to e.g. a) change the legal context and b) "pull" strategies to change financial logic such as access to venture capital funds or tax relief. These measures would have the effect of making environmental management more of a strategic priority in these sectors rather than a nice to have at the discretion of a particular manager's attitude.
Van Malderen et al. (2012)	Two waves Belgian Home-to-work travel survey undertaken by organisations >100 employees. (2005 (N=3269 companies/7460 workplaces) & 2008 (N=3788/9455). N= 5009 workplaces	Aims to identify good practice in mobility policies of workplaces in Belgium. Two classifications of workplaces using cluster analysis based on (i) their mobility policies (iii) main mode of transport used by employees to commute. Also collected data on reported mobility issues and enriched this with data on the travel to work area characteristics, type of location. *The clusters produced were not very 'rich' in terms of the variables on which to profile the organisations. But the principle of a **workplace based classification** is interesting and unique.* The cluster analyses produced: • four types of organisation: (i) no measure (ii) financial incentives for the use of bicycles and/or public transport (iii) providing cycling facilities (iv) information and/or collaboration incentives with a mix promotion of carpooling and public transport.

	participated in both surveys.	• five types of workplaces with certain commuting characteristics: (i) private motorised modes (ii) public transport (iii) cycling (iv) miscellaneous modes of transport (v) carpooling. 'Good practice' was identified to be where the mode of transport promoted by the policy corresponds to that of the workers used to commute. It is not clear whether this includes the promotion of private cars. The availability of two identical surveys conducted at different dates (2005 and 2008) enabled analysis of the development of mobility policies and impact on the commuting behaviour. Four groups of workplaces were identified: (i) those having maintained or modified their mobility policies (ii) those having introduced a policy (iii) those having abandoned their policy (iv) those without any mobility policy at either date. No relationship was found between the mobility measures introduced by the workplaces and the mobility problems their employees faced. However, where workplaces were found to have 're-engineered' policies (dropped some and introduced others), this corresponded to mode shift. The paper provides very little understanding of the relationship between the travel behaviours, policies and characteristics of the firms other than size (smaller companies favour cycling) and shortage of parking (increases non-car modes).

3.2.3 A Conceptual Model of business decision making in relation to travel

A bespoke output of this study is a Conceptual Model which draws together the evidence from the disparate sources hinted at above to provide a proposed framework of the determinants of business travel at the organisational level. Importantly, it must be noted the Conceptual Model is a model of (all) business travel behaviours NOT a segmentation model of businesses (in terms of their uptake of travel behaviours). The differences between the two, and how to move from the Conceptual Model to a segmentation model of businesses, are set out in 4.2.1 below. Suffice to say here that we need the Conceptual Model in order to show what we know about the determinants of business travel behaviours, and thus ultimately to construct a segmentation model. Each of the components in this model could become a potential 'input' variable upon which to segment businesses.

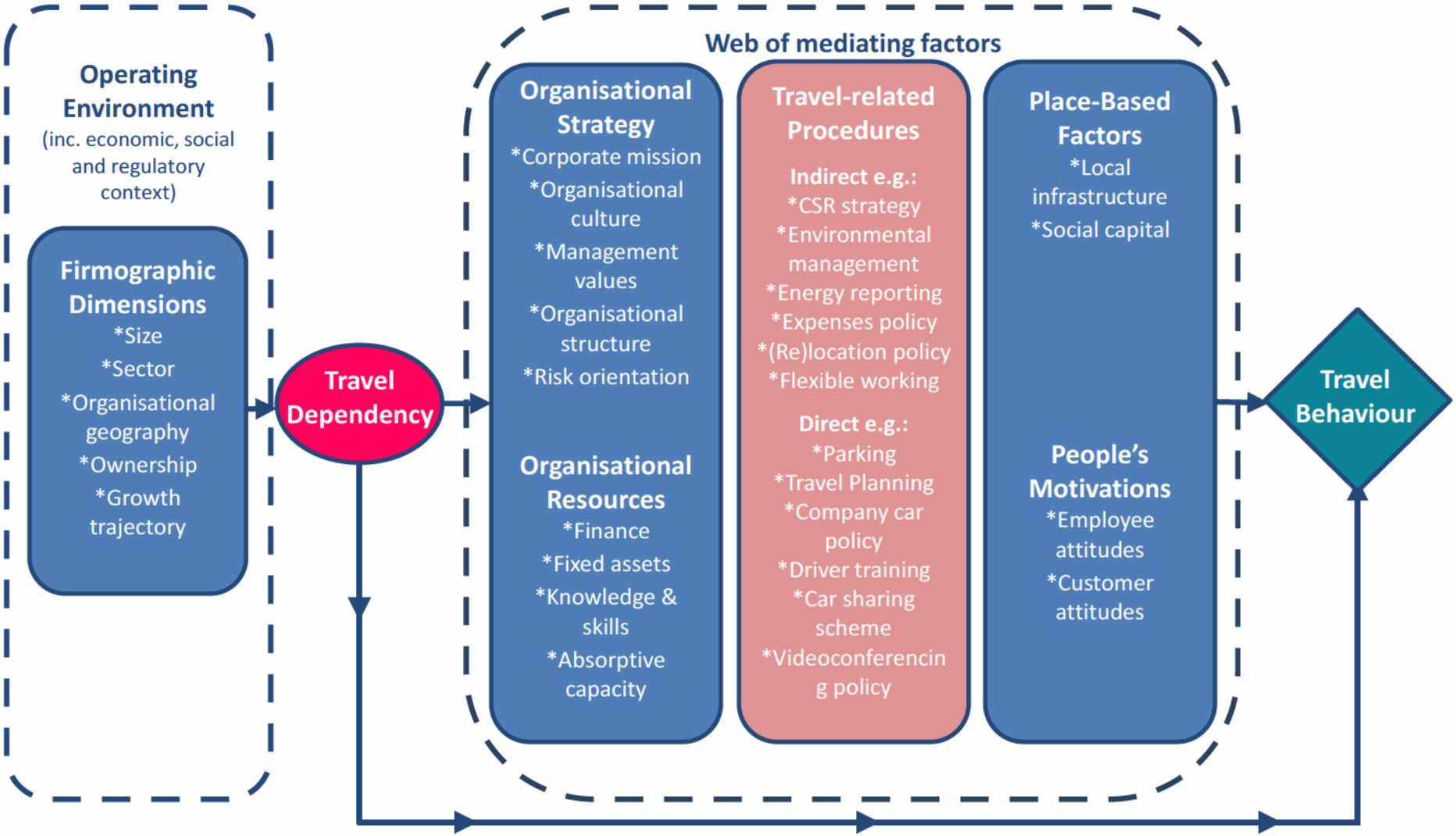
The Conceptual Model (Figure 3.2) reads from left to right, and shows the broad groups of factors which determine the extent of each travel behaviour a business undertakes. The main groups of factors include:

- The '**firmographic**' dimensions of a business (including its size and sector)
- **Travel dependency** (how much a given domain of travel behaviour is core to its business)
- Its **organisational strategies** (e.g. reasons for being, objectives, culture)
- Its **organisational resources** (e.g. assets, capital, expertises)
- Its **travel-related procedures** (policies and guidelines, travel-specific (e.g. travel plans) or non-specific (e.g. recruitment or flexi-working policies)
- **Place based factors** (e.g. public transport infrastructure)
- **People's motivations** (e.g. attitudes/beliefs influencing the travel choices of employees and customers).

The Conceptual Model can be described as a '**dual path model**', with 'travel dependency' acting as a switch, or pivot, between the two paths:

- **The bottom path** goes straight from dependency to end behaviour (Business Travel Flows), meaning that for all businesses, size/sector/other firmographics have a direct influence on the amount of travel in each domain (e.g. a haulier will always have a final travel profile dominated by logistics, the amount of which will be closely related to fleet size and sector)
- **The top path** runs from dependency through all the other groups of factors, to determine the final amount, timing and energy intensity of travel behaviour (e.g. in the case of a haulier, these factors will have influence over vehicle choice, use of ICT, investment in driver training).

Figure 3.2: Proposed Conceptual Model of business decision making in relation to travel



Final travel behaviour and its energy intensity will involve a combination of factors in all the different groups (i.e. following both the bottom and the top path). However, the dual path approach allows for cases where size and sector (more or less) alone account for the largest part of travel behaviour (but where there is nevertheless scope to change aspects of it).

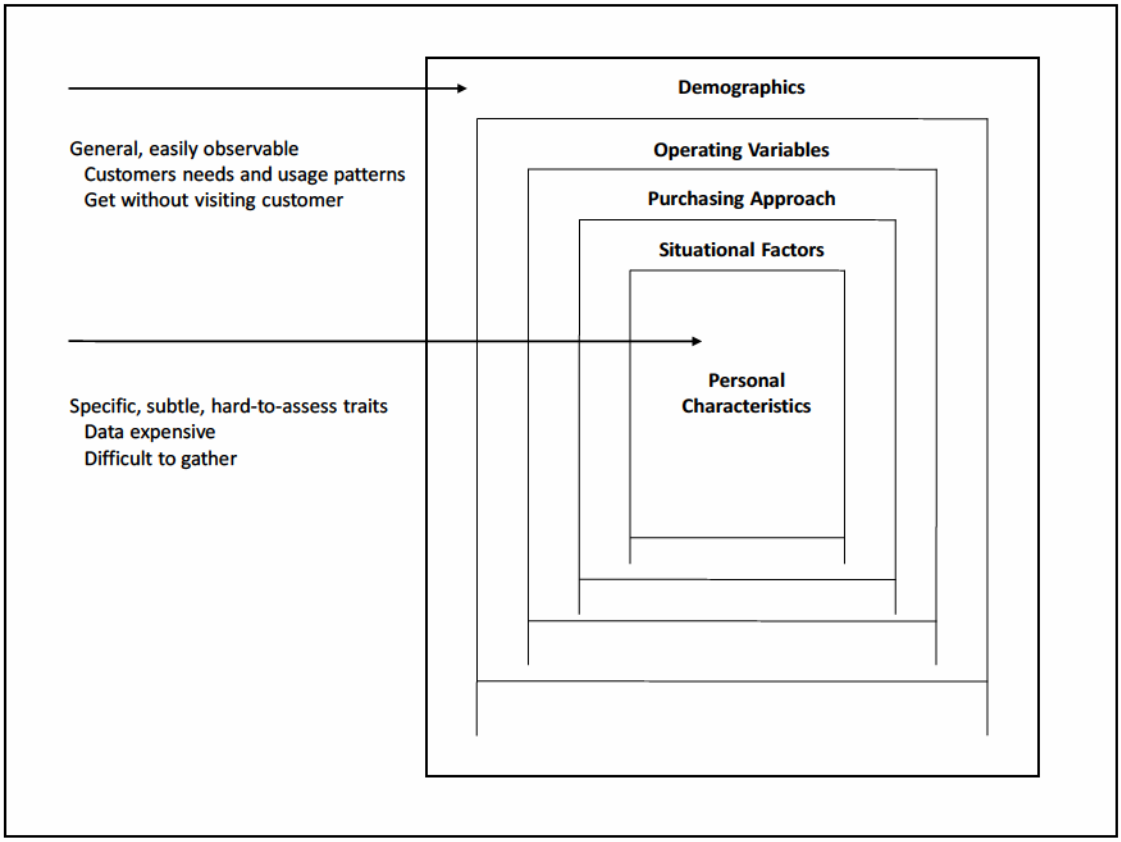
It must be remembered that the Conceptual Model is a hypothetical arrangement which brings the available evidence on diverse factors and influences relating to all business travel behaviours into a single model. It should primarily be seen as thinking device, or an arrangement for helping us understand the multiple determinants of various (as yet unspecified) behaviours. In effect, once the priority business travel behaviours are identified, then the Conceptual Model ceases to be needed: each behaviour will be determined by its own combination of factors and influences, and could in turn potentially have its own specific model. It is only at that point that we could comment authoritatively on the sequencing and weighting of the different factors in the model; for the moment their relationships are conjectural (and generic – relating to all business travel behaviours).

That said, there is logic behind how the factors are shown on the Conceptual Model, and this logic derives from two bodies of literature:

- **Behavioural models in social psychology** tend to follow a consequentialist (left to right) pattern, with the 'end' behaviour being the product of the model, and coming out on the right hand side (see e.g. Darnton 2008). As such, the factors shown closest to the right hand side are seen as the strongest ('most proximal') determinants of the behaviour (those on the left tend to be predictive of a wide range of behaviours, although they are much weaker at predicting any one specific behaviour). This approach informs the Conceptual Model devised here; it also chimes with best practice in segmentation model development, which argues for segmenting the audience in terms of the behaviour of interest itself, or of the most proximal determinants of the end behaviour (see further discussion in 4.2.1).
- **Best practice in market segmentation** (i.e. of businesses, in product and services markets) suggests taking a 'nested' approach to segmentation, building up insight across a number of dimensions of an organisation (see e.g. Weinstein 2011). The logical approach is to start with those dimensions which are clearly quantifiable and easily tapped: e.g. size of an organisation in terms of staff numbers. As much value as possible should be extracted from profiling businesses using these clear and simple methods, before moving on to develop a more nuanced understanding based on harder to measure dimensions, such as local context or staff motivations (see Figure 3.3). Effectively, this approach to researching organisations follows an onion-layer structure; the proposed Conceptual Model has a similar structure, with

firmographics shown as the outside layer (i.e. on the left hand side) before it moves through company resources and policies, to local contexts, and lastly, staff motivations.

Figure 3.3: Bonoma and Shapiro's 'nested approach' to commercial business segmentation



Source: Bonoma & Shapiro 1984

Finally, it is worth commenting on the direction of flow of influence through the Conceptual Model – as shown by the direction of the arrows. As commented above, the sequencing of determinants will in actual fact vary from behaviour to behaviour – as such the flow of the arrows is, like the Conceptual Model itself, generic and hypothetical. However, it is easy to think of circumstances where the factors influence one another right to left, instead of left to right: for instance, ecodriving training (under 'procedures') will influence organisational resources (staff driving skills) and people's motivations (attitudes to ecodriving), and over time potentially change organisational culture (under 'organisational strategy'). However, for the purposes of producing a parsimonious conceptual mode which allows us to organise the evidence on any number of business travel behaviours, we have included one-way arrows on the Conceptual Model, whereas we might more accurately think of them all as potential loops, not lines, with feedback effects between most factors. This point also is not unique to the Conceptual Model, but reflects standard practice in creating social-psychological models of behaviour (see e.g. Darnton 2008).

The following sections take each model construct and provide an overview of the evidence and a justification for its inclusion in a model focusing on business travel. Section 4.2.2 will return to the model constructs by suggesting potential ways in which each could be measured in future research.

3.2.4 Travel dependency

Our model is designed to capture the potential dominating effect that the nature of the business will have on the eventual magnitude of the travel flows from any given business. The industry sector that a firm belongs to will, to an extent, determine the amount of business travel that it is necessary to undertake. Section 3.2.5 will report that the communications industry has the highest business travel intensity, followed by other services, professional, finance, retail and manufacturing. Agriculture has the lowest business travel intensity. More detailed analysis of manufacturing has identified that production of more advanced investment goods involves higher associated business travel (WTTC, 2011).

Hence, **to place any given business within a typology, it will be necessary to know the extent to which travel is 'core to what they do'**. For example:

- For some, transporting people or goods around or delivering services is their 'reason for being'
- For some, a very large number of external business meetings are undertaken or many customers visit them
- For others, the travel 'footprint' may be objectively large but is an insignificant part of the core activities or carbon emissions (e.g. energy companies)

In this study, we have named this dimension **'travel dependency'** with our own definition as follows:

> *"the amount of travel in each of the different domains (Business, Commuting, Customer, Logistics) as a proportion of the organisation's total business travel mileage, turnover, costs or carbon footprint"*

The notion of travel dependency is the insight of this study and is not clearly present in the literature. **We suggest that travel dependency works as a kind of multiplier, combining with size and sector to determine the approximate volume of travel activity** (travel flow). Understanding the balance of all the different domains of travel flow domains in relation to the core purpose of the business also helps to understand how salient travel is to an organisation::

- Bansal and Roth (2000) highlight **issue salience** as being directly connected to how motivated forms are likely to be to address travel flows either for reasons of competitiveness or motivation. Arvai et al. (2012) suggests that it would be useful to think

about the decision-types commonly associated with each type of travel flow –i.e. are they routine and low stakes in which case heuristics will often be used (akin to habitual individual behaviours); or are they one off and high stakes in which case more deliberative processes will often be used? The more salient travel is to an organisation, the more likely it might be that it will have strategic significance.

- the potential for change (**malleability**) of each type of flow (e.g. avoiding, shifting or removing some of that flow and/or changing the energy intensity of the flow(s)).
- ***who, what and where*** needs to be influenced in the organisation. For example, those in an organisation responsible for influencing customer travel patterns or the delivery of goods and services through the supply chain are likely to be very different from those making policy on expenses or travel planning.

Travel dependency is placed in the Conceptual Model to act as a switch or pivot between two paths, with a direct line (the bottom path) to the final resultant flows of business travel. This captures the notion that for some businesses, the overall magnitude of their travel in at least one of the travel domains (e.g. logistics) is relatively fixed. However, the top pathway suggests that for any business, even those where the magnitude of the final flows are relatively fixed, there are decision processes that can influence a number of behaviours (e.g. fleet management, driver training) which will still impact on the composition (such as the CO2 intensity) of those flows.

Possible survey topics relating to <u>travel dependency</u>

- How much spent (cost)/ how many miles travelled/ vehicle *tonnes* moved/ on each type of travel flow in each of the domains in the typology
- Expenditure on travel as a % of turnover
- Number of employees commuting and average distance
- Number of customers and average distance travelled
- Size of (own) vehicle fleet (+ types of vehicles)

3.2.5 The role of operating environment

In the Conceptual Model, **operating environment captures the external dimension within which an organisation operates.** The organisations operating in a particular sector both shape the operating environment and are shaped by it. But there are aspects of the operating environment which pre-exist or otherwise stand at one removed from the interaction between organisations within a sector or supply chain. For example, the policy context or the general business culture of a region or nation. This includes the multi-scaled economic, regulatory and socio-political context. As outlined in Section 3.1.2, established literature on strategic management identifies the macro-environment (political, economic, social and technical) as well as the operating environment (competitors, markets,

customers, regulatory agencies, stakeholders). For sake of brevity our operating environment includes both sets of 'external' factors (macro and operating). It can also be seen that it acts as a catch-all for large amounts of material.

There is some evidence exploring how these broader aspects shape organisational behaviour in respect to carbon management and environmental issues. For example, Jeswani et al. (2008) compares corporate environmental attitudes and behaviours between UK and Pakistani companies controlling for sector. The study finds that whereas the UK has begun to adopt "emerging" or "active" strategies for dealing with climate change, Pakistani companies are either indifferent or in a "beginners" mode. This is attributed to: "lack of awareness, lack of financial resources, absence of policies and lack of expertise" – these are the broad parameters associated with the operating environment. Similarly, Bansal and Roth (2000) compare UK and Japanese firms underlying motivations for ecological responsiveness and find some interesting differences. Whereas British firms were more sensitive to local community concerns and the perceptions of shareholders, Japanese firms seeking legitimation where more concerned about the priorities of their industry associations and the Keidandren – the Japanese Business Federation. Simcikova (2012) makes some interesting observations about the development of CSR policy. This study explores the role, extent and context of CSR in contrasting institutional frameworks, that of Sweden and United Kingdom, and finds that according to empirical studies, the CSR versions indeed differ. National institutions can influence orientations to CSR. In Sweden, for example, CSR tends to have a normative justification and an international focus due to the Swedish tradition of corporatist integration, political culture with active NGOs, media, consumers and public debate. In contrast, in the UK, CSR is justified instrumentally, with a national focus, and is viewed as a complement to or substitute to state action.

Specifically in relation to business travel behaviours:

Studies specifically focused on the adoption of a firm's sustainable transport behaviours have also found the 'surrounding business environment' of the company to have great (if not the greatest) influence. Bjorklund (2011) concludes that there seem to be more external factors as opposed to internal factors influencing the environmental purchasing of transport services. Furthermore, this study also suggests that it is not only the number of factors, but also the size of the impact that makes the external factors' influence greater than the internal. Oberhofer & Fürst (2012) suggest that targeting individuals to change attitudes may be less effective than external policy intervention to a) change the legal context and b) "pull" strategies to change financial logic such as access to venture capital funds or tax relief. These measures would have the effect of making environmental management more of a strategic priority in these sectors rather than a nice to have at the discretion of a particular manager's attitude.

What is known in business studies generally is, however, that **sector, size and ownership do provide some structuring parameters to common business behaviour** (but apply them together and you can still see the potential scale of combinations) and so operating environment interpreted through these parameters correlates with most theoretical (and policy) positions on business behaviour.

3.2.5.1 Regulatory context

Evidence on the role of regulation emerged from both the literature review and the interviews with umbrella organisations carried out for this study. The role of regulation is closely tied to business sector and size. Studies which confirm the strong role of regulation include a study by Clemens and Douglas (2006) of firms in the US steel industry which showed a positive and significant relationship between coercion and voluntary green initiatives. Databuild (2010) found that **industrial sites cite environmental reasons much more than cost reasons** as compared with commercial organisations. It is speculated that this is because industrial sites are more heavily regulated than commercial sites. Both studies support the position that coercive forces are helpful in encouraging industry to focus on green issues. In their assessment of drivers and barriers to environmental supply chain management practices, Walker et al. (2008) note that regulatory compliance seems to underpin the different supply chain initiatives, and is the context for other observed drivers.

Some of the strongest evidence to explain why **some organisations may not comply with legislation and yet others may go beyond it *within the same sector*** points to (i) company size and (ii) management values and priorities as the strongest differentiating factors in highly regulated sectors. For instance, in a sample of 800 firms in New Zealand, Collins et al. (2007) found that half of the SMEs surveyed felt no external pressure to adopt environmentally sustainable practices. **SMEs are perceived as having greater barriers to implementing sustainability practice**s (e.g. lack of expertise and capital) compared to larger firms and so SMEs are less likely to engage in voluntary practices. This same issue of the relative lack of resources and access to quality information and whole-cost accounting procedures among smaller businesses came through in the interviews for this evidence review. Also, a key issue facing small business owners is that they already feel overburdened with existing government regulations. Consequently, Collins suggests that government may not be the best instrument of change. Instead **a key driver of sustainable business practices is the beliefs and values of senior management** (see 3.2.6.3). Networks – including trade associations, industrial environmental agencies, local governments and employee organisations – may be able to overcome the specific barriers faced by SMEs by raising managers' awareness of environmental concerns and sustainable practices. By contrast, although also highlighting this size differential in the engagement with environmental issues, the work of Worthington & Patton, (2005) suggests that ***more* regulation**

would probably be the route to take to bring about a change in behaviours for smaller organisations because smaller SMES are more focussed on compliance. At present however the study concludes that managers across the UK print screen industry sector perceive no strategic benefit in improving environmental performance. Oberhofer and Fürst (2012) also point out that **small and medium-sized companies particularly need to be supported, as they often lack resources to invest in areas which do not represent their core business**.

Also, some authors suggested that regulation did not play an overriding role in sustainable business behaviour. For instance, Walker et al. (2008) suggest that, **although environmental legislation undoubtedly played an important role in the implementation of the green supply chain management practices, it was not the triggering factor** (which was more often customer/ NGO pressure, policy champion or the drive to gain competitive advantage). Clemens and Douglas (2006) also noted that **the link between coercion and voluntary green initiatives is contextual** so that firms that had developed high levels of resources with respect to environmental strategies, the relationship between coercive forces and voluntary green initiatives becomes insignificant. This finding illustrates that **for those firms that are "corporate environmental entrepreneurs", coercive forces are no longer necessary** to encourage voluntary green initiatives. However, this study did not help us understand why firms might develop these superior internal resources in the first place.

Specifically in relation to business travel behaviours:

In a survey of Austrian freight operators[29], Oberhofer and Fürst (2012) acknowledge **the need for policy intervention within the freight sector comprising a mixture of push and pull strategies**. Restrictions (push) should include a legal framework that inhibits environmentally adverse behaviour. Incentives (pull) relate to supportive actions like access to venture capital funds or tax relief. Given the international nature of large scale freight movements, the authors contend that it is **necessary to align these measures across industries and national borders** in order to prevent friction and competitive disadvantage. A particular focus should be put on industries operating in a very competitive environment and under strong price pressure.

In the interviews with umbrella organisations carried out for this study (Pangbourne et al., 2015), **regulation surrounding environmental issues came a close second to costs as an issue of greatest concern to businesses**. However, there were mixed views on whether compliance was seen as a driver of more sustainable practices or way to gain competitive advantage. **Businesses that believe they are already behaving in a cost efficient way tend to view environmental regulation as imposing a net**

[29] 180 respondents completed the questionnaire. 43% of all respondents were from the transport for hire or reward group of companies while 47% belonged to the businesses in other fields regularly performing own account transport group. 10% did not specify their sector affiliation.

burden that must be complied with as cost efficiently as possible. Whether or not the cost burden is indeed 'real' **requires a whole-cost accounting approach to environmental practices** and this came through in a number of different ways in the interviews as key to opening up minds to new ways of doing things. There was some evidence, on the other hand, that businesses who address regulatory and corporate social responsibility issues ahead of time can reap organizational benefits. Somewhere between these two views was a **recognition of the underlying necessity for regulation** to drive the environmental agenda either because costs are not sufficiently aligned with environmental impacts or because cost is not always a sufficient driver of pro-environmental behaviour (often because of the lack of holistic information about their cost saving benefits). The nature of the interviews (i.e. the fact that they were not undertaken with individual businesses) means that it is difficult to draw conclusions about how these views are distributed among sectors or types of business. The only conclusion was that views differ even *within* the freight industry as represented by two different bodies whose views were somewhat contrasting (with the road freight industry being more negative about the burden of regulation, including carbon reporting), suggesting that there are 'sub' sectoral or other differences at play.

Possible survey topics relating to regulation

- Environmental regulation(s) subjected to
- Voluntary schemes available/ participated in

3.2.6 The role of firmographics

Firmographics refers to a number of features of organisations that are relatively easy to observe, including size, sector, ownership type/legal status and organisational geography. Historically, analysis of business demographics has been driven by the requirement of policy makers to assess the significance of groups of firms in economic output and employment. This requirement has led to data gathering of key characteristics such as what the main activity is that a firm is engaged in (industry/sector and the Standard Industrial Classification (SIC)) and how many employees the firm has (size, including zero employees, micros (under 10) and SMEs and large). A further size determinant used has been that of turnover with, for example, up to £25m determined as SME and £25-£50m as mid-sized. Even on these simplest of characteristics, however, where bands are drawn in typologies vary at international and national level and across stakeholders.

In analysing resource efficiency/environmental improvement issues and their relationship to firms, Databuild (2010), Cox et al. (2012), Runhaar et al. (2008) and Banks et al. (2012) all support the proposal that **typical subdivisions of organisations (e.g. by size and sector) may have a useful role in segmentation for ecological responsibility and wider energy and travel practices**. This is because

configurations of size and sector map on to other important aspects including regulation, issue salience (including travel dependency) and management structure. This corroborates wider business studies literature which concludes that sector, size and ownership do indeed provide some structuring parameters to common business behaviour and so operating environment interpreted through these parameters correlates with most theoretical (and policy) positions on business behaviour.

Therefore a key conclusion of the studies in this review is that the diversity of transport (and energy) behaviours has some patterning - principally by size, sector and the interaction between the two. This suggests that a useful segmentation is possible. However, the evidence for the patterning is fragmented and partial so that **segmentations along these lines are too coarse grained to be meaningful** with respect to the design of interventions to influence business travel. For example, "SME" is far too big a category - the review finds clear differences in approach and attitude between small, medium and large organisations. Also sector categories are too broad. For example within "manufacturing" there are a very large number of different kinds of activity, each with a unique supply chain and set of commercial, economic and market pressures and a unique operating culture. **Also, when multiplying combinations of size and sector together, the potential scale of combinations is still very large.**

Most importantly, detailed work on business behaviour (Bessant et al., 2005; GHK, 2012) highlights the substantial array of drivers and immense complexity that sits behind business decision making such that the term 'operating environment' looks simple in comparison. Moreover, **these quantifiable data (firmographics) relate to what a business is rather than how a business makes decisions**. This is a key distinction when it comes to arriving at a segmentation model for business related practices which goes beyond profiling and provides a tool for policy makers to understand how best to target interventions. To fill the gaps, research into energy and travel behaviours across a broad range of sectors and size categories is needed as outlined in Section 4. In the meantime, more detailed evidence on each of the firmographics categories is outlined in the remainder of this section, as well as suggested survey questions.

3.2.6.1 Size

The size of an organisation is typically defined by the number of employees but can also be related to turnover, floor area statistics (typical in the retail sector) and, more specifically, size of the vehicle fleet (the usual metric used in the haulage industry).

Once again, the majority of the literature relates to general sustainability practices rather than travel specific practices. Also, **the main focus on size in the literature is on SMEs**, often loosely defined. Care is needed on the use of size definitions. For example "SME" is functionally useless as a size

categorisation having a bearing on behaviours: an organisation having a handful of staff behaves very differently to an organisation having 50 or 100 (Bradford & Fraser 2008).

As well as a quantitative approach to measuring size (e.g. number of employees or turnover), a qualitative approach can be used to distinguish between small, medium and large businesses, through the respective differences in the nature of the firm. An example from Preuss and Perschke (2010) in a depth case study assessing the role and potential of CSR the UK fashion industry is provided in **Figure 3.3**.

Figure 3.3: Difference in the nature of small, medium and large businesses

	Large firm	Medium firm	Small firm
Agency theory			
Ownership	Often widely held, institutional and individual investors	First stages of separation between ownership and control due to growing use of outside funding	Owner capital, personal borrowing, funds from family and friends, local bank loans, perhaps venture capital
Role of capital markets	Wide-spread use of capital markets	Likely to make increasing use of external sources of capital	Securities not publicly traded, limited liability rarely present
Monitoring	Wide range of standardised tools, both hierarchical governance (e.g. salaries) and market governance (e.g. share options)	Principal agent relationship likely to remain informal	Often not applicable, otherwise close personal links
Interaction with stakeholders	Wide range of stakeholders, formal mechanisms to provide information and feedback	Increasing reliance on external stakeholders to support growth	Small number of stakeholders, often dealt with on one-to-one basis, Highly particularistic, personal relationships
Resource-based view			
Managerial expertise	Professional management with firm-specific knowledge about unique opportunities	Firm-specific managerial knowledge concentrated among a few persons	Owner–manager with general expertise
Organisational structure	Formal, bureaucratic administration processes Combination of longer-term planning and short-term targets	Signs of functional differentiation Owner–manager likely to retain considerable discretion	Informal and flexible Strategy and planning limited to the short term
Business objectives	Variety of formal measures, e.g. market share, stock market value	Increasingly formalised	Goals of small business owner often vague, inadequately defined and pragmatic Focus on survival and operational necessities Financial gain, but also autonomy and self-realisation
Market type	Economies of scale	Increasing market orientation Growing likelihood of internationalisation	Niche markets, sometimes dependence on few major customers

Source: Preuss and Perschke (2010)

The authors observe that **large firms tend to use a highly formalised approach to CSR**, which is often designed and coordinated by a dedicated CSR function and communicated in annual CSR reports that are increasingly being audited by third parties. **A major reason for large firms to engage in CSR is the business case**. By contrast, **small business owners tend to engage in CSR in an informal way**. Their CSR practices are usually local in scope, do not necessarily bring tangible benefits and are undertaken on an ad-hoc basis. **Often, the small business owner may not even describe these activities in terms of social responsibility**.

Other studies have confirmed that drivers / barriers to environmental behaviours are experienced differently by SMEs. **SMEs are perceived as having greater barriers to implementing sustainability practices** (e.g. lack of expertise and capital) compared to larger firms. **SMEs are less likely to engage in voluntary practices**, as one of the key issues facing small business owners is that they already feel overburdened with existing regulations. The following key barriers to adoption of pro environmental measures in SMEs have been identified:

- **Cost concerns, resource constraints and the relative financial significance of opportunities:** Larger organisations will have greater resources to employ dedicated energy or environmental managers (Cox et al., 2012). Larger organisations will also have better access to capital to allow borrowing for energy efficient investment and will accept longer payback periods (Banks et al., 2012). This is linked to concern over the cost of these measures (Collins et al., 2007) and the finding that SME's are generally sceptical that adoption of environmental behaviours will directly increase profits (Revell et al., 2010). A study by Worthington & Patton (2005) on adoption of environmental behaviours amongst the UK printing sector (taken as an indicator of the behaviour of SMEs more generally) sums this up by suggesting that mangers of smaller companies attach no strategic significance to environmental improvements.
- **The capacity of firms to implement improvements:** Larger organisations have more capacity to act on energy issues, including managerial expertise and the time and capacity to plan energy management and monitor outcomes, and are more responsive on issues affecting their public image– including their performance on energy and environmental issues. Smaller organisations will tend to have less time and technical skills to consider energy efficiency opportunities, to sift and process relevant information. Lack of internal skills to interpret technical information and the time and capacity to plan is a major barrier for smaller SMEs.
- **The role of decision making processes and individual attitudes:** In smaller organisations the values and attitudes of senior managers will tend to be more influential in shaping energy management than in larger organisations. Larger organisations are often more bureaucratic and hierarchical which can lead to principal agent problems as facilities staff tend to be some distance in the hierarchy from strategic decision makers setting the strategic direction of the organisation (Banks et al., 2012). Preuss and Perschke (2010) also compare the dominant role of the owner–manager in small firms to the dominance of capital markets for large companies. They suggest this translates into some leeway for the owner–manager of a small firm to determine CSR priorities (CSR emerging in an informal way), whereas large

firms were under a much greater degree of external pressure (the CSR response being framed in a deliberate policy). On the other hand, larger organisations will have more strategy and bureaucracy derived from a central source so that the various elements of the organisation can operate without personal oversight. This means that an energy or environmental strategy is a more natural fit with a larger organisation's management systems and can be deployed over a large number of activities quite efficiently.

- **Efficacy beliefs and salience:** Small companies can feel that their contribution is insignificant and the energy saving agenda is more appropriately pursued by institutions and larger companies (Banks et al., 2012, Collins et al., 2007). Small businesses have a less visible impact on the environment compared to larger firms, which reduces the salience of environmental issues for these firms.
- **Interaction with stakeholders:** Larger organisations are more inclined to develop energy efficiency strategy and adopt certificated management systems such as ISO 14001 (Banks et al., 2012). This is generally for reasons of demonstrating credibility to potential trading partners and bolstering the public image or brand of the organisation.

Together, these factors will limit the degree of individual concern that SMEs feel for environmental issues. Government can help to promote the case for strategic advantage in environmental performance by increasing market pressures e.g. by adjusting their own purchasing policy. "Educating" small business owners of the virtues of better environmental performance is also suggested. However, what is considered of strategic benefit will vary depending on the type of environmental motivation held by the organisation. For example, Runhaar et al., (2008) find that each of their environmental leader "types" perceives different policy measures as more or less helpful or relevant. (see 3.2.6.4 below). Nevertheless, Revell et al. (2010) identify greater environmental awareness, more positive environmental attitudes and more environmental practices amongst SMEs than in studies conducted 5-10 years previously. They argue that further studies at regular intervals are required to establish whether this is a trend or a blip.

Specifically in relation to business travel behaviours:

Size (specifically fleet size) came through strongly as an important distinguishing factor in the freight sector. On the one hand, this is obvious as it is possible that, whatever the attitudinal values and culture within an organisation, the emissions reduction opportunities are likely to be very different depending on whether the organization is an SME with 5 company cars or a 100 HGV freight operation on the other.

However, in their survey of Austrian freight operators, Oberhofer and Fürst (2012) note the importance of organisational attitudes and culture, but *do not* find any differences in attitudes to sustainability between firms of different sizes. It might be assumed that smaller firms are more exposed financially and therefore would have less positive attitudes to environmental regulation but this is not found. (Both attitude and environmental behaviour scored slightly lower among transport companies than among other industries though). However, the study does conclude that **larger companies tend to perform better in environmental terms**; the implication is that **smaller companies' poor environmental performance results from a lack of opportunities rather than a disproportionately poor attitude.**

Also in the freight sector, Davies et al. (2007) is able to show **for ICT adoption at least that fleet size is a meaningful approach to understanding different haulage behaviours**. Fleet size remains the key grouping within the fleet industry as does the split between general haulage operators (who carry goods for other parties) and companies which operate their own fleets as part of larger operations (e.g. supermarkets)[30]. Whilst some organisations within general haulage are using some forms of ICT in their business, there appears to be a split emerging between those who are actively using e-commerce to support their operations and those that are not. The industry structure in the UK is characterised by the very large number of smaller operators which run fewer than 11 vehicles although due to the ease of entry into the transport industry 93% of firms operating just 46% of the total UK vehicle fleet are classified as small with between 1 and 10 vehicles[31]. It is in this category where ICT adoption is least well developed and reliance on all more traditional means of operating are more prevalent. This could mean that smaller operators are missing out on some of the benefits from ICT adoption. The implication is that **more support could be given to smaller haulage companies to promote the uptake of ICT.**

See also evidence under 'organisational structure' below which indicates that corporates with larger fleets are most likely to procure Electric Vehicles. While UK evidence is limited, this is supported by a recent UK survey by **GE Capital** (2011) which reports that 18% of the largest fleets (500+ vehicles) operate EVs of some type as compared to only 2-3% for fleets with fewer than 500 vehicles.[32]

With respect to other travel behaviours, Gustafson (2013b) observed that **SMEs are less likely to have formalised** travel management and most Travel Managers are in larger companies. Julsrud et al.,

[30] Davies et al. (2007) note that the total road transport market in the UK can be broken down into four main areas of specialism. Temperature Controlled and Box, Tankers, Tippers and General. In turn general haulage can be categorised in terms of trailer type: curtain sided or flatbed vehicles.
[31] Citing figures from Highways Agency 2003
[32] Company car trends. UK GE Capital Fleet Services, 2011.

2012) identify **company size a key determinant of access to room-based videoconferencing** with 83% of respondents in large companies (100+) versus 46% in small companies (1-19) having these facilities. Roy and Filiatrault (1998) report that the **size of company is a determinant of travel budget**, and overall amount of travel although Roby (2010) cites data from GlobalExpense[33] which shows that this is not a purely linear relationship: business travel comprises 46% of employee expense claims in large firms, 61% in medium-sized companies, and 45% in small. She points to **company culture and company size as critical determinants of differences in business travel expenditure** and in the process of engagement with businesses and their needs. Through interviews with case study businesses in London, she identifies the following characteristics related to business travel generalizable by the size of the company:

- **Small businesses** (<200 staff) do not have transport/environmental specialists, travel policy or carbon monitoring. The motivation for business travel decisions is directed by the values of directors and staff; cost is a key driver.
- **Medium businesses** (200-2,000 staff) manage business travel by an operations manager typically alongside buildings, ICT, environment and possibly fleet. Little air travel takes place[34] and is mostly domestic but policies are in place to encourage train travel and ICT substitution.
- **Large businesses** (2,000+) undertake more air travel, including internationally, which tends to be managed by travel management companies. However, staff compliance is an issue, particularly for road and rail transport. For instance, car travel through the expenses system is hard to manage as trips may not need pre-approval. These firms have invested more in ICT systems. Senior managers are usually setting and implementing the travel strategy and related policies and budgets with good links to CSR and HR. Thus, where they exist, these policies are likely to have top level support unlike business travel managers themselves who tend to be in operations/procurement roles.

Hence, these findings relating to fleet management and other business travel behaviours corroborate other widely reported findings that **larger organisations have better environmental performance.** For instance, Databuild (2010) finds across all sectors larger organisations perceive that they have done more on fuel and energy efficiency than smaller organisations – only 14% of organisations with >50 employees feel that they have done little or nothing on this agenda as compared with 31% of one man bands and 33% of organisations with 2-9 employees. Larger organisations are more likely to lease

[33] GlobalExpense (2009) Employee Expenses Benchmark Report 2009, GlobalExpense Limited, London, KELSO CONSULTING.
[34] Although it should be noted that these interviews were carried out in London only

green office space and are also more likely to adopt certified energy and environmental management systems such as ISO 14001.

However, whilst all the evidence cited above would possibly support a case for using company size as a segmenting factor for business travel, particularly within the freight operator sector and potentially to explain the uptake of Electric Vehicles (EVs) in other organisations, **size could be argued to be a blunt measure. Other research has coupled the size factor with a more nuanced qualitative element to account for organisational structure and process**, issues closely linked with corporate culture and organisational structure to explain EV uptake (Nesbitt and Sperling, 2001). There are, however, quite significant differences even *within* the SME category often dictated by owner/management values. This is reported in Section 3.2.6.1.

Possible survey topics relating to <u>size</u>

- No of employees (in each site/location)
- Turnover
- Size of vehicle fleet

3.2.6.2 Sector

The conceptual model contends that size and sector are the firmographic characteristics which lay the foundation for an organisation's 'way of doing business' or 'reason for being'. **Sector first and foremost determines the activities people do** (e.g. they make lathes or provide logistics) and the production inputs (e.g. energy, materials, capital/knowledge intensive) and then, relatedly, professions/roles/grades. Consequently these parameters will broadly define the range of travel and transport modes that make sense within the socio-technical space occupied by the organisation. They will also influence organisational culture (Bansall and Roth, 2000) which in turn will influence decision making, particularly in terms of what is noticed as an issue, what is salient, what is considered of strategic value and how various options are evaluated.

Using the supply chain perspective also requires that we have clarity on what exactly is meant by "sector". **Evidently using a broad sector description such as "manufacturing" will provide little insight on the types of travel behaviour that are deployed by the manufacturing organisation. A sub-sector definition is required** which more accurately describes the precise activity of the organisation within the manufacturing supply chain – such as "manufacturer of automotive components". This distinguishes an organisation that designs, makes, stores, sells or transports products.

Many studies have concluded that each sector type perceives a different range of incentives and barriers leading to varying motivations to adopt energy and sustainability strategies which in turn can

lead to different types of strategy being adopted (Williams and Schaefer, 2013; Banks et al., 2012; Zhu and Sarkis, 2006; Worthington & Patton, 2005). Some of the sectoral differences in respect of *general* environmental behaviours and attitudes are listed below:

- In highly regulated sectors (such as utilities and the oil and gas industry) the adoption of an energy management system may particularly appeal, motivated by the need to comply with both formal regulation and informal norms which apply to the sector. The Databuild (2010) research also finds that the difference in **the amount of regulation applied within different sectors leads to some sectoral differences in stated motivation for environmental action**. For example, industrial sites were significantly less likely than commercial sites to cite cost savings as a principal motivation across all energy efficiency and fuel saving measures; instead, reducing environmental impact was generally more important. This is a surprising result given that industrial sectors are generally much more energy intensive than commercial ones, energy therefore constituting a much higher proportion of the cost base. It is thought that this rather counter intuitive finding is linked with **industrial sectors having a greater intensity of company environmental policies or compliance requirements. Commercial sites may be less likely to see an obvious need to reduce their environmental impact as their impacts are more lightly regulated.** Commercial sectors therefore tend to identify and justify action only where it produces financial benefit. These findings support the model of ecological responsiveness developed by Bansal and Roth (2000). Worthington & Patton (2005) also mentions that the sector **derives much of its information about this area from the trade associations** - this is in accordance with the Bansal and Roth framework which proposes that sectors seeking legitimation have strong trade associations looking after the interests of the industry as a whole.
- Sectors can be characterised by the degree of **field cohesion** they possess. Field cohesion describes the density of interactions between actors in the same sector (Bansal & Roth, 2000). **Sectors with high field cohesion will have powerful trade associations and industrial lobby groups to protect their industry**, maintain its public image and ensure the industry is seen to be acting together on key issues. This impacts the motivations underlying an organisation's sense of environmental responsibility. For example, firms in a sector with a high degree of field cohesion will be motivated primarily by legitimation and conforming to standard industry practices in order to not 'look bad' (Bansal and Roth, 2000). They will be less willing to adopt innovative environmental practices as 'first movers', as these will be quickly copied by other firms in the sector resulting in a raising of standards for all with the associated increase in operating costs. For example the oil industry has high issue salience

for energy issues and also high field cohesion – the supply chain is intensively networked – companies build up long standing and trusted relationships with one another frequently using one another's services. Staff will often move from one of these companies to others further strengthening formal and informal ties and connections.

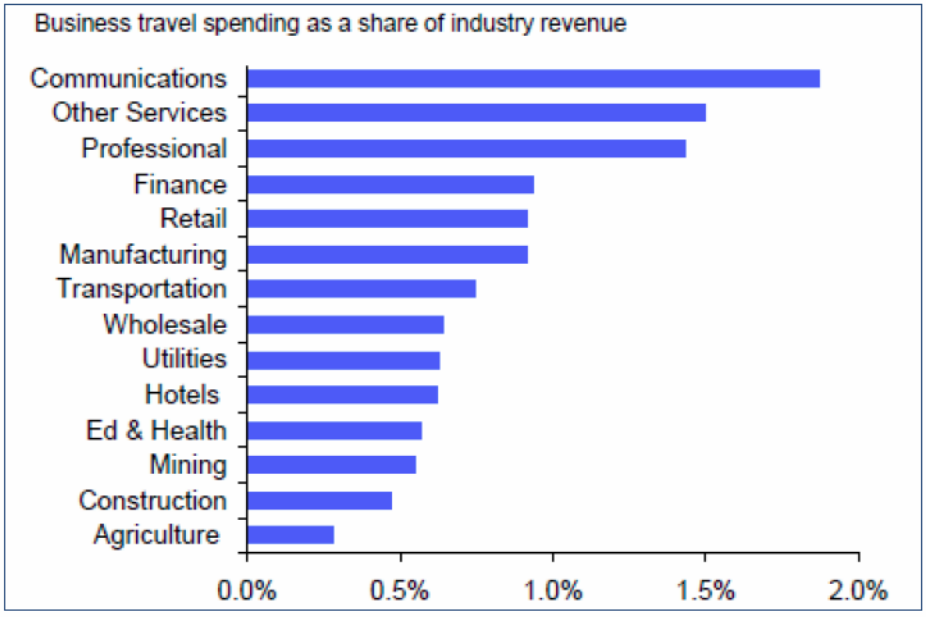
- The energy or fuel intensity of the sector influences the **salience** of its use and hence the strategic value of energy or fuel efficiency. The more energy intensive a sector is the more opportunities for cost savings are identified and acted upon (Banks et al., 2012).Sectors where energy or transport are part of the business and therefore where energy or fuel use is salient are more likely to have energy and environmental management underway (Worthington & Patton 2005).
- **Drivers of business growth** vary by business sector. Banks et al. (2012) describes studies exploring a number **of different motivations for energy efficiency. These are linked to cost savings but also so called Non-Energy-Benefits such as improved corporate image and improved staff comfort**. Sectors which have an overriding interest in maintaining the morale and productivity of employees (such as finance) are more likely to lease "green" office space. Using Bansal and Roth's (2000) model of ecological responsiveness, Eichholtz et al. (2012) suggest that for sectors, such as banking, financial and legal services, which depend for their profitability on maintaining comfortable, happy and therefore productive office staff, there are a clear incentives to provide comfortable, morale boosting office space. Energy efficient office space can fulfil these functions: energy efficient office space is usually more comfortable and the use of low carbon or sustainable office space is an indication that the organisation takes its environmental and ethical responsibilities seriously. It is thought that this may lead to better morale and the ability to attract higher quality staff.
- **Sectors which are closer to the public in the supply chain are more likely to be involved in voluntary environmental programmes**. Sectors that work in environmentally sensitive areas such as forestry and oil and gas also tend to procure energy efficient office space to offset potentially negative reputational effects (Banks et al., 2010). Cox et al.'s work (2012) suggests that **public sector** organisations are more advanced than private sector or voluntary/community sector organisations in developing low carbon initiatives. However, public sector organisations have been found to have problems of competing procurement priorities – example is patient safety coming before environmental concerns for the NHS Trust (Zhu and Sarkis, 2006)?

Specifically in relation to business travel behaviours:

The industry sector that a firm belongs to will, to an extent, determine the amount of business travel that it is necessary to undertake. Sector will also determine the factors that influence a firm's practices and their motivation for and barriers to adopting sustainable behaviour.

The literature review for this report found few quantitative sources of evidence on the intensity of business travel behaviour (or more specifically 'briefcase travel') in various industrial sectors and, to a lesser extent, across professions. With respect to sector, World Travel and Tourism Council (2011) found that the **communications industry has the highest business travel intensity** (travel expenditure as a share of industry revenue), followed by other services, professional, finance, retail and manufacturing (Figure 3.4[35]). **Agriculture has the lowest business travel intensity**. More detailed analysis of manufacturing identified that production of more advanced investment goods (machine tools and instruments in a continual state of innovation as well as high-tech goods) involves higher associated business travel.

Figure 3.4: OECD Business travel intensity



Source: WTTC, 2011, p14

When calculating the contribution of travel to overall company emissions, IBM (2008) also identifies **service-based businesses as undertaking the greatest amount of business travel, as well as those whose manufacturing operations are outsourced or contracted from the upstream supply chain**. The relative contribution of travel to a business' overall emissions varies considerably, especially for

[35] This was produced using input-output tables and identifying business travel purchases by sector across OECD countries. The report does not specify which countries and simply says 'Among the [OECD] countries for which I-O tables are available.

service-based businesses and those whose manufacturing operations are outsourced or contracted from the upstream supply. Table 3.3 summarises figures they provide for indicative contributions of travel to total emissions for different industrial sectors[36].

Table 3.3: Contribution of travel to overall company emissions – examples from different industrial sectors

Business	Contribution of travel to overall company emissions
A global aluminium producer	0.1%
A UK Government department	16%
A UK retail bank	21%
A European publisher	34%
A UK Government agency	65%
The UK practice of a leading management consultancy	77%
A UK-not for profit organisation	95%

Source: IBM 2008, p3

In the academic literature, many papers use common sectoral terminology (e.g. the service sector) but are not necessarily specific about differences between sectors. A few exceptions are: Gustafson 2006 who uses Swedish industrial classifications, where the **highest percentage of travel was in 'Other services' (14.8%), then trade (13.1%), the third highest was manufacturing/extraction (11.9%). Construction, education and healthcare are all less than 10%.** Davies and Armsworth (2010) also show that **financial firms were less sensitive to price changes of air and rail travel** when compared to those in food/pharmaceuticals. These studies therefore reveal a very similar sectoral patterning to business travel to the WTTC and IBM studies reported above but, in conclusion, as the IBM data shows, whilst sector is important, it is also an unreliable indicator as the amount of travel in service sector businesses is very variable.

Data is also available at the individual employee level on the relationship between profession and the amount (and nature) of business travel. Data in the DfT's National Travel Survey (NTS) is collected by socio-economic classification which is translatable to the job profiles of organisations. In a report for the Department for Transport on the valuation of travel time savings for business travellers (Wardman et al., 2013), special tabulations of NTS data are reported which identifies the occupations (using National Statistics Socio-economic Classification) (Table 3.4) and industrial sectors (Table 3.5) which report the greatest number (and distance travelled) of business trips.

[36] Note that it is unclear from the IBM report where these figures are sourced from.

Table 3.4: Business Travel by Socio-economic classification (all modes)

NS-SEC	2010
Average number of trips (per employed person per year)	
Managerial and professional occupations	58
Intermediate occupations	38
Routine and manual occupations	20
Never worked and long-term unemployed occupations	2
Not classified[2]	26
All employed people (aged 16+)	**35**
Average distance travelled (miles per employed person per year)	
Managerial and professional occupations	1,516
Intermediate occupations	596
Routine and manual occupations	258
Never worked and long-term unemployed occupations	15
Not classified[3]	463
All employed people (aged 16+)	**729**

Table 3.5: Business Travel by Industry (all modes)

Industry group	2008/09
Average number of trips (per person per year)	
Agriculture and fishing	88
Energy, water, mining etc.	34
Manufacturing	24
Construction	69
Distribution and hotels	16
Transport and communication	25
Financial and real estate	54
Public administration, education and health	50
Other service	57
All people (aged 16+)	**40**
Average distance travelled (miles per person per year)	
Agriculture and fishing	931
Energy, water, mining etc.	786
Manufacturing	717
Construction	1,586
Distribution and hotels	356
Transport and communication	836
Financial and real estate	1,349
Public administration, education and health	597
Other service	761
All people (aged 16+)	**780**

Source: Wardman et al., 2013, p21. Note: A business purpose trip is defined as 'personal trips in the course of work, including a trip in the course of work back to work. This includes all work trips by people with no place of work (including site workers) and those who work at or from home.

Table 3.4 shows that managerial and professional staff make the most trips per person (averaging at more than 1 per week), and also travel the furthest. The authors speculate that such workers also dominate travel by rail for business purposes given the high wages of such travellers and their

propensity to travel further. Table 3.5 shows that, compared to occupations, travel is more evenly split across industrial sectors. However, employees in the agriculture/fishing travel make the most trips per person, followed by construction, other service and employees in the high value service sector (financial and real estate). This finding contradicts the WTTC report cited above which finds agriculture to be the sector with the lowest amounts of business travel.

As well as understanding which sectors undertake more business travel than others, some studies have investigated whether some sectors are more likely to adopt 'green' practices. In particular, there is a **significant amount of literature emerging on the sectoral differences in the uptake of teleworking and videoconferencing** (e-working). Roby (2010), in a report for Transport for London, found that **levels of e-working for both business travel and commuting were more dependent on business type than location (in London)**. In particular, **professional service providers are reported to have very high levels of business travel for meetings** and are thus also most likely to introduce e-working 'as the concept of remote working for meetings is already considered the norm' (p59). In a study in Norway, Denstadli et al. (2012) found that **businesses who participate in large amounts of air travel tend to be more likely to participate in videoconferencing** and, overall, **banking/insurance, ICT, oil and chemical industries are the sectors with the greatest likelihood to change travel behaviour** (in Norway). Research has demonstrated that **intra-organisational contact has been a prime motivator for the use of videoconferencing** (e.g. Beaverstock et al., 2009; Denstadli et al., 2012; Denstadli, 2004; Lian and Denstadli, 2004), implying that the technology has served mostly as a communication tool for multi-unit companies. Arnfalk and Kogg (2003) found that frequent travellers were among those who most favoured virtual meetings (suggesting complementarity), although they also reported that **people involved in sales and procurement, whose travel frequency was the highest, were reluctant to use videoconferencing owing to their high degree of external contacts.** Indeed, face to face meetings (F2F) is part of the suite of communication strategies employed by the firm and, particularly in some sectors such as professional services sector (such as architecture, sales and financial consultancy), many authors believe there will always be a need for it, albeit potentially becoming less important for younger generations (Faulconbridge et al., 2009; Arnfalk and Kogg, 2003; Aguilera, 2008). This is because these sectors depend upon deal making and the sharing and disseminating tailor made, non routine and often one-off solutions and therefore have a greater dependence on development of trusted relationships between client and contractor. This kind of rapport is much easier to develop in a F2F meeting rather than in a virtual alternative. Also, where virtual alternatives exist their energy consumption is not insignificant.

There is little information on the sectoral differences in the uptake of other sustainable business travel behaviours. Eichholtz et al. (2012) find that financial and legal services sectors are more likely to rent

energy efficient office space with environmental credentials than other sectors. However, **it is entirely possible that companies locating to "green" office space may disregard the travel and transport implications of their choice.** This possibility is mitigated, to some extent, in new buildings by virtue of the leading environmental rating systems for non-domestic buildings, LEED[37] and BREEAM[38] including criteria for low carbon commuting within the overall rating. Specifically, additional credits are awarded for provision of facilities for cycling to work and proximity to public transport routes (see Section 2.5).

Heinen et al. (2009) identify a number of work-related factors that affect decisions to commute or not by bicycle: type of contract/multiple work locations, the need to use a car during the working day, and the need to transport heavy or bulky objects to work. Irregular shifts also influence decision to cycle commute. Overall job design is the thing identified here as related to sector as a determinant of cycling behaviour. Full time cycle commuters are more likely to work in primary industry or manufacturing than in public utility services. Part time cyclists are more likely to be in mineral production, building/construction trade, hotel and restaurant, transport, storage and communication, finance and insurance, education and health/healthcare than in public utility companies. Including income in the analysis reduces the effect of sector, though job position does not seem to be significant.

Possible survey topics relating to sector

- SIC
- NS – SEC of employees
- Nature of the business (e.g. shift work)
- % of employees with a fixed work schedule
- Operating hours/ opening hours

3.2.6.3 Organisational geography

Organisational geography includes the number of sites and their geographical distribution as well as the market reach. Whilst geography will itself directly relate to local factors (such as local transport infrastructure, skills, cycling culture), this factor in the Conceptual Model captures the need for long-distance communication produced by multi-unit companies, the development of team/project-based working and globalisation. It also captures the geographical distribution of customers and suppliers and reflects the degree to which an organisation is seeking to buy or sell from an international marketplace.

Due to the pervasive need for face-to-face contact discussed above, together with the associated rise in the conferences and conventions industry, Aguilera (2008) suggests that **the geographical characteristics of a business and the ways in which a business organises communication between**

[37] Leadership in Energy and Environmental Design

[38] Building Research Establishment Environmental Assessment Method

its sites is a key determinant of business travel. A globalised business with offices all over the world has a structural need for some business travel because a) there is a need for hub managers to ensure that instructions are being carried out in spoke offices and for spoke offices to be inducted in the culture and "ways of doing things" set by the hub office. This requires face to face contact (Faulconbridge et al., 2009). Likewise, Gustafson (2013a) notes that geographically dispersed companies expect mobility from managers, whereas companies with a corporate HQ will hold internal meetings there, reducing the mobility of senior managers. On the other hand, in his 2012a paper, Gustafson suggests that **intra-company travel is easier to manage than external travel**. Lu and Peeta (2009) concur with this and suggest that the substitution of business travel with videoconferencing is determined by the context of the meetings, not the number of meetings. They suggest intra and inter-firm travel should perhaps be considered separately as they pose different challenges and opportunities.

The broader geographical context was highlighted in three studies as an important factor in the amount of business travel. Limtanakool et al. (2006) identify the spatial structure in which businesses operate (i.e. distance to opportunity) as a determinant of their participation in medium and long distance travel. A moderate polycentric urbanisation pattern with many medium sized cities (like the Netherlands) increases distance travelled, as the opportunity sites are close enough to make it worthwhile to trade across these spaces. In the UK, **the greater concentration of the population and firms in a smaller number of metropolitan areas has the effect of reducing per capita medium and long distance business trips**. Hebes et al. (2013) used existing datasets in Germany[39] to understand firms' service related traffic as part of commercial transport (such as facility management, home care, maintenance, consultancy services) and found that spatial setting was an important predictor variable. In particular, commercial **vehicles from firms with an office based within sectoral clusters are characterized by a significantly lower vehicle distances per year**. On average, these vehicles travel about 3500 km less per year than their counterparts in rural areas. This result appears to be directly linked to the geographical position of customers. The analysis shows that a higher share of customers within a 50 km radius leads to less vehicle kilometres driven per year. Geography features in a similar way in Le Vine and Jones (2012) where car use for business travel is more important outside Greater London. However, within London, Roby (2010) finds the percentage of business *trips* for an average weekday has remained fairly constant between 1991 and 2007/08, fluctuating between 6% and 7%,

[39] Generated by previous academic studies: "Kraftfahrzeugverkehr in Deutschland" (KiD 2002) consisting of driver's log of commercial vehicles for one day in Germany and "Service- Related Traffic" from ~1200 firms as part of a research project to look at business-business travel.

but rising to 8% in 2007/08[40], notably higher than the national average of 3%[41]. She also finds the average distance travelled is also higher in London accounting for 15% of the distances travelled[42], compared with 9% as a UK average[43]. The difference between the two sets of figures (Le Vine/Jones & Roby) is that the former is concentrating on car business use and the latter is all modes.

In addition Aguliera (2008) finds that the **customer structure is a determining factor.** The number of customers, their geographical position and the form of cooperation with these customers are assumed to be important external aspects.

Possible survey topics relating to organisational geography

- Number of sites
- Distance of sites from each other, from HQ, from other key venues (eg. suppliers; retail outlets)
- International presence (sites and customers)
- Customer spread/ How many customers within 50k
- Amount of intra-company vs inter-company travel
- Videoconferencing facilities

3.2.6.4 Ownership

Ownership refers to whether a business is publicly listed (PLC), privately owned (Ltd, partnership, cooperative or sole trader), not for profit (social enterprise), public sector or third sector. **Very little evidence emerged directly on the role of ownership on the amount or nature of business travel or the propensity to engage in sustainable business travel behaviours, which is quite surprising.** Indirectly, ownership surfaced as an important factor in a number of ways. For instance Roby (2011) found that **reporting/accountability requirements vary according to business type**: PLCs have stringent reporting requirements due to their accountability to shareholders and this public disclosure of environmental performance can be a powerful driver for adoption of more sustainable practices. Preuss and Perschke (2010) relate ownership closely to the size of the firm. They classify large firms as often widely held institutional and individual investors, medium firms as being in the first stages of separation between ownership and control due to growing use of outside funding and small firms as characterised by owner capital, personal borrowing. They found **differences in CSR strategy across these typical ownership patterns.** For instance, the dominant role of the owner–manager in small firms was found to translate into some leeway for the owner–manager to determine CSR priorities

[40] Transport for London (2009) Travel in London. Key trends and developments: Report No 1, TfL, London, TFL (Table 9.3, pp 137).
[41] Department for Transport (2009) Transport Statistics Bulletin, National Travel Survey: 2008, DfT, London, HMSO (Chart 4.1a, p28).
[42] Transport for London (2009) (Table 9.7, p 148).
[43] Department for Transport (2009) (Chart 4.1b, p 28).

(CSR emerging in an informal way), whereas large firms were under a much greater degree of external pressure (the CSR response being framed in a deliberate policy). Walker et al. (2008) found that the major internal barrier to implementing sustainable business practices is the cost. The study found that this was particularly true of public sector organisations. However, Roby 2010 found that not for profits have a low awareness of cost control for travel, unless they have an environmental remit.

Possible survey topics relating to ownership

- Publicly listed, privately owned (Ltd, partnership, cooperative or sole trader), not for profit (social enterprise), public sector or third sector

3.2.6.5 Growth Trajectory

This model construct (which may also be termed organisational lifecycle) captures both the history of growth of the business and its current 'direction of travel'. This in turn is related to the market position of the firm and competitive structure of its product market. Growth trajectory has emerged very recently in the literature in conjunction with the Green Growth agenda and thus is still a relatively 'unstable' concept with little direct evidence relating to business travel. The strongest evidence comes from Preuss and Perschke (2010) who suggest that studies have shown that **high-growth firms are more likely to engage in innovative practices in order to gain a competitive edge in the market.** These firms will naturally look to adopt environmentally sustainable business practices to cut costs and differentiate themselves from competitors. In their study of 'green' workplace initiatives in Scotland, Cox et al. (2012) also suggest that **organisations which are growing are also more likely to have carbon management practices in place.** Organisations which are static or declining are thought to be less likely to embrace carbon management and must have the benefits clearly set out for them.

Possible survey topics relating to growth trajectory

- Growth history
- Currently growing or not
- Market position/ market share/ stock market value

3.2.7 The role of organisational strategy

This section deals with the components of strategy – how an organisation chooses to respond to its operating environment. This covers the purpose and orientation of the business as a whole related to its corporate structure arrangements and ownership.

Strategy, resources, local factors and people are all required to carry out business or organisational activity. We hypothesise that these **internal issues will be especially vital for any segmentation model.** Clemens and Douglas (2006) point out that institutional theory suggests *external* forces drive

firms' decision-making and that firms will only perform conscientiously (which, with respect to environmental behaviour, they term 'voluntary' green behaviours (VGIs)) if coerced by governments. However, they combine institutional theory with resource based theory which focuses on the internal resources a company has and found that although coercion is positively related to the performance of VGIs, decision making leading to VGIs is increasingly driven by *internal forces* (notably resources which integrate environmental issues into strategic processes such as additional accounting systems, monitoring of waste streams, training) and where these resources exist, VGIs are more likely to be genuinely voluntary (i.e. happening without coercion). Popadiuk (2012) agrees and states that **trying to gain a better understanding of the external focus of an organisation as a means of explaining its performance provides a limited perspective upon which to undertake segmentation. It is more instructive to examine internal or resource-based issues.**

In the context of business trip making, it is notable that Aguilera (2008) finds contradictory results for the role of size and sector and concludes that "An explanation for such contradictory findings probably lies in the observation that a company's sector or size is not the most appropriate parameter by which a need for business travel should be judged. **Organizational parameters (in their broadest sense) are undoubtedly far more determining.**" (p.1112)

3.2.7.1 Corporate mission

Organisations may have a variety of 'reasons for being', not all of which are profit driven or growth oriented, but may include being inheritance focused or focused on the social good, including **ecological responsibility.**

These orientations can have a strong link to ownership and sector and size. Preuss and Perschke (2010) suggest that in large commercial firms, market share and stock market value structure the firms 'mission', whereas **in small firms, goals are often vague and pragmatic with a focus on survival and operational necessities**. Williams and Schaefer (2013) note a useful distinction between different types of SMEs, though, in terms of their main motivation for being in business. One such distinction is between high growth/high profit-oriented entrepreneurs – sometimes termed 'gazelles' – and 'normal' SME owners, who may be more interested in achieving a work–life balance while obtaining 'sufficient' profits to earn a living.

As discussed previously, the framework of Bansal and Roth (2000) on 'corporate ecological responsiveness' talks of three motivations for corporate 'greening': competitiveness, legitimation and environmental responsibility. In this influential paper, competitiveness is defined as the potential for ecological responsiveness to improve long-term profitability through, for example, increased resource efficiency, enhanced reputation with customers and enhanced reputation in the labour market.

Competitively motivated firms engaged in more visible activities to improve their corporate environmental reputations. It can be seen how this might help frame the whole 'business population' including the public, private and not for profit/third sector.

In any case, it is "strategicity" or strategic advantage (meaning conferring longer term competitive advantage) which is thought to mainly drive decision making and investment in firms - rather than short term calculations of profit and loss (this will vary by sector to some extent) (Bessant et al., 2005). As discussed in Section 2.4.2, examples of the "energy efficiency paradox", whereby cost effective, low risk investments in energy efficiency are not undertaken in the private (and public) sectors, are prevalent in the literature (Banks et al., 2012). **Instead, energy efficiency will be associated with green growth to the extent that it is perceived as having a strategic value** which, in turn, is primarily about longer term competitive advantage and may not involve growth in the short or medium terms or even profit over those periods.

Thus, energy efficiency measures are not undertaken because **decisions around adoption of energy efficient practices involve additional factors to consideration of profit or growth alone**. This is not to discount the importance of price signals and costs in organisational decision-making, but only to situate these kinds of reasoning and drivers within a larger context where other factors come to play also. It is suggested that organisational behaviour is better understood using theory which understands company behaviour as "social-technical" in character i.e. companies, and the supply chains in which are they embedded, are constructed from individuals and groups of individuals who **act in ways which make sense in the context of their local business culture, the social relationships they share and the material and technical infrastructure which guides choice and opportunity**.

All the organisations surveyed by Worthington & Patton (2005) acknowledged that there were potential business benefits from environmental responses yet none had really sought out truly innovative ways of eliminating environmental damage - for example there was almost no take up of water based inks. This may be a function of the sector which fits the "legitimation" motivation for ecological responsibility – i.e. it is driven by compliance rather than recognising a competitive advantage or seeking to "do the right thing".

However, Williams and Schaefer (2013) found that climate change was not seen as a business issue by SME managers and that the only way to engage them with this issue was to focus on cost savings. Therefore they promoted the energy efficiency and environmental management agenda in terms of quick financial wins for the companies. Nevertheless, they also distinguish between environmental orientations of SMEs – high versus low. They distinguish 'normal' SMEs from both high-profit-orientated entrepreneurs and ecological entrepreneurs, whose business is founded on the principal

aim of providing an environmental good. The paper further distinguishes between 'normal' SMEs that are reluctant to engage with environmental issues and 'environmentally pro-active, normal' SMEs, whose main business purpose is not an environmental one but who are nonetheless actively interested in reducing the environmental impact of their businesses. The paper's findings suggest that **environmentally pro-active SME managers were both able and willing to engage with the climate change debate and saw this very much within a wider environmental and social agenda. Promoting only cost savings is therefore possibly too narrow a policy response.** Similarly, where SMEs are motivated to act in a way demonstrating environmental leadership, Runhaar et al., (2008) suggest that SME's are of two general types. **Some see greenness as a commercial opportunity, others out of a sense that it is the "right thing to do".** Larger companies are primarily motivated by the cost savings opportunities and the benefits to the organisation's public image but Clemens and Douglas (2006) illustrate that for those firms that are "corporate environmental entrepreneurs", coercive forces are no longer necessary to encourage voluntary green initiatives.

Despite these broader and longer term objectives, the literature also demonstrates that **short term costs of action can also be important, particularly for smaller firms**. Revell at al (2010) find that on the whole SME's perceive a number of business benefits from greening their businesses including "attracting new customers", "good publicity", "potential to break into new markets". However they also perceive increased costs as a major barrier and two out of three SMEs **were sceptical or unsure as to whether greater environmental friendliness would lead to increased profits**. The more costs were rated as a barrier, the less likely respondents were to act to reduce impacts or to have predominantly positive attitudes. This has important connotations, as it indicates that **SMEs' proactive behaviour may wane once the so called 'low hanging fruit' of efficiency gains have been achieved** and more costly environmental measures begin to have negative financial impacts.

Overall, the literature suggests that those advising SMEs on environmental issues and climate change **should perhaps concentrate less on the business case and cost savings but pay more attention to other motivations that lead small business managers to engage with environmental issues, particularly value-driven arguments.** This is an area where peer support among small businesses could be useful, as managers stated they trusted arguments put forward by other businesses more than those advanced by advocacy groups or advisory organisations. In addition, **business advice should perhaps focus more on making managers feel that their actions matter with respect to the environment and to climate change.**

Specifically in relation to business travel behaviours:

With respect to freight transport, Oberhofer and Fürst (2012) found that economic impact and financial strength, as well as stakeholder influences (e.g. regulations, customer requirements), played the most important role when it comes to the implementation of environment-protecting measures. This seems to be a consistent finding in the freight sector, including in the interviews for this study which found CSR **to be less important in the freight sector** and where implementation is more often linked to efficiency improvement and is more likely to be viewed as an obligation rather than a driver for greening fleet operations (Pangbourne et al., 2015).

Nevertheless, there are particular characteristics of the "efficiency" concept which **place fuel and energy efficiency in a kind of conceptual blind spot** and systematically bias decisions away from selection of energy efficient outcomes (Banks et al., 2012). For example, the language of efficiency is centred around payback rather than Net Present Value, i.e. the metric of the worth of an investment in efficiency is whether it pays for itself rather than whether it adds value to the organisation. Also the classification of efficiency investments as maintenance costs rather than assets on balance sheets directly impacts bottom line profit and which means that making a case for the expenditure is made more difficult. This means that **sustainable transport issues have to be integrated into business strategy decisions in order to support long term thinking rather than short-term profit maximisation**.

For instance, Potter et al. (2004) identified that the longevity of a workplace travel plan is determined by the ability of the organisation to accept that the travel plan is something they *should* do rather than *have to do*. This in turn requires organisational commitment and a shift in the travel plan from being an isolated estate management measure towards relating to an organisation's core purpose and eventually being accepted as a normal business or organisational practice. Roby (2010) found that mature travel plans **can become embedded within organisations** as they are harnessed to business objectives such as recruitment/retention of staff, business growth, company image and environmental motivations. This paper evidences a link between mature travel plans and business objectives that go beyond statutory requirements. As travel plans mature the motivations change from externally imposed requirements to meet a planning condition, to a much broader range of internally driven motivations. This change in motivations to become *more internally driven* is accompanied by a development in the business cases for a travel plan. **Business cases such as linking into business travel and recruitment** begin to strengthen the links into the organisation and help to embed and diffuse the travel plan. Developing these business cases requires a more holistic approach to travel planning which can also change the way an organisation works. The most obvious example of this is to **change to smarter or** flexible working practices**.** If organisations' level of integration and internalisation of travel plans can be identified, (rather than other factors such as number of

measures, or funding provided) this may provide a robust predictor of successful travel practices. The key finding therefore is that the introduction of **successful workplace travel plans (which can be used as a proxy for sustainable travel practices) is dependent on the degree to which an organisation has integrated a travel plan within their core activities.** If peripheral, then the plan will have little impact; if central, then all the organisations activities become affected and participate in delivering (and benefitting from) changes in travel practices. While this may or may not involve procurement, most significant travel plans will involve fleet management (and a fleet manager) at some level.

Roby (2009) has identified a historical trend in the motivation behind travel plans – which has changed from a regulatory response (initially) to one dominated by CSR/ congestion/ and business operation issues. It is interesting, however, that workplace travel plans were very rarely mentioned in the qualitative interviews for this study, and only by the umbrella organisation with travel planning as a specific remit (Business in the Community/ Ways to Work). Although this finding may have been different if the interviews had been held with individual businesses, it could potentially indicate that travel planning **has a long way to go before it makes it into normative business strategy**.

In the interviews for this study, the **retail sector was found likely to see sustainable transport as more of a sustainability issue** linked to supply-chains and environmental pressure. Retailers were found to have some interest in technological improvement for freight transport where it contributes to their carbon targets and would also respond if consumers demanded it (Pangbourne et al., 2015).

Possible survey topics relating to <u>corporate mission</u>

- Profit orientated vs profit satisficing
- 'Corporate' motivations for engaging in CSR (competitive, legitimation, sense of ecological responsibility)
- 'Corporate' belief in link between ecological responsiveness and resource efficiency/ long term competitiveness/ profit/ enhanced reputation
- 'Corporate' view of regulation a cost burden or driver of environmental practice
- Innovation/ R&D

3.2.7.2 Organisational culture

Organisational culture is the pattern of shared assumptions within an organisation usually tried and tested, found to be effective and passed on over time. This is closely linked to corporate mission as it covers the purpose and orientation of the firm as a whole, related to its corporate structure arrangements and ownership (ICF GHK, 2012). Different organisations have different cultures which can be described as 'the way we see and do things around here' and giving an organisation a sense of

identity - 'who we are', 'what we stand for', 'what we do'[44]. "Culture therefore determines, through the organisation's legends, rituals, beliefs, meanings, values, norms and language" (ibid)'.

Culture has been strongly related to business ethics in the literature as these are defined as moral rules, standards, and codes of principles which provide guidelines to behaviour (Lewis 1985 cited in Douglas and Lubbe (2009)).

Specifically in relation to business travel behaviours:

Very little literature was uncovered which directly addressed the notion of organisational culture in relation to travel-related business activity. One exception was Douglas and Lubbe (2009) who utilised the Modes of Managing Morality model of Rossouw and van Vuuren (2003)[45] to explain the role of organisational culture *vis a vis* individual factors (employee attitudes) in influencing compliance and non-compliance with corporate travel policy. This model captures the way in which organisations manage business ethics and the authors map the formulation and 'spirit' of corporate travel policies on to the model, thus claiming this to be equivalent to a measurement of 'culture'. Their model has 5 types of business: Immoral (ethics has no place in business), Reactive (laissez faire ethics management/ token), Compliance (rule based approach for prevention of unethical behaviour), Integrity (value based approach and proactive promotion of ethical behaviour), Totally Aligned (ethics reinforced as part of culture and purpose and entrenched in decision making). These are cross-tabulated with three types of travel policy management: high, medium and low control. A 'Compliant' business is likely to have a high control travel policy, whereas an 'Integrity' mode business is more likely to have a medium control policy, expecting employees to internalise the ethical code. 'Immoral' and 'Totally Aligned' would both have low control policies for opposite reasons.

The results suggests once again that behaviours need to be embedded into the core purpose of the organisation to be most successful, although this model would suggest that **total alignment is not entirely necessary if policies and procedures are more tightly managed and there are the resources, including management competence, to see this through.** However, the moral modes model can only be directly transferred to sustainable travel policies if sustainable travel policies are seen as 'ethical'. For instance, given that the organisational culture of heavy duty freight operations tends to be more highly focused on operational requirements (and economic restrictions), it may be the case that these findings do not transfer to this the freight sector.

[44] http://businesscasestudies.co.uk/business-theory/strategy/corporate-and-organisational-culture.html#axzz2e6x63RUe

[45] Rossouw, G.J. and van Vuuren, L.J. (2003) Modes of managing morality: A descriptive model of strategies for managing ethics. Journal of Business Ethics. 46(4), pp.389-402.

One other example from the literature is Roby (2011). She suggests organisational culture can be an important distinguishing factor as to whether or not a company introduces videoconferencing or attempts to manage the commute. In the context of reducing 'briefcase travel' she highlights the 'culture of travel' that can develop within organisations or even within specific project teams where, as a symptom of controlling travel purely by cost within project budgets, the attitude can be 'if the money is there and someone else is paying for it then why not travel'.

Possible survey topics relating to organisational culture

- Moral rules, standards, codes of principles which provide guidelines to behaviour
- Culture of business travel (business travel as a status symbol; rewards for business travel; communications messages regarding travel/ environmental issues)
- Levels of compliance/ non-compliance with travel policy

3.2.7.3 Management values and attitudes

From the evidence reviewed, there is **little doubt that the role of senior management in motivating ecological responsibility, setting the direction and 'spirit' of sustainability and travel related decisions and embedding them in an organisation, is pivotal.** The influence of these attitudes is still dependent on a number of things including the size and decision making structure of the organisation, but nevertheless, **the culture of a particular organisation and all that flows from this derives party if not largely from the attitudes, values, and beliefs of senior executives.** A whole culture can develop around the vision of a charismatic leader.

Bansal and Roth (2000) identify **three classes of individual who may influence the firm's ecological motivations**: (i) 'decision-makers' who will use their values to decide which signals are important and which are not (ii) some 'organisational members' because of their value systems, will champion ecological responsiveness and (iii) the 'top management team', who may be more receptive to changes in procedures and processes if these fit with their own personal values. They **define ecological responsibility as a motivation that stems from the concern that a firm has for its social obligations and values**. Examples of ecological responsibility from the study included the redevelopment of previously used land to green areas, the provision of a less profitable green product line, using recycled paper and the replacement of retail items or office products with ones more ecologically benign. **Firms motivated by ecological responsibility often pointed to a single individual who had championed their ecological responses. The decision process was often based on the values of powerful individuals or on an organisation's values rather than a widely applied decision rule.** The business practices of ecologically responsible firms were often innovative and proactive, rather than simply mimicking the actions of rival firms.

Many studies agree with the importance of single individuals or at least refer to 'senior management' as a whole. Worthington & Patton (2005) find that where organisations went beyond compliance in terms of environmental improvements this was driven by 3 main factors: active support of senior management, employee involvement and experience with quality management systems. For Williams and Schaefer (2013), motivations were tied to sectors, particularly in terms of whether the industry was subject to specific environmental regulation. However, whilst the manager of a small chemicals company cited compliance with legal and regulatory requirements as a key motivator for pro-environmental actions, **personal values were still a key motivation for him wanting to go beyond legal compliance in his business**. Arvai et al., (2012) find that the values of senior managers are important but also significant are the characteristics of the decision to be made – **the more complex and uncertain the information needed to make the decision the more likely that heuristics and individual values will be employed to simplify the problem.** The work of Bansal and Roth (2000) also suggest that **the role of individual concern is more important for some motivations than others** and will be more influential in some contexts than others. Amongst smaller SME's individual concern of staff (and senior management) may be influential in organisational decision-making. In larger organisations only the individual concern of senior management is likely to be influential. Indeed, there is a large body of evidence specifically highlighting the fact that in SMEs the key driver of sustainable business practices is the beliefs and values of senior management (Collins et al. 2007). Networks – including trade associations, industrial environmental agencies, local governments and employee organisations – may be able to overcome the specific barriers faced by SMEs by raising managers' awareness of environmental concerns and sustainable practices.

Specifically in relation to business travel behaviours:

Bjorklund (2011) uses a factor analysis from a survey among 50 Swedish food and forestry companies to examine the drivers and barriers to adopting sustainable transport services in the supply chain. The study reveals that individuals within a firm's management can have a significant impact as a driver of sustainable business practices, as measured by their awareness of issues, priorities and internal communication methods. Similarly, Arnfalk and Kogg (2003) find that new sustainable practices (in this case providing videoconferencing equipment) are in themselves not enough to encourage adoption. **Whilst company policy is important, it is only effective if supported by senior management** as well as training, internal support and incentivisation. These findings are directly supported by Gustafson (2013) who identifies management 'attitudes' to travel as important, Roby (2010) who claims decisions around business travel are 'directed' by the values of directors and staff (in small companies) and GAP (2013) who said that 'credible and consistent support from senior managers was the common theme across all the successful organisations we spoke to'. GAP (2013) also highlights

evidence from their interviews of a number of **instances where travel initiatives were undermined when senior managers were openly disregarding them**. For example, they quote a large private sector employer as saying: "We had a 'no domestic flights' initiative, which was discredited because senior people within the business were quite visibly ignoring it and flying." This concurs with Faulconbridge et al. (2009) who describe how **business travel has a status component.** Those in more managerial positions often do more business travel – to enforce instructions, train others and disseminate company procedures and ways of doing things. The implication is that senior individuals in the organisation set the organisational culture by making decisions about this activity. In this instance, therefore, this issue salience can act as both a good and a bad thing. In their study of workplace initiatives on low carbon behaviours, Cox et al., (2013) also highlight the role of *line* managers. These are a vital bridge between senior management and workers: often more trusted and certainly more engaged than senior management. In very large organisations there can be an "us and them" mentality whereby corporate values which are embraced by senior managers do not filter down to workers.

Senior buy-in was also found by the Energy Saving Trust (EST) in their assessment of the Plugged-in-Fleets initiative which concluded: 'Our experience working with fleets has shown that unless high-level decision makers (ideally board level or above) are involved, then it can prove very difficult to ensure change happens within an organisation' (EST, 2013, p.7). This report also concluded that full whole-life costs analysis is essential in identifying if a plug-in-vehicle is a right business decision.

In section 2.5, the issue of **accountability and responsibility** for business travel, especially commuting and customer travel, was highlighted as a potentially important differentiator of businesses. In the interviews with umbrella bodies, commuting was discussed as being almost entirely outside the formal responsibility of the employer captured by the quote: '***the organisation is not that interested in how the person comes to work***. *The person themselves feels that's completely their choice until they enter the office premises'* (BITC/Ways2Work quoted in Pangbourne et al., 2015*).* There are certain exceptions, for example if an employee is travelling to a different location for work than their 'normal' office base. Travel planning has been the only formal mechanism that encourages organisations to influence commuting and customer travel.

Evidence of the role of '**sense of responsibility'** akin to its role in models of individual behaviour change did not emerge as important from the published literature. Three examples were found. Firstly, Rye (1999) specifically asked about this in a survey of 1000 businesses across the UK (excluding London) in relation to their motives for workplace travel planning. He suggests that businesses must perceive there to be a transport problem and that they have at least some responsibility for solving it before they will act. However, in this survey in the late 90's, the majority did not perceive there to be

a congestion problem in the vicinity of their workplace and, in any case, felt such issues to be mainly the responsibility of local and national government. Only 6% believed that employers have a high level of responsibility for such problems. Secondly, Roby (2011) highlights one organisation that purposefully did not manage the commute as they felt that it was 'too much of an invasion into the personal life of their staff'. However, the lack of attention in the literature to customer and commuter travel from the organisational perspective can be taken itself as a reflection of the lack of responsibility that organisations take for these areas of business travel. High profile corporate sustainability initiatives such as Marks and Spencer's Plan A are also notable for their 'lifecycle' approach to carbon emissions from the products they sell, but the lack of attention to how their customers travel to collect those products. Finally, the annual Barclaycard Commercial Business Survey (2008[46]) found more than a quarter (26%) of all respondents believe the onus is on employers to manage the effects of business travel on the environment, up eight per cent from the previous. As the turnover of a company increases the pressure on a company also grows with a third (34%) of respondents, working in companies with a turnover of more than £100 million, believing it is their company's responsibility to reduce the impact on the environment. Respondents also reported that the Government should have overriding responsibility of the environmental impact of business travel (33%), with a fifth (19%) saying it is the individual's responsibility and a tenth (12%) the responsibility of airlines and other travel suppliers.

Possible survey topics relating to <u>management values and attitudes</u>

- Issue salience/awareness
- 'Corporate' approach to travel costs during a downturn: can it be shaved without impacting on turnover? In recovery, do they explicitly or implicitly sanction increased travel to generate business?
- Priorities for travel management
- Beliefs about the business case for 'green travel' behaviours
- Are sustainable travel policies seen as 'ethical'?
- Business travel and status
- Perceived barriers to changing behaviour
- Compliance with travel policy among senior managers – do they 'walk the walk'?
- Belief that managing the commute / customer travel is their responsibility or is too much of an invasion into personal life

3.2.7.4 Organisational Structure

This concept captures the degree of centralisation, bureaucracy and autonomy within an organisation's organisational structure including the application of decision support tools and the degree of discretion that employees possess to act on their own environmental values. Organisational

[46] http://www.newsroom.barclays.co.uk/content/Detail.aspx?ReleaseID=1592&NewsAreaID=2. This is based on a survey of ~2500 companies but the original report on the findings could not be found. This is the link to the press release

structure is an important differentiator in understanding the propensity to act sustainably. However, internal structure cannot be entirely inferred from ownership, sector or industry.

Worthington & Patton (2005) and Bansal and Roth (2000) find that **where organisations went beyond compliance in terms of environmental improvements this was driven at least in part by employee involvement**. Organisational structure and the involvement of employees in decisions clearly have a strong link to size. Banks et al. (2012) review a number of studies reporting how **larger organisations are more bureaucratic and hierarchical which can lead to "principal-agent" problems** as facilities staff responsible for managing the organisation's energy consumption tend to be some distance in the hierarchy from the senior managers setting the strategic direction of the organisation. However, **larger organisations also tend to have more strategy, more time and more capacity** to act on energy issues and are more responsive to issues affecting their public image – including their performance on energy and environmental issues.

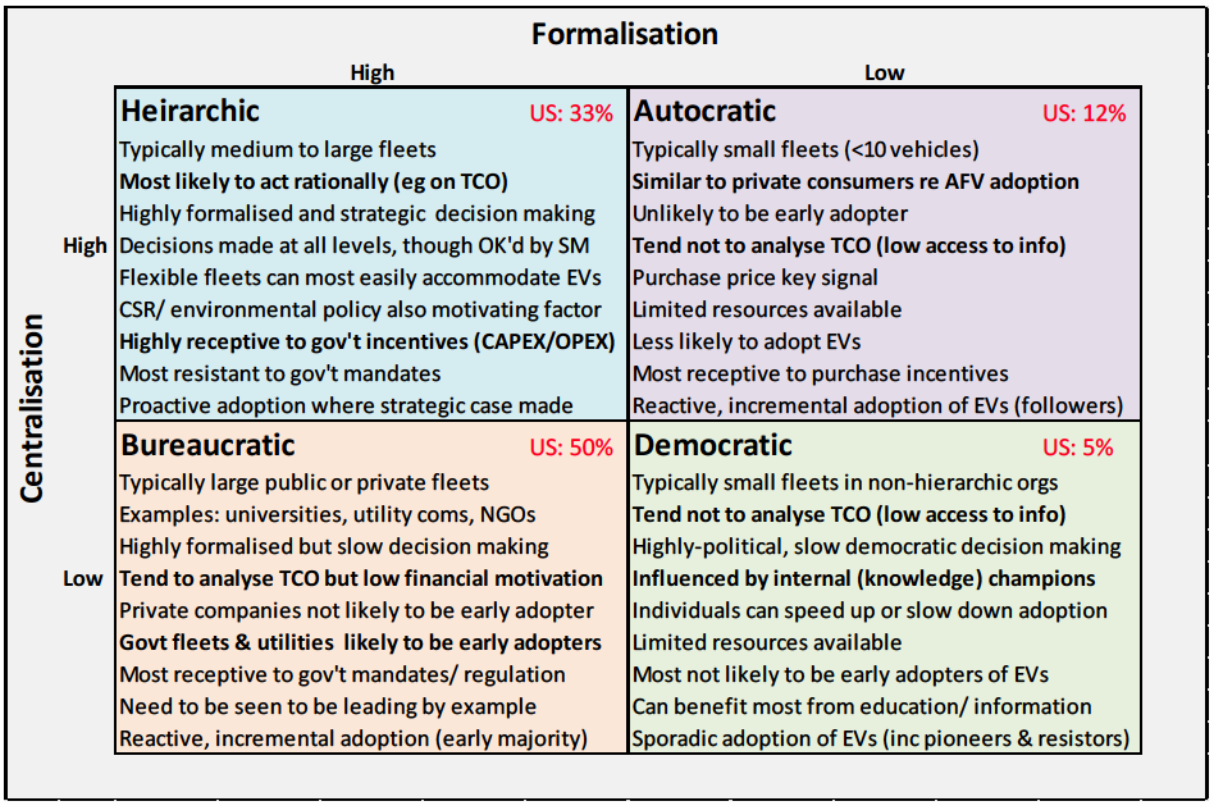
This is very much **linked to management *style* and the decision support tools in place**. In relation to business growth, Bessant et al. (2005) highlight control issues (owner involvement, delegation, decision making) and human resource issues (leadership, recruitment and training, compensation, workload management) as key ingredients of success. Arvai et al. (2012) set out to review the literature to ask 'how can we encourage *individuals* in organisations to make sustainable choices?' and suggest that the **application of particular decision support tools to particular contexts (types of decision) will lead to better decisions and particular outcomes**. For example changing routine behaviours which are effectively 'low stake' (which arguably could include commuting and many elements of briefcase travel) could be tackled using **"Passive" techniques which give feedback, establish goals, use 'public commitments' and employ defaults**. This is akin to 'nudge' theory, but does chime with studies of business travel management policies which suggest that **over-rigid rules can lead to non-compliance** (Douglas and Lubbe, 2009; Gustafson, 2013). High risk decisions with lots of intangibles (which arguably could include aspects of fleet management such as adopting electric vehicles) should be tackled with the "active" decision-support tools which we suggest could include whole-cost accounting approaches highlighted in the qualitative research for this study (Pangbourne et al., 2015).

Specifically in relation to business travel behaviours:

One of the most relevant studies uncovered for this review is Nesbitt and Sperling (2001) because of its topic area (explaining fleet management including the use or procurement of new vehicle technologies) and its attempt to segment businesses. This study is also highly pertinent to the topic of organisational structure. Based initially on focus groups and interviews used to formulate a working

typology, supplemented by a two part questionnaire survey of 2711/2117 fleet managers in Californian companies to test the typology. The authors use two dimensions to classify U.S. private and public sector organisations – according to the level of *centralisation* (with respect to organisational structure), and level of *formalisation* (with respect to internal administration), of the organisations' decision-making processes. The result is a four-fold categorisation of organisational differentiated according to receptiveness to measures designed to incentivise cleaner vehicle adoption. The following figure summarises the main issues covered by the two-dimensional segmentation proposed.

Figure 3.5: Four quadrant classification of organisational and administrative structure



Key: TCO: Total Cost of Ownership; SM: Strategic Management; CSR: Corporate Social Responsibility; Gov't: Government; AFV: Alternatively Fuelled Vehicle

Source: figure prepared by the reviewers from Nesbitt and Sperling (2001). Notes: TCO = 'Total Cost of Operation'; EV = Electric Vehicle

The research suggests that **organisations operating larger fleets are most likely to consider new vehicle types (including EVs) if they can be classified as 'hierarchic' as typified by large private sector corporations.** These organisations tend to be highly motivated by Total Cost of Ownership (TCO[47]) considerations and CSR policy, and view potential risks as opportunities. **While more 'bureaucratic'**

[47] Total Cost of Ownership is a calculation designed to help people make more informed financial decisions. Rather than just looking at the purchase price of an object, TCO looks at the complete cost from purchase to disposal. It adds to the initial purchase price other costs expected to be incurred during the life of owning the vehicle, such as fuel costs service, repair, and insurance.

organisations, as are found in the public sector, aspire to adopt new technologies, aim to lead by example and are more motivated by government regulations, they tend to be risk averse, have overly complex decision making processes, and have less access to investment capital. As a result this type of organisation tends not to be among the earliest adopters.

According to the authors, **smaller organisations (operating fewer vehicles) are less important as early adopters of new vehicle technologies.** These are classified as either: 'autocratic' and are similar to private consumers in their attitudes towards new vehicle types; or 'democratic' with organisational behaviour that tends to be dominated by internal knowledge champions (who can either support or block adoption). The four segments identified by paper also differentiate according to receptiveness to measures designed to incentivise cleaner vehicle adoption. The paper observed that **'Hierarchic' (large fleets) respond to financial incentives** (assess TCO, risk as opportunity); **'Bureaucratic' (large fleets) respond to mandates** (TCO insensitive); **'Autocratic' (<10) respond to purchase incentives and information** (risk averse); **'Democratic' (small fleets) have low access to resources (money & time) and tend to respond most to information.**

While UK evidence is limited, this is supported by a recent UK survey by GE Capital (2011) which reports that **18% of the largest fleets (500+ vehicles) operate EVs of some type as compared to only 2-3% for fleets with fewer than 500 vehicles.**

Further evidence on organisational structure is situated in the literature on travel management and workplace travel planning. For the latter, there is much evidence to suggest that **travel policies and plans need to be both centralised in the sense that they are embedded within a strategic, cross-organisational wider framework** (such as a carbon management plan) (GAP 2013), **whilst at the same time allow individual employees the discretion to act** on their own environmental values (Bansal and Roth 2000, Douglas and Lubbe, 2009). However, the annual Barclaycard Commercial Business Survey (2008[48]) found **less than a fifth of respondents (18%) had an environmental policy at work governing business travel** and over a tenth (11%) of those questioned didn't know whether their company did have a policy in place. Even fewer companies monitor their business travel carbon footprint (7%) or offset their carbon emissions (4%).

The GAP study of over 100 businesses including qualitative and quantitative surveys provides some of the clearest evidence on this issue. They showed that 62% of the organisations they surveyed (N=~120) said that they had a 'strategic, cross-organisational approach to reducing travel', but during the interviews many were **unable to substantiate** what form this took and it rarely translated into a

[48] http://www.newsroom.barclays.co.uk/content/Detail.aspx?ReleaseID=1592&NewsAreaID=2. This is based on a survey of ~2500 companies but the original report on the findings could not be found. This is the link to the press release

coherent narrative which engaged the whole organisation. They found that 'without a wider framework, workplace travel plans can become box ticking exercises, often only undertaken to meet an external demand such as a planning requirement' (p14). They suggest that **incorporating travel activities into a wider framework, for example a carbon reduction plan or ISO14001, provides a focus and adds greater weight**. They provide the example of Basingstoke and Deane Borough Council where the travel plan was incorporated into a Carbon Management Plan, which was then signed off by senior management and the council committee. It contained clear targets and clear ownership of those targets, to ensure that they filtered down.

The importance of centralised processes is also highlighted by Davies and Armsworth (2010) in the context of business (air) travel policy/management practices. They suggest that **centrally organised processes equate to greater sensitivity to issues such as price rises** so that small changes (e.g. price increase of 2%) may have substantial impact on decisions/behaviour across the whole company. Roy and Filiatrault (1998) also conclude that **centralised processes which control** air travel **also have a large influence on that travel.** Douglas and Lubbe (2010) also identify **four important structuring factors** in corporate travel management: (i) *travel information management* whereby information about travel is collated (centrally) in order to be able to influence it (ii) *travel expenditure management* so as to design a payment system which consolidates information about travel expenses into reports and standardised payment methods (iii) *travel management companies* used to outsource part or all of the travel elements, and (iv) travel policy where the primary purpose usually cost control, but also informs employees about company expectations, rules and limits. A travel policy seen as a practice that impacts directly on travel outcomes. They also suggest that a job role of Corporate Travel Manager regarded as pivotal.

Relating to different element of business travel, Handfield et al. (2005) also point to the **important role of decision support systems to assist** supply chain management**.** This research demonstrates how companies integrate environmental and supply chain decisions using Environmental Management Strategies. In doing so, the authors contest, the company is able to move past any belief that there is an inherent trade-off between being environmentally friendly and being profitable – one of the key barriers to sustainable company strategies and one often experienced at the manager level. The authors claim: 'The companies we interviewed have demonstrated that the **trade-off mentality concerning environmental issues becomes less relevant as companies pursue best-in-class materials management practices that reduce cost by reducing waste'** (p18). The paper shows that in this way, **supply chain management practices can actually become environmental initiatives which spur new ways of thinking and acting on 'total quality'**. The paper includes consideration of the transportation of purchased materials, but focuses on hazardous materials distribution only.

Returning to 'briefcase travel, despite the finding that these centralised decision support tools are vital, the inference of Douglas and Lubbe (2009) find that travel policies **that are developed in consultation with staff, and which provide incentives for compliance actually improve the effectiveness of travel policies in managing travel and the expense of travel**. Similarly, in his study of corporate travel management', Gustafson (2013a) interviews travel managers and analyses travel policy documents and identifies *control-oriented strategies* which use 'use formal rules, surveillance and sanctions' and *commitment-oriented strategies* which 'encourage employee involvement, responsibility and self-control'. He concludes that a balance is needed between these two elements as they can in fact complement each other so that **control strategies work best if employees are committed which, in turn, is encouraged by having autonomy backed up by guiding policies and routines.** The balance between control and commitment was influenced by employee relations, organizational hierarchies and the professional status of both travel managers and travellers as well as the services provided by major business travel agencies which often promoted control-oriented travel management. Gustafson has published a variety of other papers which look at issues of travel time and mode choice for briefcase travel (2012b and 2013a) and corporate travel management more generally (2012a) which all identify this need for balance but also identify the **important role of travel managers (with appropriate status and strategic positioning) in achieving this balance**. Interestingly, in his 2012a paper, he identifies that travel managers are extending their remit into meetings management, on the back of the rise of video/teleconferencing. This represents an opportunity to spread video/teleconferencing. However, his 2013b paper he notes that **the structure around travel management can become over complicated** between travel managers, travel management companies (particularly due to the complexity of the business travel market with respect to supply and pricing and loyalty programmes aimed at travellers rather than the businesses) and the business travellers themselves. He therefore underlines the need for formal travel management control systems within organisations to manage these relationships.

After identifying four different clusters of commercial travel behaviour (based on time of day, vehicle location, type of vehicle and economic sector) from commercial drivers' logs in Germany, Hebes et al. (2013) identify that internal company processes have a significant impact on behaviour. Significantly, **if employees themselves decide which mode to choose for travel, the average distance per year increases**. The authors suggest this may be to do with more arbitrary decision or comfort-based choices.

The evidence therefore suggests that both centralisation and autonomy is necessary, but the latter particularly can lead to more arbitrary (and less sustainable) decisions. The evidence also suggests that there is mixture of both centrality and autonomy in decision making in organisations. Roy and

Filiatrault's (1998) study of business air travel practices, for instance, suggest that centralisation of decision making is prevalent with many administrative controls (such as air expenses limitations, formal authorisation required before travelling) having a large impact on end-user travel patterns. However, GAP (2013) also claim that **three-quarters of business travellers are responsible for choosing how they travel** leaving options much more susceptible to individual employee values and habits (see Section 3.2.9.1) which, if Hebes et al.'s analysis is correct, could lead to greater distance travelled. It is clearly difficult to put any kind of figure on where centralisation is greatest or weakest, however, as different elements of business travel choice are bound to have different elements of control.

What is clear is that **administrative decision making processes within organisations can be very fragmented.** Research reported by Banks et al. (2012) finds that in larger organisations the **various roles within the organisation may have distinct orientations to energy efficiency**. For example, facilities managers will tend to view efficiency as a means of creating greater comfort, maintenance staff will see it as means of reducing plant downtime and senior managers may view it in terms of how it adds to the branding and green credentials of the organisation.

Other authors have found that different groups within an organisation will also have similarly variant and nuanced perspectives on greener travel behaviours. GAP's research (2013) found that **budgetary responsibility for travel expenditure can be spread across different departments, resulting in nobody having ultimate ownership**. In addition to a lack of ownership, the diffused nature of travel budgets means that **the whole financial impact of travel is difficult to see**. Echoing the calls above by Douglas and Lubbe (2010) for 'structuring factors' for travel management, the GAP (2013) authors suggest that the **business case for taking action would be strengthened if organisations were able to clearly see their total travel costs** and that the **'successful' organisations in their study had 'collected a clear picture of their total travel impact, assigned clear targets and built in clear accountability'.** The resonance with calls for 'whole cost accounting' in the interviews with umbrella bodies for this study is striking (Pangbourne et al., 2015). The GAP study highlights the Lake District National Park Authority who reduced carbon emissions from travel by 28% between 2008 and 2013, in part as a result of introducing team travel reduction performance indicators with feedback, 'prizes' and a **sense of collective responsibility'**.

Gustafson (2013b) found that travel managers have no common background, with some full time and others part time and that their place in the organisational structure varied across finance, human resources, CEO assistants, procurement or secretaries. Many of them were found to be low in the hierarchy with the level of seniority and corporate culture impacting on the effectiveness of the travel manager's role. Roby's study of London firms (2010) shows that **small companies tend not to have**

transport/environmental specialists. This means that business travel is often the responsibility of the operations manager who may have an operations or procurement role working alongside buildings, ICT, environment and possibly fleet managers. Staff compliance is an issue. She found that car travel through the expenses system was often hard to manage as pre-trip approval was not always required. However, she did find that in larger firms, travel management may be linked to CSR or human resources who are more likely to have top level support, unlike most travel planners.

A survey of businesses to understand the response to their Plug-in-Vehicles grant for electric vehicles found that the job roles, responsibilities and remit of those responsible for EV purchasing varied considerably (Hutchins et al., 2013). They ranged from company owners and managing directors, transport/ fleet managers, senior management (e.g. finance directors and general managers), environmental specialists (e.g. those with responsibility for implementing and maintaining low carbon initiatives.

Possible survey topics relating to organisational structure

- Sense of collective responsibility for travel policy
- Who makes decisions about different areas of travel policy – cross-organisational approach?
- Degree of employee involvement in decisions/ autonomy over travel choices
- Description of travel policy management as high/med/low control
- Existence of a company travel policy/ formalised Travel Management/ use of a TM company/ travel information management/ travel expenditure management
- Status of the travel manager
- Focus on measuring: Use of whole cost accounting/ environmental management system for business travel expenditure/ vehicle procurement
- Desire for better measurement systems
- Level of integration/ internalisation of travel planning/ travel policy part of CSM
- Levels of compliance/ non-compliance with travel policy
- Communication methods – what are employees informed about when booking travel
- Training, information, support functions
- Attraction to financial incentives versus regulation/mandates versus information and incentives
- Feedback, incentives, targets

3.2.7.5 Risk orientation

The evidence on the link between sustainable business travel practices and risk management was not explicit in the literature. However, appropriately mitigating risk can lead to significant business value as environmental stewardship improvements also result in differentiated products, more efficient operations, and a more sustainable world (Olson, 2009). Olson suggests that if market risk from rapidly changing consumer preferences toward ''green'' products is high, the reputational risk for businesses that do not take steps to be more efficient and ''green'' will also be higher. In their assessment of

drivers and barriers to environmental supply chain management practices, Walker et al. (2008) note that a feature which all investigated projects share is that regulatory compliance seems to underpin the different initiatives, and is the context for other observed drivers. Other common drivers were pressure or encouragement by customers (with reputational risk a key issue), environmental risk minimisation and monitoring environmental performance. Regarding external drivers, **although environmental legislation undoubtedly played an important role in the implementation of the projects, it was not the triggering factor (which was more often customer/ NGO pressure, policy champion or the drive to gain competitive advantage).**

Consequently, as we have already suggested, **a firm's relationship to the natural environment is, and will increasingly become, a source of competitive advantage. Evidence exists of a positive relationship between the bottom line and 'greening' of business practices** (e.g. Babiak and Trendafilova, 2010; Bansal and Roth, 2000; Nidumol et al., 2009) – and this positive relationship is one of the key drivers of the adoption of sustainable business practices (including travel practices) - see the qualitative evidence for this study (Pangbourne et al., 2015).

Sorrell et al. (2011) present evidence that **organisations tend to be risk averse in approving investment in new equipment which will deliver "gains" such as savings from greater efficiency**. There is inevitably uncertainty over the technological performance of new equipment which does the same job as that which it replaces. So, it is a case of better the devil you know. Whilst their paper was reviewing industrial energy efficiency, these concepts could be equally applied to fleet management and the uptake of new vehicle technologies. Drawing on principles from behavioural economics, the review suggests that risk aversion also has an interesting psychological dimension: **organisations and individuals devote relatively more resource to avoiding losses than making gains: "foregone gains are perceived as less painful than losses"**. This creates a barrier to implementing measures for energy and fuel efficiency savings as these are a theoretical gain only generated in comparison to a counterfactual set of circumstances: the supposed situation without the measure. Nonetheless they are viewed as a form of potential "gain". Therefore the principle of greater emphasis on avoiding losses versus making gains will mean that **companies, given the choice, are biased away from accounting for the true cost of failing to make efficiency investments**. More generally, this is also an argument for reframing energy "savings" not as gains but as "avoided losses". These factors all bias organisations away from investment in efficiency over alternative investment which more clearly adds to the bottom line and productive capacity.

As we saw earlier, different organisational structures may also coincide with different attitudes to risk, with 'autocratic' companies tending to be more risk averse and hierarchic firms potentially seeing risk

as an opportunity (Nesbitt and Sperling, 2001). Nevertheless, this evidence on the importance of reframing efficiency has implications for the development of engagement strategy.

Possible survey topics relating to <u>risk orientation</u>

- Attitudes to risk (risk as an opportunity vs risk adversity)
- Imperative to 'go green' due to perceived risk from:
  - changing consumer preferences (reputation)
  - environmental degradation
- Attitudes to new vehicle technologies - perceptions as avoidance of loss or a gain

3.2.8 The role of organisational resources

Organisational resource refers to the characteristics of the resources that an organisation is able to deploy to achieve its objectives. This includes the skills base, information, absorptive capacity, culture and practices, cash flow and finance, plant and technology (ICT).

Studies have shown that resource constraints are experienced differently by **SMEs as they are generally found to have greater barriers to implementing sustainability practices** (e.g. lack of expertise and capital) compared to larger firms. Revell et al. (2010) study the environmental attitudes of SME's and finds the **most commonly cited barriers to energy efficiency measures include costs, lack of time and unhelpful infrastructure** (meaning lack of recycling facilities in the study).

Arvai et al. (2012) find that **heuristics and mental shortcuts will be more commonly used in a context of limited time and resources**. Complex decisions need time and resources to come to the best decision, therefore there is a clear implication that organisations that have time and resources to address sustainability decisions are less likely to use the range of shortcuts available to them. This is likely to be the case in larger organisations where dedicated staff can be employed to work through the decision-making process although the work of Banks et al. (2012) and Sorrell et al. (2011) suggests that even in large organisations "non-rational" decision-making processes are employed unless whole-cost-accounting is in place (Pangbourne et al. 2014).

3.2.8.1 Finance

This construct covers the working capital and investment finance; normally a combination of reserves, debt and equity instruments. This, in turn, is linked to cash flow and financial strength. **There is a good correlation between borrowing and growth but financial strength is not the same as profitability** (many companies who grow are not necessarily profitable).

Once again, the evidence between this construct and sustainable business travel behaviour was not direct. We will not rehearse the arguments here that were presented under the 'sector' and 'corporate

mission' constructs which highlighted that whilst cost is still one of the greatest barriers to action and still a more compelling argument than environmental benefits, it is longer term competitive advantage which is thought to mainly drive decision making and investment in firms rather than short term calculations of profit and loss. **To take advantage of any longer term cost saving benefits and competitive advantages, however, financial strength will play a vital role**. Those that have better access to capital to allow borrowing for energy efficient investment and can accept longer payback periods will be in a better position to act. We therefore believe this is an important separate construct in the model.

Possible survey topics relating to finance

- Access to working capital/investment finance
- Reserves/ debt
- Finance/ cash flow a perceived barrier to action
- Acceptable payback periods on investment in sustainable travel
- Perceived financial cost of action

3.2.8.2 Fixed assets

Fixed assets relate to the buildings, plant, ICT and associated equipment which allow the firm to undertake its activities. In a transport context, this will also relate to the fleet, distribution centres and other directly transport related assets, depending on the business.

The strongest evidence to emerge specifically relating to business travel surrounded the topic of ICT. Davies et al. (2007) assess the impact of ICT on UK general haulage companies and conclude that while many of the smaller haulage operators remain dependent upon traditional communication and process systems, the larger logistics companies, who control the majority of vehicles and freight movements, are progressively developing new ways of working supported by ICT adoption. **There is a moderate positive association between size of fleet and the importance of ICT**. When comparing empty running/ backhauling[49] and fleet size, the companies with larger fleets are also achieving better levels than those with smaller fleets.

This has strong resonance with the qualitative research undertaken for this study which concluded that **all of the emerging trends highlighted in the interviews (car clubs, mode switch to rail, increasingly integrated delivery services) are underpinned by developments in ICT** (Pangbourne et al., 2015). This related to data collection, logistics, travel planning and effective communications. The developments in ICT enable the cost-effective measurement of key indicators implicated in making

[49] In freight logistics, a backhaul is a hauling cargo back from point B to the originating point A. Since it costs almost as much time and fuel to drive empty as fully loaded this makes economic sense, but involves partnerships and logistics management.

travel and transport activity more targeted and efficient. **The umbrella organisations called for more support in this area in the form of resources, incentives and also information, especially for SMEs.**

Possible survey topics relating to <u>fixed assets</u>

- Vehicle fleet, distribution centres, ICT infrastructure

3.2.8.3 Knowledge and skills

The evidence base in this review suggests that focusing on strategy (i.e. competitive advantage, reputation, innovation) rather than profit maximisation can increase development and effectiveness of existing and new policies. **Making energy use visible and salient is an important first step on the way to energy efficiency becoming a strategic objective.** This means policy should encourage further monitoring and reporting practices and, if appropriate, combine energy efficiency messaging with a broader eco-efficiency agenda.

In their interviews with pro-environmental but 'normal' SMEs, Williams and Schaefer (2013) report that while the SME managers in the study exhibited greater awareness and understanding of climate change issues than found in earlier studies they still expressed some difficulty in translating their awareness into practical action for themselves and their businesses. Mostly the reasons for this seemed to be that they **found it difficult to weigh up the environmental advantages and disadvantages of particular actions and thus to decide what was the best course of action**. This suggests that information and decision-tree type support is required in this instance to assist SMEs in adopting more sustainable behaviours.

Further engagement routes are suggested by the Databuild (2010) study for DECC which identifies the most common sources of information that have been used when organisations are thinking about energy and fuel efficiency. The largest single source of information at the time of the study was the Carbon Trust, then the internet, then energy suppliers. The situation has presumably changed since this time as the Carbon Trust has scaled back its activities following its loss of central government funding. **When organisations were asked about which sources of advice they were most satisfied with, the largest percentage (91%) was for workshops and seminars. Phone advice elicited the least satisfaction at 55%. The type of media generating the most "action" was on line resources followed by site audits.**

From this research, it could be suggested that **policy is currently too focused on the last stage of decision-making - evaluating alternatives via cost metrics. The evidence suggests that refocusing on the early and middle stages (noticing opportunities and assembling options) will provide new approaches.**

Banks et al. (2012) consider the impacts of a number of government policies mainly around providing information in the right format. The study also considers the effectiveness of voluntary agreements. The evidence suggests that **where information is presented in the right way at the right time then it can be influential (e.g. energy audits).** Labelling of buildings also appears to be effective and is particularly influential for some types of organisation. Voluntary agreements seem to work well at the regional scale and are more effective if they are backed by the implementation of an environmental management system. **Evidence for the effectiveness of environmental management systems is mixed.** Often it appears they are adopted as a means of demonstrating prudent management rather than as a serious tool to reduce a company's environmental impact. Nevertheless, Banks et al. (2012) describe a number of examples of organisations that have initiated change programmes either in experimental settings or in response to government policy – e.g. they have undergone an energy audit as part of a programme of energy audits. Evaluation of the changes in practice resulting from these interventions presents a mixed picture – e.g. **50% of economically proven energy audit recommendations go unimplemented**. However, effects can also be surprisingly good. For example various behaviour change interventions e.g. **using energy champions or feedback** linked to strengthening social norms can have significant and durable impacts on energy consumption.

One of the reasons that information does not get translated into action may be because of a skills deficit. **Making sense of an energy audit may require technical skills that the organisation does not possess (Banks et al., 2012).** Indeed, financial health may be good, and willingness to comply or innovate with sustainable approaches may be in place, but these **resources will not necessarily lead to successful behaviour change if there is a lack of technical skills or other internal skills to interpret technical and financial information**. In addition, time, decision making structures and capacity to manage the processes are important (Bessant et al., 2005). Banks et al. (2012) point out that bringing in the required expertise or developing the skills in house needed to interpret and implement an audit's recommendations incurs a transaction cost. Another important hidden cost is any downtime incurred whilst an organisation re-equips to the more energy efficient alternative. Fuel or mobility efficiency is the analogue of energy efficiency in many of these respects.

Specifically in relation to business travel behaviours:

Faulconbridge et al. (2009) provide case study evidence that there was awareness amongst professional service firms that travel behaviours were a significant component of the organisation's carbon emissions and that the manager "didn't know what to do about it". This suggests that

government policy measures to monitor and report Scope 3 emissions[50] e.g. via developing clear guidance and requiring an annual report of the carbon footprint which includes scope 3 emissions from business travel could encourage consideration of greener travel methods.

We can return again here to the need for decision support tools such as whole-life costing to support information requirements. A recent assessment of uptake of electric vehicles in fleets in New Zealand (Baas, 2012) concluded: 'Fleet managers often do not have any formal training in financial management and therefore do not have a good handle on what each truck costs to run over its lifetime. As a result, very few fleets are putting effort into saving fuel despite the financial benefits.' (p31)

In the interviews as part of this review, the above evidence on the **knowledge and skills deficit** that can surround general energy efficiency behaviour was clearly present with respect to the environmental impacts of travel. In particular, **increasing pressure is being exerted through the supply chain for carbon related data and** information and this is having a knock-on impact on transport logistics. **Interviewees' comments suggest that organisations which are most successful in adopting green supply chain behaviours tend to be those that fully appreciate the holistic advantages of their implementation.** The interviews also revealed **the importance of the maturity of sustainability initiatives** within an organisation which is related to the degree of joined up thinking applied and often reflects the maturity of the organisation as a whole. But this is also linked to staff capabilities. This chimes with Roby's (2010) research on workplace travel plans which highlights the fact that the more mature plans are the most embedded (and therefore successful). Also, in the longitudinal study of businesses in Belgium, Van MMM et al. found evidence of organisational level travel behaviours being 're-engineered' with some measures dropped and others introduced and this was associated with modal shifts. The authors suggest 'that managers were gaining experience in the mobility field and they were monitoring their policies to improve their effectiveness' (p15).

In conclusion therefore, whether financial resources and other softer resources in terms of senior management buy-in is present or not, **evidence and information is essential to successful engagement.** Buy-in will not stand the test of time without data, practical measurement tools and viable alternatives. Developing the skills base, backed up with ICT systems, is now critical to achieve this.

[50] All large companies isted on the London Stock Exchange are subject to Mandatory Carbon Reporting whereby Scope 3 emissions are 'other' emissions which are not under the direct control or ownership of the reporting organisation. This includes emissions resulting from commuting and business travel where the means of business travel is not owned or controlled by the reporting organisation. See Section 2.5.

Possible survey topics relating to knowledge and skills

- Skills a perceived barrier to action
- Knowledge a perceived barrier to action
- When information is most useful
- Preferred information channels
- Use/ interpretation of energy audits
- Length of time initiatives have been in place

3.2.8.4 Absorptive capacity

Absorptive capacity is the collection of factors affecting a firm's ability to acquire and use different types of knowledge and resource, thus capturing a firm's ability to effectively deal with change. It also covers its ability to recognise the value of this information and apply it. This has links with R&D strategy, knowledge management, organisational structure and communication (Cohen and Levinthal, 1989). It is, therefore, **a construct in the model which links various strands together** and, **as such, is difficult to measure discretely** and evaluate in terms of its role in facilitating action towards sustainable business travel. Studies involve a firm's innovation performance, aspiration level, and organizational learning. It has been said that in order to be innovative an organization should develop its absorptive capacity. The direct evidence on the link between this and sustainable business travel is once again limited. Given the fuzziness of the concept, pinning down which different forms of absorptive capacity are associated with which behaviours and which types of product, process and organisational innovative behaviours is difficult (Abreu et al. 2006). Absorptive capacity is, however, clearly associated with the benefits which firms are able to derive from different behaviours. **The ability for a firm to benefit from networks and external advice in particular are directly related to the capacity of the firm to manage and utilise these knowledge streams**. It can also likely magnify the impact of the owners' own skills and competencies, training and HR practices as it enables the diffusion of internal knowledge throughout the firm.

Given that it is necessarily difficult to capture the concept of absorptive capacity in quantitative datasets, the various dimensions are typically proxied by a range of factors such as the level of graduate employment and the scale of investments in training. The existence of R&D personnel or R&D spending can also be seen to reflect a firm's ability to absorb external knowledge, as well as its ability to create new knowledge and innovate (Love et al. 2008).

Possible survey topics relating to <u>absorptive capacity</u>

Note: this is a construct in the model which links various strands together and, as such, is difficult to measure discretely

- Perceived adaptability
- Utilisation of networks; membership of networks
- R&D strategy and spend
- Innovation performance
- Level of graduate employment
- Scale of investment in training

3.2.9 The role of place-based factors

In the Conceptual Model, place-based factors are neither internal nor external components, but represent situational factors located somewhere between the two. This includes local infrastructure, history and socio-demographic characteristics of the location. Infrastructure of course includes accessibility generated through the transport connectedness, but also digital connectivity.

3.2.9.1 Local infrastructure

Understanding the importance of location to the final travel behaviours that are generated by businesses is very challenging to summarise from the existing evidence base. Whilst we know that commuting characteristics (as detailed by the Census journey to work data, for example) are significantly impacted by location including density of development, public transport accessibility, journey times and car parking availability, the same cannot be said for an understanding of the geographical variation in briefcase travel or logistics transport. Aguilera (2008) sums this up nicely: *'Access to transportation is often mentioned as important, but very few analyses explain exactly how it is linked to the need for business travel for certain professional areas requiring a lot of face-to-face contact, such as business services'* (p1113).

There is a large body of literature on business location decisions under the theoretical perspective of Industrial Location Theory (McQuaid et al., 2004; Döring et al., 2010) (in which transport features as an important component), and there is some literature on the link between transport infrastructure investment and local economic development. This literature is vast and is not reviewed here. The basic proposition is that firms make choices about location that minimise costs and maximise opportunity to reach market (=maximise profit). The 'new economic geography' suggests that agglomeration effects combine with transport costs to play a key role in local/regional development. These economic approaches send a message to regions that they should create the right environment for businesses by reducing business costs. This leads to a focus on 'hard locational factors' – including investment in transport infrastructure. However, **some of the empirical observations in the era of the new**

knowledge economy suggest that previously important factors such as raw materials, or (physical) access to sales markets are losing relevance (McQuaid et al., 2004; Döring et al., 2010). Attention is shifting to 'soft locational factors' such as improving knowledge transfer between research and business, creating an innovation culture and cooperation networks or having a pool of highly qualified and creative labour. Quality of life attributes of a region start to be important. Nevertheless, 'hard' factors remain decisive in the decision processes around location (Love and Crompton, 1999). In this research, transport-related factors are important but not the top factor, and appear to be diminishing in importance. **The presence of a suitably qualified labour force is much more important** (Kimelberg and Nicoll, 2012).

The questions about transport-related factors in location-decision making do not make a very clear distinction between travel by people and transport of raw materials/goods. However, this is an important distinction, and this is perhaps starting to be recognised (e.g. by Kimelberg and Williams 2013, who undertook research with real estate agents as to their views of what are important locational decision factors for their clients, categorising the clients by facility type rather than by sector). This shows very clearly that in the perceptions of real estate professionals across the USA, there are very **clear differences in the rank of transport-related location decision factors for different types of business facility**, showing that in the American context at least, it is **not wise to generalise about the transport-related needs of businesses as a whole**. For instance, parking provision for employees is ranked as a number one priority for office based industries, only third for manufacturing.

However, **this review found very little evidence that links transport or digital communications as a location decision making factor to the actual travel behaviours undertaken by that business**[51]. Also, Döring et al. (2010) also point out that research fails to consider hidden 'locationally relevant processes' such as the expansion or shrinkage of existing sites (relative to other sites), the founding/dissolving of local branches and decisions NOT to relocate having considered it. As this has not been researched, there is no data about the role played by specific local transport-related factors, such parking availability or what happens to business travel in the context of local infrastructure changes on final (non commuting) business travel outcomes. A possible exception is the two papers relating to the Belgian longitudinal workplace travel surveys (Van Malderen et al., 2012; Vanoutrive et al., 2012). The nature of this survey enabled location to be correlated with the mobility behaviours implemented by businesses and the mode share of commuting to that workplace. The first paper

[51] We have not reviewed the literature on workplace parking and commuting as part of this review due to its size. It is now a well established finding, however, that workplace travel plans which include some degree of parking restraint achieve the greatest modal shifts away from single occupancy car usage (Rye and Ison, 2005; Cairns et al., 2004; Watters et al., 2006). This suggests that local factors regarding parking availability are likely to impact travel behaviour, although its influence on the adoption of organisational procedures such as parking priority, pool cars etc is not documented.

found small workplaces, *wherever* they are located, to be more likely to have higher proportions of cycling commuting, but large firms in built up areas are more likely to have public transport commuters. So the results relating to local factors are mixed. The second paper found carpooling (take-up rather than the existence of workplace initiatives) to be higher in less accessible locations. However, these studies still do not link businesses *decisions* to locate in certain places with their travel decision to implement certain behaviours. Interestingly though, Van Malderen et al. found no relationship between the mobility measures introduced by the workplaces and the mobility *problems* the firms believe their employees to be facing (including local congestion) giving further mixed messages with respect to the importance of local factors.

Possible survey topics relating to local infrastructure

- Ranking importance of various local transport/ digital infrastructure factors (see Kimelberg and Williams, 2013)
- Local infrastructure a perceived barrier to action
- Perceived quality of local transport and digital infrastructure
- Measured shifts in behaviour before/ after local infrastructure change

3.2.9.2 Social capital

In a business context, social capital can be defined as 'the ability of actors to secure benefits by virtue of membership in social networks or other social structures'. It is the product of formal and informal relationships, trust and co-operation between institutions, networks and business partners (Spence et al., 2003).

The inclusion of this construct in the conceptual model emerged out of the corporate sustainability literature, not the business travel literature, but the concept has arisen in a business context through the literature on corporate sustainability which has empirically demonstrated how **social responsibility and social sustainability can add value to a business** (ibid.). This includes the relationship of business with its communities, being attuned to societal expectations and having good relationships with stakeholders which can include the local community.

Preuss and Perschke (2010) make the point that the concept of social capital provides a more useful basis than Corporate Social Responsibility (CSR) for studying social responsibility in smaller firms. On closer investigation, the two terms complement each other: **CSR represents an organisation-level approach to addressing social and environmental externalities of economic activity, while social capital focuses on the level of the individual with their ties to a multitude of other individuals within and beyond the organisation.** Either way, what is being suggested through the inclusion of this concept is that organisational behaviour is better understood using theory which understands

company behaviour as “social-technical” in character i.e. companies, and the supply chains in which are they embedded, are constructed from individuals and groups of individuals who act in ways which make sense in the context of their local business culture, the social relationships they share and the material and technical infrastructure which guides choice and opportunity.

Possible survey topics relating to social capital

- Use of/ membership in local professional networks

3.2.10The role of people's motivations

3.2.10.1 Employee attitudes

This refers to social and psychological characteristics of individual employees that impact on the way business is done and the end user travel behaviours. The point has been made above in 'organisational structure' that individual autonomy in decision making is important to foster buy-in to travel policies and create a culture of shared values within an organisation. The work of Cox et al. (2012) suggests that **workers within an organisation can influence an organisation's practice** if encouraged to do so and the management systems are in place to gather and consider workforce perspectives. Overall, the evidence repeatedly emphasises the point that **successful initiatives depend on building shared individual and organisational values through individual and group based staff involvement combined with senior management commitment**.

There are various potential 'points of influence' by individual employees, however, and this makes it even more difficult to gauge their importance in any segmentation of businesses. Douglas and Lubbe (2006) identify four sets of 'motivations that matter': management, travellers, travel management companies and travel service suppliers. In the end, *any* decisions made within a company are made by *someone* or some people with their own individual attitudes and values (this has been covered under management values above). But there is a difference of formal power between types of employee with, for example, the psychographics[52] of an owner-manager or director likely to have more weight and impact on practices and culture than the psychographics of a junior employee.

Nevertheless, **the psychographics of individuals at lower levels in an organisation can exert considerable influence on what senior managers are prepared themselves to implement**; and individual employees will exert influence over their own travel pattern, be it commuting or aspects of their business trips. The 13th annual Barclaycard Commercial Business Travel Survey (2009[53]) found that there is a clear difference in behaviour between senior management and more junior positions. Environmental concerns influence (partially or significantly) 30 per cent of Chairmen versus 54 per cent of personal assistants and secretaries. Muster (2011) finds that interventions must also align with the wishes and orientations of the employees. He suggests it is **very important to avoid "reactance"**

[52] Psychographics is the study of personality, values, opinions, attitudes, interests, and lifestyles.
[53] http://www.newsroom.barclays.co.uk/content/Detail.aspx?ReleaseID=1592&NewsAreaID=2. This is based on a survey of ~2500 companies but the original report on the findings could not be found. This is the link to the press release.

whereby employees feel that they are being manipulated and that they do not have freedom of choice or autonomy. An example of this in the literature was found in a report for the New Zealand Transport Agency (Baas, 2012) in a study of **fleet management** where they found very few operators measure fuel used by individual vehicles because the attitude of drivers and other staff was cited as often being resistant to doing this. Rye and Ison (2005) report that workplace parking charges can be 'more emotive than pay'.

Different behaviours captured by the Conceptual Model developed as part of this study will be subject to more or less influence by individuals. For instance, commuting and shopping will be more determined by the individual employee/shopper and hence influenced by their attitudes. Muster (2011) goes even further and makes a case that helping your employees green their lifestyles outside of work will add to the success of the CSR strategy as it will increase employee confidence in its integrity and encourage employees to bring new ideas to work about how their organisation can develop its sustainability credentials. **Commuting behaviours fall between personal life and working life** and can therefore be considered as an appropriate starting point. This opens up an interesting new dimension which blurs the boundary between organisational behaviours, business travel behaviour and private behaviour – i.e. **what could or should be the role of organisations in shaping private behaviours outside the workplace to achieve greater sustainability - including mobility practices?**

'Briefcase travel' can be also subject to a large degree of autonomy. A recent study of just over 100 businesses found that three-quarters of business travellers are indeed personally responsible for choosing how they travel (GAP, 2013). In their study of **videoconferencing**, Denstadli et al. (2012) believe that individuals have a large part to play in how they travel. This means that these **travel behaviours are 'dictated by habits and routines, social norms within the workplace and booking the option that is most convenient for them'** (ibid). The review of the evidence under 'organisational structure' found that the lower the amount of monitoring of business travel, the greater the amount of travel is undertaken. The segmentation of personal travel choices offered by Thornton et al., (2011) suggests that distinct mobility profiles can be discerned and that these are associated with particular demographic categories, lifestyle types and attitudes. The research reminds us that **individuals also bring their own capacities, values and orientations to the organisational travel equation** – i.e. it suggests that some employees will travel to work in one way whilst others use another – and that both will be differently influencable in changing their commuting patterns.

However, an interesting issue to contemplate is the 'self-selection' issue. In other words, **employees choose organisations often based on the fit of their moral values with those of the organisation, and**

vice versa. Douglas and Lubbe (2009) cite Scott (2000)[54] who suggests 'recruitment and socialization techniques result in some degree of homogeneity in organisations' employees. This suggests that the characteristics, views, values, and capabilities of the **employees are, at least in part, selected, trained, or encouraged by organisational values and characteristics**. Behaviour by employees, at least as part of their organisational roles, may thus be partly dependent upon organisational characteristics'. Douglas and Lubbe (2009) postulate that different kinds of companies have different kinds of travel policies and explain the link between organisational culture and individual employees as being one of self-selection where individuals gravitate to organisations that fit their moral values. This means that, **whilst there might be both organisational and personal reasons for individuals' behaviours, the values of employees are not independent of those of the organisation** as the two are not simply randomly assigned to each other.

In the evidence review, studies on the role of the individual characteristics of employees can be divided into those investigating environmental values, those investigating the 'status' and other motivations attached to business travel and those investigating socio-demographic characteristics.

Arnfalk and Kogg (2003) found no link between employee environmental concern and an interest in virtual meetings. The link is made at corporate level. Importantly, environmental concern (at staff level) could not be linked to an interest for virtual meetings, even though a majority of the employees expressed a feeling that environmental issues were important. As in other contexts, and for other measures, **environmental motivation for sustainable practices is weak**. In a study of business class air travel, Lassen (2010) found that individuals generally have a lot of autonomy to make their own decisions about work-related travel. He suggests that interventions must focus on the **disconnect between attitudes and behaviour**, suggesting that information provision and attitudinal change is insufficient to initiate actual change. Mason and Gray (1995) segment European business air travellers into three groups according to the benefits sought from flying: schedule-driven consumers, corporate cogs and informed budgeters[55]. Although based on individual travellers, the authors imply that an understanding of both the organisation (e.g. its level of bureaucracy, the degree of in-house travel management and focus on cost savings) and the travellers are needed to understand business air travel behaviour. With respect to fleet management, Oberhofer and Fürst (2012) contend that the rather **weak explanatory power of attitudes** supports the idea that economic impact and financial strength as well as stakeholder influences (e.g. regulations, customer requirements) play a more

[54] Scott, E. D. (2000) Moral Values Fit: Do Applicants Really Care?, Teaching Business Ethics. 4(November), pp.405–435.
[55] Schedule-driven consumers (flexibility, timing, frequency are is most important and they value exclusive products aimed at the business traveller), corporate cogs (do not tend to book their own travel and are less personally focused on timing and flexibility but place value on frequent flyer schemes to achieve personal benefits), and informed budgeters (tend to pay initially out of their own pocket and pay attention to costs, often tending to be responsible for setting travel policy within the organisation they work for).

important role when it comes to the implementation of environment-protecting measures. Banks et al. (2012) found the perception of non-energy benefits, presumably including environmental benefits, to **vary by which part of the organisation was experiencing them** – for example maintenance staff may place greater value with minimising machine down time rather than improvements in comfort or fuel efficiency.

Various studies have investigated status driven norms and motives for business travel. Gustafson's papers (2006; 2012 a & b; 2013a & b) are all relevant to this topic as he investigates professional identity and status, and also career factors. He suggests **employees can be interested in business travel for reasons of status and the marketing of business travel plays on this, presenting business travel as glamorous and prestigious.** Faulconbridge et al (2009) describes how business travel has a status component. Those in more managerial positions often do more business travel – to enforce instructions, train others and disseminate company procedures and ways of doing things. The implication is that senior individuals in the organisation who set the organisational culture make decisions about business travel – particularly briefcase travel (Faulconbridge et al., 2009). Douglas and Lubbe (2010) found **that those employees most interested in status (found at all levels of an organisation) are also the most likely not to comply with travel policies**. Heinen et al. (2009) point out that sector and culture (social working environment) impacts on this insofar as people have perceptions about how colleagues expect them to travel (this is in line with normative beliefs in the Theory of Planned Behaviour). Nicholas and McDowall (2012) provide evidence that psychographics are important, confirming that f2f discussions are prioritised higher than communication technology and because **employees accept business travel as they have 'chosen' the lifestyle and regard it as important for career opportunities.** Arnfalk and Kogg (2003) find that new behaviours (such as virtual meetings) can be considered as 'second class'. However, Faulconbridge et al. (2009) report that architecture professionals had the sense that **younger generations wanted to work in different ways** to more senior, older staff. Younger staff exhibited a greater reliance on virtual mobility and had less interest in visiting clients for meetings or extended periods. This finding is also supported by Banister et al (2007).

There are a variety of other individual factors related to the amount and type of business travel undertaken by employees. Many of these are to do with the job itself and the grade. For instance, Gustafson (2013b) suggests that many business travellers and patterns such as overnight stays are relatively well paid, well educated (i.e. mostly managerial or professional). More men than women travel on business (also confirmed by Julsrud et al., 2012; CAA, 2011) and it is noted in the paper that more women tend to adopt working strategies that reduce business travel (i.e. virtual meetings). They have high status and are regarded as valuable. Limtanakool et al. (2006) observe that medium and

long distance travel is largely undertaken by men, highly educated, working full time, higher grade, associated with car ownership. However, it can be argued that where the literature has researched 'business travel', it is biased towards 'high-end' air travel and travelling for such things as meetings and conferences. There are many other aspects of travelling for work or *as* work (see Section 2.1) which receive less attention.

Possible survey topics relating to employee attitudes

- Belief that commuting behaviour is completely their choice until they enter the office premises
- Attitudes to commuting: perceptions of walkability/bikeability/bus-train-ability/carshareability of their commute (reflecting actual proximity)
- Belief that business travel improves career prospects
- Belief that business travel commands respect, prestige
- Desire to work in different ways
- Resignation to the fact that travelling is part of the job
- Perception of how well business travel time can be used
- Enjoyment of business travel
- Environmental awareness and sense of personal responsibility to change behaviour

3.2.10.1 Customer attitudes

As with employee attitudes, there is plenty of literature beyond the scope of this review about the role of individual attitudes and values on travel behaviour and this is clearly relevant here. However, this review **found no studies which had investigated the travel behaviour of customers in order to understand the differences between one organisation and another** in this regard. 'Customers' obviously come in various forms and include clients to which goods and services are supplied and tourists in the leisure industry. Several studies confirmed the role that customers can have on firms' environmental purchasing activities, supply chain management and on green considerations in the purchase of transportation services (Bjorkland, 2011; Walker et al. (2008). It is also possible that there is also relevant literature looking at this from the perspective of eco tourism. **These pressures do not always lead to pro environmental outcomes** as customers' non-environmental demands, such as demands on short lead times can, for example, force the supplier to use a faster and less environmentally friendly transport mode (Bjorkland, 2011).

Possible survey topics relating to customer attitudes

- Belief that organisations have responsibility to provide alternative/green travel options
- Environmental awareness and sense of personal responsibility to change behaviour
- Perceptions of walkability/bikeability/bus-train-ability/carshareability of their commute (reflecting actual proximity)
- Influence on customer accessibility on business location

3.3 Conclusions – Section 3

The evidence review has allowed a Conceptual Model of the decision making processes which are most likely to underpin business travel behaviours. Whilst the evidence base is patchy and there is uncertainty as to the strongest determinants of each behaviour and how they interact, the Conceptual Model is offered with some confidence that it provides a solid framework from which the steps to segmentation (outlined in the next section) can be based. Within the evidence presented for each model construct, there are many significant findings which hint at key determinants. These include organisational structure and the decision making processes which can underpin this, the corporate mission often expressed and manifested in senior management values and actions, the balance between centralisation and embeddedness of travel policy (which is a necessity for sustainability) and the ability of individual employees to shape this policy and have individual autonomy in decisions and the internal resources including skills built up through experience and learning. Whilst the evidence hints at the relative importance of these constructs in the Conceptual Model, this needs to be explored in relation to specific behaviours and validated through empirical research.

SECTION 4: ASSESSING THE FEASIBILITY FOR A SEGMENTATION MODEL OF BUSINESSES

Key findings

- **Segmenting for green growth in the context of travel and transport behaviours will be challenging.** Getting all the way to a quantitative or hybrid (qual/quant) model may not be possible: **the feasibility will be established through the steps in the development process, particularly once the final dataset is assembled and analysis begins.**
- However, business travel in all its guises represents a very significant proportion of travel within all elements of the transport network. Understanding of organisational decision making around travel-related behaviours is weak. Therefore**, any steps undertaken on the way to creating a segmentation model, and the model itself, will fill valuable gaps in the evidence base.**
- **The model itself will:** build insight, help develop strategy, assist in the design of interventions, provide elements of evaluation frameworks, inform communication strategies and develop a common language for audiences.
- For the purposes of developing a segmentation model of businesses in relation to their travel behaviour, it can be **recommended that DfT focus on building a model aimed at the gathering and sharing of insight** and understanding 'what makes people/organisations tick'.
- In order to be able to quantify the segment sizes, and to allocate other businesses to adopt the segments in future surveys it can be **recommended that DfT and other potential partners aim to develop a fully quantified model, based on bespoke survey data**, which may also be linked to other business metrics.
- A model based on determinants of behaviour rather than the behaviours themselves should prove more stable, and more useful for sharing and building insight over time. **Segmenting on determinants offers the safest way to produce a model with the potential to predict a wide spectrum of behaviours, and hence have wide policy applicability.**
- However, the model may still not be able to cover all types of organisation, or all types of travel behaviours. **There may need to be more than one model (potentially split by each domain of travel in the typology, or size or sector).**
- Evidence on the determinants of some travel behaviours is particularly thin **(fleet management (including company cars, new technology and use of pool cars); expenses policy, supply chain management and procurement; substitution of rail by air, location policy and carbon reporting.**
- Evidence on the current and potential reach and environmental and growth impacts of travel behaviours is necessary **to inform a prioritisation of behaviours to set the stage for further work on model development.**
- Evidence of the effectiveness of policy instruments **to mitigate environmental impacts or business travel and support business growth would inform understanding of business behaviour. This includes understanding the impact of important new policy mechanisms relating to carbon accounting have been introduced recently and impact on business travel.**

- The next steps to model development **are: convene stakeholders, agree model objectives and potential applications, fill evidence gaps, decide priority behaviours and undertake primary quantitative research to be used to identify model solution(s).**
- **The task of undertaking a business travel behaviour survey with a representative sample of UK businesses is of primary importance in the process of segmentation model development – and perhaps even more important than the model development in itself. We also recommend that a regular survey of business travel at the organisational level is considered as a worthwhile task in its own right.**
- **The survey needs to be undertaken with a** representative sample of the business population**. Pre-existing databases exist for all businesses registered, but these do not include public sector organisations.**
- **Which office or site in a business is surveyed is of critical importance. It is** likely that businesses should respond at multiple levels of the organisations **and that views from multiple respondents within a business will need linking together before clustering, including individual employees.**
- **Some methods, such as face to face, would lend themselves more easily to multiple respondents completing a questionnaire.** It is also likely that multiple questionnaire tools will be needed within the same survey to tailor the questions and approach.

4.1 Rationale for a segmentation of businesses in relation to their travel behaviour

4.1.1 Filling a gap in provision

The simplest argument for developing a segmentation model of businesses in relation to their travel and transport-related behaviours is that there is no such model in existence. As such, the proposed model – covering organisations in all sectors in the UK, and in relation to all types of travel and transport-related behaviours – would fill an obvious gap in provision.

Arguments for why that gap needs to be filled are set out below (for instance, in terms of the potential applications of such a model – see 'Why Segment' below). Before moving on, it is worth outlining the nature of the gap in provision, including the kinds of models this review has identified, which partially cover areas relating to the review's scope, but which do not bring together the insights into a single model. While these models do not help to close up the gap, they provide insights and implications for the task of developing a model in this area.

4.1.1.1 Segmentation models of businesses, but not relating to travel behaviour

The literature review for this study has identified numerous segmentation models of businesses. The vast majority of these use standard descriptions of a business' dimensions ('firmographics') such as size, sector, location (plus e.g. age, ownership) to categorise organisations into like types. While this

method is widely used for market segmentation, it tends not to go beyond a descriptive outline of the business; whatever the behaviour of interest, the same firmographic dimensions tend to be used. This leads to an observation arising from the literature review, that **firmographics are used as descriptors of the business in question, and have *associations* with behaviours, but are not presumed to be strong (or sufficient) predictors or determinants of any particular behaviour undertaken by the business**. As we have seen in the Section 3.2.5, the available evidence suggests that firmographics have explanatory capacity for a relatively limited range of business travel behaviours, and in many instances have little predictive power at all.

Another recent literature review, undertaken by members of this research team for BIS (Marsden et al., 2012), explored the potential for using segmentation to develop an advice, information and support strategy for businesses which might increase their potential for growth. Similar to this review, that study found that all the available segmentation models of businesses in relation to their support needs were built upon firmographic variables – and as such these would be poor predictors of growth-related behaviours. The review went on to identify other variables – largely relating to business's capacities, orientations and growth ambitions – which would be better predictors of growth. Even so, the review concluded that *"much research relies on cross-sectional analysis mapping the characteristics of identified well-performing, high-growth firms. Such an approach limits the extent to which causal effects may reliably be inferred."* (ibid.). In short, while we can isolate the characteristics of firms which have grown, and then look for those attributes and 'growth-critical behaviours' in the business population at large, we cannot argue for a causal effect between encouraging those attributes and behaviours, and high growth ensuing.

These points provide two useful learnings for an approach to developing a travel behaviour-related model of businesses. First, there is little consensus over how to segment businesses from the point of view of understanding and influencing their behaviours. Second, there is currently no clear method for segmenting businesses to maximise their growth potential. Returning to the terms of reference for this review, **if segmenting for growth is an uncertain task (one which BIS are believed still to be working on), then segmenting for green growth in the context of travel and transport behaviours is even more challenging**.

4.1.1.2 Segmentation models of individuals, relating to travel behaviour

There are numerous segmentation models of individuals which relate to their travel behaviours. Although they do not assist directly in the task of segmenting businesses, they are likely to prove a useful source of dimensions, and even specific questions, on which a business travel model could be constructed. This is especially the case given the realisation that merely segmenting on the attributes

of a business (its firmographics) is likely to be insufficient for predicting travel and transport-related behaviours. It follows that understanding a business's attitudes is key to understanding its behaviour. What exactly 'business attitudes' are, and then how to research them, are both open questions (asked outright in the context of business's travel behaviours in a recent a recent review for the DfT: see Lyons et al. 2009). However, the most obvious route by which to research a business's attitudes is via its people (this is also the line taken by Lyons et al.).

Although segmentation models of individual members of the public were not within the scope of this review, it is worth highlighting three leading models relating to different types of travel behaviour, primarily to make points about the factors on which they are constructed:

- *Car Traveller Typology model (Anable, 2005)*

  Anable's model identifies seven segments of the Scottish public, based on their attitudes to car use and the environment. The segments are then split to reflect car ownership (four of car owners, three of non-owners). The survey behind the model focussed on six journey types, including supermarket shopping and travel to work.

- *Cycle Market Segmentation (TfL, 2010)*

  TfL's model is constructed to identify potential segments of the London population who could increase the proportion of their trips made by bicycle; the study also profiles potentially cyclable trips for each segment. The model features seven segments, ranked according to their potential for increased cycling. The segments were derived from two longitudinal travel surveys by TfL, plus a one-off survey probing travel behaviours and attitudes of London residents. These data were then combined with geodemographic profiling data (using Mosaic). The resulting model of cycling behaviour was largely based on current behaviour and demographic variables; attitudes were found to be relatively weak predictors of cycling potential.

- *Climate Change and Transport Choices Segmentation Model (DfT, 2011)*

  The Department for Transport's Climate Change and Transport Choices Segmentation Model (Thornton et al., 2011) is a multi-factorial 'psychographic' segmentation model that distinguishes the English population according to a range of attitudes and behaviours related to carbon emissions from personal transport behaviours. The model is based on a range of attitudes and behaviours in relation to different transport modes, as well as environmental, lifestage and socio-demographic factors. The model identifies 9 segments, divided (as with Anable's Car Travellers) into car owners (six segments) and non-owners (three). It is notable that questions about commuting, and food shopping, are included in the survey.

Based on the three models of individuals' travel behaviours highlighted here, it can be concluded that attitudinal variables are (varyingly) important in predicting individuals' travel behaviours, including work-related behaviours such as shopping and commuting. Notwithstanding the fact that Section 3 concluded that organisational structural factors are likely to be stronger determinants than individual employee attitudes, and that employee attitudes will not be independent from organisational values due to self-selection, given that customer travel/delivery and commuting are both included in the longlist of business travel and transport behaviours developed for this review, **we can conclude that any effective model of business-related travel behaviour will also include an attitudinal component**.

A further specific point about overlaps between business and individual segmentations should be made here. It is notable that DfT's public segmentation model incorporates both shopping and commuting (albeit with few questions relating to each). **While there is a strong case to be made for including these types of behaviours in any future business model, there is also an opportunity to omit them from the business model, as they are already covered elsewhere**. On the one hand such omission could be beneficial, and minimise the chance of 'double-counting' of emissions. On the other hand, such omission would reduce the potential for targeting commuting and shopping behaviours via the business, rather than the employee or shopper. There is at heart a challenging boundary question here, which we shall return to in our final conclusions and recommendations from this review.

4.1.1.3 Segmentation models of businesses, relating to specific travel behaviours

Three segmentation models were identified during this review which address businesses' travel and transport-related behaviour, but each only covers one specific area of behaviour. In methodological terms, all three are relatively simple models, constructed on a limited number of variables, as follows.

- *Typology of Fleet Decision Making (Nesbitt & Sperling, 2001)*

  This approach was outlined in Section 3.2.6.4. Briefly to summarise, in seeking to explore the potential for encouraging vehicle fleets to adopt lower carbon and alternatively-fuelled vehicles, the authors created what they call a typology of vehicle fleets, based on the decision making processes of the 'host' organisations which run the fleets. The typology classifies firms in two dimensions, resulting in four types of fleet 'host' organisation. The two dimensions of centralization and formalization are explained, respectively, as the extent to which (fleet) decision making is vested in a few people with a high degree of authority, and the extent to which rules and procedures are in place (which guide the fleet decision process). The resulting four types are therefore expressive of the ways in which fleet decisions are vested in the hands of a few individuals, and whether there are formal processes to regulate the decisions.

The development of the typology involved multiple methods: a literature review on businesses' decision making approaches across all areas of their activity (and not specific to travel and transport behaviours) which identified the two dimensions of centralization and formalization. These types were then used to structure the sample for a wave of qualitative interviews on the specific subject of fleet decision-making. Having confirmed the relevance of the types to the domain of fleet management, and identified key questions which could differentiate between firms in terms of their decision making, a survey of businesses was run which included seven statements on fleet decision making processes. Businesses were then allocated to the four types based on the combination of (yes/no) answers which they gave to the seven questions. **As such, this is not a formal segmentation clustered based on patterns in the data; instead it is a qualitative typology, based on pre-determined variables identified through qualitative research, but which has then been formalised in order to quantify approximate segment sizes.**

The quantification of the types via the survey work is interesting in that it also enables the types to be profiled in terms of other variables included in the survey. Thus the authors find that decision making styles correlate with a number of firmographic variables; for example, the less formalized (autocratic and democratic types) were found to be smaller firms, while most (but not all) of the bureaucratic organisations were government departments or associated agencies. In this way, the study demonstrates the widely-recognised observation that firmographics are associated with particular business behaviours, but that they may not be determinants of those behaviours. Indeed **the typology would appear to argue for the merits of segmenting on the known determinants of behaviours, rather than the behaviours themselves, or on firmographics.** In this way, the typology supports our methodological recommendations on how to approach segmentation model development of business travel, as set out in Section 4.2.1 below.

While simple, the typology appears to have considerable power in identifying critical differences between businesses, which impact on their purchase decisions (in this case, fleet vehicles). The paper does not go on to explore how other travel and transport-related behaviours may also be influenced by these attributes, but given it derives from the literature on decision making styles in general, and it appears to correlate with certain combinations of firmographics, **we suggest the dimensions will be of wider relevance across other domains on travel and transport behaviour.** For this reason, factors relating to these dimensions are incorporated in our conceptual model, under 'organisational strategy' (see Section 3.2.3 above).

- *Belgian Workplaces' Commuter Typologies (Van Malderen et al. 2012)*

As described in 3.2.2 above, this study was designed to identify good practice in terms of effective workplace interventions to encourage the use of alternatives to single-occupancy car use for daily commuting to work. As such, the cluster models it develops are means to an end in analysing findings from the Belgian Home To Work Travel Survey (HTWT). Two models are produced, and they are both quantitative models, derived from the data, but each of the two models is based on a single dimension only; as such **we choose to describe these as typologies, as little additional profiling data is provided for each segment, and the purpose is not to describe each type of workplace in the round – rather it is to identify which interventions can be shown to have been effective for encouraging non-car commuting**. The more detailed analysis in the study involves overlaying the two models to show how workplace interventions map onto staff mode choice for commuting.

The first model identifies four types of organisation based on the alternative mobility policies they promote: (i) no measure (ii) financial incentives for the use of bicycles and/or public transport (iii) providing cycling facilities (iv) information and/or collaboration incentives with a mix promotion of carpooling and public transport. In terms of segmentation methods, this model clusters workplaces on the single dimension of their travel 'policies' – although the authors use that term to capture all kinds of intervention from financial incentives to the provision of showers and the removal of parking spaces – some of which activities we would tend to class as company policies and frameworks, some of which we would consider business travel behaviours in their own rights.

The second model identifies five types of workplaces based on the dominant modes by which staff undertake the daily commute: (i) private motorised modes (ii) public transport (iii) cycling (iv) miscellaneous modes of transport (v) carpooling. The authors then set one model against the other to identify those workplaces where the dominant mode matched the dominant policies; in these firms, the relationship between policy and modal choice was further explored to identify which policies worked best in bringing about non-single occupancy car commuting.

Other than to give segment sizes, the only further description of each segment is to observe that smaller firms tend to be the most likely to promote cycling, while larger firms and those in urban locations are the most likely to promote public transport.

For the purposes of this section of our review, we can see that **segmenting by the end behaviour does not necessarily help to understand the motivations of a workplace**. It is only when the data of staff mode choice are set against those on workplace 'policies' that we can begin to learn what might influence modal choice for commuting: albeit that most influences are

probably missing from the model. The study also suggests that **profiling workplaces – as well as employees – can result in significant insight** in building up a picture of business travel behaviours, and what works. As a subsequent point, **surveying workplaces in terms of the 'policies' they have implemented can be a meaningful way of measuring business behaviour**. Both these observations support approaches we have taken in the Conceptual Model resulting from this review.

- *European Business Air Travellers Segmentation (Mason and Gray 1995)*

The model divides European business air travellers into three segments based simply on the main benefits they seek from flying: schedule-driven consumers, corporate cogs, and informed budgeters[56] (Mason and Gray, 1995). Given the discussion immediately above about overlaps between business and individual motivations in predicting business travel and transport-related behaviours, it is interesting to note that the developers of the air traveller model describe the business travel market as a "hybrid consumer-industrial market" (ibid.). **This description implies that both the travelling organisation and the employee-traveller would need researching in order to build a complete picture of business air travel behaviour.**

A further interesting observation about the business air traveller model is that **it is in fact based only on a survey of business travellers, not businesses.** This is a common methodology for travel and transport surveys, even when they relate to business travel – see Section 2.2 for a review. While such surveys may account for the individual's role in travel behaviours and decision making, they do not capture the corporate framework within which the individual's choices are circumscribed.

The European business air traveller segmentation features in a paper on business air travel in Norway (Lian & Denstadli, 2004). The authors note that, beyond the 1995 segmentation, "there is little other information on air traveller subgroups" – indeed the paper goes on to conclude that segmented approaches are vital to all kinds of predictive strategy for managing air travel supply and demand. In turn this review would suggest that segmentation models relating to business travel are thin on the ground across all the types of business travel and transport-related behaviour we have identified.

[56] Schedule-driven consumers (flexibility, timing, frequency are is most important and they value exclusive products aimed at the business traveller), corporate cogs (do not tend to book their own travel and are less personally focused on timing and flexibility but place value on frequent flyer schemes to achieve personal benefits), and informed budgeters (tend to pay initially out of their own pocket and pay attention to costs, often tending to be responsible for setting travel policy within the organisation they work for).

To summarise this opening section, we can conclude that **there are few current segmentation models of businesses in terms of their travel and transport behaviours, and none which cover what we would consider the full spectrum of these behaviours.** Furthermore, there is uncertainty over how best to segment businesses even for generic purposes of understanding their needs, and providing targeted support. **This lack of similar models underlines both the potential need for a new model of business transport and travel behaviours, and the many likely (and unknown) challenges that lie ahead on the path to constructing such a model.** Finally, we can conclude that any model interested in predicting business behaviour will need to include not just the business's dimensions (its firmographics) but also the motivations of its key people, including its senior staff, its rank and file employees, and potentially even its customers. Some of the implications of this realisation are explored below (for instance in Section 4.3.2 on survey development).

4.1.2 Why segment?

In order to further develop the rationale for segmentation model development, and the process of development from which an effective model will result, it is important to be clear on the basic principles of segmentation. Three principles are outlined here[57]. Segmentation is…

- *A practical tool*

  Segmentation is a practical tool, originally developed in the context of commercial marketing. Hence the ultimate criterion by which a model can be judged is whether it enables the more effective achievement of strategic objectives – for instance, in commercial marketing, does the model give me a better response rate than sub-dividing the audience by some other means (e.g. by socio-economic grade).

  In this aspect, the key question to be answered at the outset is **'What do you want the model to do?'** For instance, if the model is required to predict how different segments may take up specific behaviours, then it would be most appropriate to segment on the factors which most directly relate to that behaviour – or even to segment on the behaviour itself. However, if the model is required for more exploratory purposes, based on revealing differences/similarities in the worldview and lifestyle of different audience subgroups, then it may be more appropriate to segment on foundational or cross-cutting motivations (such as values and beliefs), even if those only predict specific behaviours relatively weakly.

[57] These three principles are proprietary to Andrew Darnton and flow from his work on a number of public-sector segmentation models, including the Defra Pro-Environmental Segmentation model (see e.g. Darnton 2014), DFID's Citizen Segmentation model (e.g. MORI 2008), and the Welsh Government's Sustainability Audience Segmentation (e.g. Ipsos MORI et al. 2013).

A further difference in the ultimate use of the model could be **whether the model 'owner' will need to access or recreate the segments in subsequent research or customer profiling.** This would require the identification of a relatively small set of 'golden questions' in order to enable the segments to be replicated in subsequent studies (which in turn would argue for using fewer input variables, and arguably having fewer segments in the model). If however the model is required as a one-off tool for targeting particular subgroups, then such questions may not be needed.

- *An iterative process*

One of the inherent challenges to segmentation model development is that one cannot see all the way to the end of the process from the beginning; instead, it is necessary to refine each step in light of learnings gained through the previous steps. For instance, when it actually comes to the statistical stages of clustering, different outputs may need to be tested until the ideal solution is found. Similarly, when attempting to combine items from existing datasets, steps which are desirable may not be feasible, given limitations in the data (e.g. resulting in low levels of accuracy in the model). As such, the process of segmentation is hard to specify with certainty in advance, and flexibility needs to be built in. **The core principles and purposes of a model should be borne in mind at all times in order to ensure that the right decisions are being taken at each stage.**

- *As much an art as a science*

"Creating a model may involve a great deal of technical wizardry, but ultimately good models tend to appeal to the common sense of those working in the area to which they relate" (Darnton, 2006).

This saying underlines the collaborative nature of segmentation models, both in development and application. As noted above, they are practical tools, and they must meet the strategic needs of the model owner, as well as research-based criteria for robustness. The model owner should not just commission the model, but be an active partner in its development; for instance, while the statisticians can provide the different cluster 'solutions', **it is for the owner to select one solution, and to advise on how the segments should be named** – it is the owner after all who must 'sell' the new model to their colleagues and other potential users. This close collaboration should run throughout the development process; a further example of a key moment for collaboration comes in the clustering process, where the number of segments to be featured in the final solution is stipulated beforehand by the owner – not the statistician. Commonly a number of different solutions (say, for 5, 6, 7, or 8 segments) are then run, and the

best fit solution is selected. It could easily be assumed that the data are fed into the statistical analysis and a model comes out of the other end of the process; even in this most statistical phase of development, the analysts rely on the insights of the model owners (as future users) to set the boundaries around the process. **Thus, rather than a hard science, segmentation development is a softer and more consensual craft, relying on good judgment as much as statistical accuracy.**

Given the top principle that segmentations are practical tools, **what sort of a model is required depends on the kinds of application it is to be used for.** Segmentations can serve many purposes, and their capacity to serve as focal points for a variety of functions and stakeholders is one of their main benefits. Some of the applications for which segmentations in the public sector are used are listed below, again drawn from Andrew Darnton's previous projects. These applications may be of direct relevance when making the case for moving to the next phase in the development of a travel and transport-related segmentation model of businesses.

- *Build insight*

  By dividing the audience into smaller groups, more fine-grained insight can be gained on each. As the model is used over time by different researchers and practitioners (making use of the 'golden questions' for accurate replication, so more insight on each segment can be added back into the model from these newer studies. If building insight is the primary purpose of the model, then it is important that the composition of the segments remains relatively stable over time – so all users are building insight on precisely the same subgroups.

- *Develop strategy*

  Just as classifying an audience into subgroups enables more insight to be developed on each, so it enables differentiated strategy to be developed. For instance, instead of one theory of change for the whole audience, differentiated approaches can be set for each subgroup, based on their particular attributes and preferences.

- *Design interventions*

  Segmented approaches support targeted intervention designs: not 'one size fits all' solutions. Ideally, models supporting intervention design would be able to show variation in the influences on priority behaviours across subgroups, such that intervention strategy could be tailored accordingly.

- *Devise KPIs, and evaluation frameworks*

Performance measures can be more accurately set if differentiated across segments. They would recognise that each subgroup starts from a different point, and has different capacities and opportunities to change. This variation in measures of success should be picked up in the evaluation approach for the intervention.

- *Target subgroups more effectively with communications/interventions*

Segmentation models which are to be used for marketing purposes tend to include information on both the channel preferences and the messaging strategy for each priority subgroup. This application is closest to the original purposes for which segmentations were developed in the public sector (largely, direct marketing). Information on preferences can also be supplemented by geodemographic data on physically where to find each segment, which in turn can support both communications and service delivery.

- *Develop a common language for audiences*

Whatever the applications of a model, by identifying and profiling segments, a model owner provides a new way of talking about their target audience with others. Even if other interested parties do not go on to use the model in their work, or share their data, the act of creating and disseminating the model has transformed the ways in which people think about the audience. In turn this increases the potential for collaborative working (on applications including all the above) – which may be advantageous if attempting to bring about transformational change in an area of behaviour involving many actors, such as many types of business travel and transport behaviour.

4.1.3 Different approaches to segmentation

Having set out the rationale for a segmentation model of businesses in relation to the their travel behaviours, and then having outlined the general principles of segmentation and the uses to which it can be put, we should move on to **consider the different ways of approaching the task of segmentation model development**. Having considered these options, we will then be able to make a recommendation about the best route to pursue the development of the business travel segmentation. It should be stressed that different applications require slightly different kinds of model. Three main types of model can be identified, based on their main purposes; again, these types are drawn from Andrew Darnton's proprietary work on segmentation models.

- *Insight model*

Segmentation models of this type address the question "**What makes people tick**?" They are largely ways of arranging complex data on multiple audience subgroups, in order to subdivide

the population into subgroups which are more manageable, primarily for research purposes. Models of this kind are primarily thinking devices, not behaviour change delivery tools, as they have no one specific behaviour in mind (in contrast to e.g. commercial segmentations, which are often designed to support frequent use of product or service). The weakness of such models is that while they have potentially very broad applications in terms of building insight and developing policy across a range of areas or behaviours, they are relatively weak at predicting the uptake of any given behaviour.

- *Delivery model*

Segmentation models of this type address the question "**Where can I find them**?" This not merely means that the model comes with golden questions, the asking of which enables new audiences to be allocated into the existing segments, but also has geographic or other identifying data within (or attached to) the dataset. These models also tend to be focussed on a particular behaviour or domain of behaviour, and to be used by practitioners to deliver a product or service relating to that behaviour. An obvious example would be the delivery of area-specific services like recycling collection, or travel planning advice by means of doorstepping. Segmentation outputs for these kinds of model often link into Acorn or Mosaic segments[58], or are mapped to GIS software, such that service providers can know which segments are dominant in which postcodes, and tailor their approaches accordingly. Note however this is not a perfect science, as the precision of segmentation often breaks down at postcode or doorstep level (e.g. next door neighbours may in reality be from different segments, although the mapping would treat them as the same).

- *Comms model*

Segmentation models of this type address the question "**How can I reach them**?" Similar to the service delivery type of models, models of this kind are designed to support practical work, but this time communications activities rather than service delivery. As such, the emphasis is on including media consumption information in the dataset, as well as a raft of attitudinal variables (not so much for the purposes of constructing psychographic segments, but in order to understand better how to construct appropriate messages for each segment). Any focus on specific behaviours is likely to be apparent in the way the attitude statements are drafted; other factors which are known to be important in influencing the behaviour(s) in question may be omitted from the dataset.

[58] These geodemographic profiles only relate to households/individuals.

These three types of model according to their main uses and users are presented to outline the different approaches to model development, based on being able to anticipate the main future uses of a model. However the division in to three types is a little simplistic: **in reality, models tend to be pressed into multiple uses** – not least to get value for money from the investment made by the model owners – and in most examples of public sector segmentations these three purposes merge. That said, models which are effective in spanning all three purposes are rare; it is possible to create such a model, but challenging. A multi-purpose model of that kind would require a large dataset, based on a long survey tool, and with the potential to link to geodemographic systems in order to profile the segments on the ground.

For the purposes of developing a segmentation model of businesses in relation to their travel behaviour, it can be recommended that DfT focus on the first type of model: that which is designed to support the gathering and sharing of insight. Primarily, this reflects the weak state of the evidence on business travel behaviour, as this review has shown: the first task is to build knowledge, and then build support for the segmentation model as a mutually-acknowledged means of sharing insight and developing strategy across interested stakeholders. Quite simply, **it is too soon for the DfT as owner to be developing a delivery-focussed model in any specific area of business travel behaviour.** Other stakeholders may come forward who are keen to develop a model which they can use to deliver targeted offers or strategies, but unless they are holding considerable insight into the behaviours they are interested in and their determinants, we would recommend they too wait until further research has been undertaken and they could be reasonably sure they were segmenting on the variables which mattered (in terms of influencing the end behaviours). A second clear reason for developing an insight-type model is that there is not yet sufficient clarity over which travel and transport behaviours are to be prioritised for policy purposes. As such, it is not possible to construct a delivery or comms model, as it is not clear which behaviours the model would most need to be able to predict and deliver against, although we do recommend this as an important next step (Section 4.3.1).

A second means of describing different types of model is by the methods which are used to develop them. As with the principles and applications outlined above, it is imperative that model owners understand the variety of methods available, so that they can choose appropriate routes for model development. Again, the type of model in terms of its methods should be appropriate to its uses, although the question of costs also comes into play here. Generally **when we talk of segmentation models, we tend to think of quantified models which are generated by clustering survey data; looser qualitative approaches are often referred to as typologies** (see e.g. Darnton, 2013). However, multiple methods exist, and these are outlined below, with an indication of the strengths and

weaknesses of each[59]. Again, it should be noted that distinctions between these methods are somewhat simplistic, as the more ambitious or technical models are often developed via a process that moves through the stages, starting with literature review, then testing in qualitative research, before surveying and clustering (in a single dataset or by combining survey and other database variables).

[59] Based on Andrew Darnton's proprietary work, including an unpublished study for Defra on Segmenting SMEs (Rathouse & Darnton, 2010)

Table 4.1: Segmentation approaches

[Method]	Description	Pro's	Con's
Intuition	Expert insight	Better than nothing; in an area with relatively little existing evidence, expert insight can be a significant advance; experts involved often tend to be practitioners (e.g. sales teams or business support teams) whose expertise is derived from daily practice – and whose insights will therefore support practical application of the resulting typology (or segments); based on existing knowledge and experience and therefore low in cost and time required	Unquantified; Unevidenced; Non-replicable with any known accuracy – all done by eye. Based on knowledge of current not future businesses and markets, therefore of less use for devising future strategy and policy.
Qualitative	Qualitative analysis and interviewer judgement	The entry-level approach to segmentation, albeit only based on qualitative evidence (hence results in 'typologies' not segmentations). Potentially more likely to reflect the important differences between firms than quantitative clustering, which could just pick up on statistical patterns in the data (rather than meaningful differences). Much cheaper than quantitative surveying, though still costly if a diverse enough sample is drawn.	Unquantified; Non-replicable with any known accuracy – all done by eye. Relies on judgement and expertise of the researcher, as well as the precise blend of the organisations sampled.
Quantitative	Statistical clustering methods	Segment sizes quantified; known accuracies; probabilities of allocation to different segments; potential to replicate with known accuracies in future surveys	Very costly to survey, especially in a diverse and complex area like business travel where multiple tools may be required (see Section 4.3.3 below). Results in known accuracies for replication, but this is still imperfect (clustering being a stepwise process which turns out slightly differently every time): there is an inevitable element of inaccuracy in allocating firms to segments in future surveys.
Hybrid	New survey data, plus existing survey datasets, market	Fundamentally linking to other datasets reduces the amount of data items to be collected through a new survey, reducing costs and the time burden	Inherently combining data into a single dataset is an imperfect business, as it necessarily introduces inaccuracies into a model. In order to project data

	metrics or geodemographics	on respondents (and hence increasing response rates). Additionally, data quality can be improved through linking to business metrics (i.e. non-survey data), e.g. employment/turnover figures, not based on self-report.	collected from one sample of businesses onto another sample of businesses, the two sets of businesses need to be mapped to one another in corresponding dimensions. This is done using common variables or 'hook questions', which should ideally be asked in identical ways to get a good match. These hook questions should also relate to variables which we know are strongly predictive of the behaviours under consideration i.e. they have some predictive power in determining segment allocation. Sadly, the questions most usually asked in common across surveys are firmographic ones, and these tend to be poor predictors of many behaviours. The first test of a combined dataset should be whether it has been constructed using more than just firmographics. Even where these conditions can be met, given the inherent inaccuracies in hybrid models it can be argued that they are best treated as hypothetical models, to be validated in some future survey which incorporates all the items of interest in a single dataset (in fact, the hybrid model can help establish which are the variables of most interest). This point is the overall conclusion from a scoping study on methods of developing a food segmentation for Defra, which concluded that any hybrid models would represent a temporary 'holding position' before a full bespoke survey could be undertaken (Darnton, 2010).

Having commented that 'segmentation' is normally used to refer to quantitative models, it is notable that all the above types of model appear in the literature on business segmentation. For instance, in textbooks on market segmentation, it is often recommended that businesses start profiling their customers based on the understanding their staff already hold about their customer base (see e.g. Weinstein, 2004). Notably, intuition-based models tend not to be dismissed in the business literature in the ways they might be in the academic or social policy literature. Indeed in market segmentation, the process of developing intuition-based models has been referred to as "*data collection through experience*" (Palmer & Millier, 2003). Meanwhile a recent review of segmentation models of businesses in relation to providing information, advice and support (AD/GHK for BIS, 2011) identified nine current or recent models, of which four were hybrid (in various forms), three were based on intuition, one was quantitative and one qualitative. All these models were clearly considered fit for purpose; it can be concluded that they were serving different purposes, with different levels of resource allocated to each.

For the purposes of the current scoping study on developing a segmentation model of businesses in relation to their travel and transport behaviour, **it can be recommended that DfT and other potential partners aim to develop a fully quantified model, based on bespoke survey data, which may also be linked to other business metrics** (for instance, actual turnover data, taken from tax returns). This recommendation is premised on the need to be able to quantify the segment sizes, and to allocate other businesses to adopt the segments in future surveys. In this way, the main purpose of the model as a tool for building insight reinforces the chosen method of quantitative clustering: users can find the segments in their future research, and add their new insights back into the model.

This recommendation is logical, but as ever is subject to the realities of segmentation as a practical tool, and an iterative process. On the first grounds, the model will need to be seen to deliver value for money, such that the investment in a robust process of research can be justified – likely to include a bespoke survey, and potentially hybrid clustering (involving the fusing of key items from existing datasets into the new survey dataset). Second, **getting all the way to a quantitative or hybrid model may not be possible:** the feasibility will be established as we go through the steps in the development process. **The model may not be able to cover all types of organisation, or all types of travel and transport behaviours. There may also need to be more than one model – or potentially no model at all, if the evidence gaps are too large, or the model owners and partners cannot decide on the approach to be adopted, or the uses to put the model to.**

Having made these recommendations for the ideal type of model to develop, the following section sets out the preliminary steps to model development.

4.2 Shaping a model, Identifying evidence gaps

4.2.1 From conceptual model to segmentation model(s)

In setting out the path from literature review to segmentation model, the conceptual model becomes the pivot point. The conceptual model is a model of businesses' travel -related behaviour – not a model of businesses themselves (i.e. the segmentation model which we are scoping out through this review).

The conceptual model is an explanatory device, a way of organising the evidence on the factors and influences which bear on business travel behaviours. In the case of this particular area of study, **the conceptual model is also a way of identifying the large evidence gaps which characterise the subject area.** This section goes on to outline the nature of those gaps, and make recommendations for how to fill them: from existing data, and by commissioning new primary research.

The conceptual model must be filled with data on each of the factors identified. This matters because one of the main tenets of segmentation methodology: that segmentation models which need to show variation in the uptake of a behaviour (or behaviours) should be constructed on that behaviour(s), or the proximal determinants of that behaviour(s) (see e.g. Darnton 2014). Thus the conceptual model is critical as it shows all the determinants which (we believe) apply to all the potential business travel and transport behaviours. If we can gather all the data on the determinants into a single dataset, then we can perform statistical analysis, and cluster on those determinants which most differentiate between the segments.

In terms of making the decision on **whether to cluster on the behaviours themselves or the determinants of those behaviours, it is important to recall the purpose of the model.** We suggested above that the segmentation model of businesses should be predominantly an insight model, for the purpose of building understanding about different subgroups and their behaviours. As such we need a stable model, in which the composition of segments will not vary substantially over time. For this reason, we **take the view that behavioural variables should be left out of the cluster bases;** while it is hard to change behaviours, they can and do tend to change more rapidly than their underlying determinants (especially businesses' and individuals' motivations).

This approach to clustering is also recommended for being "*cleaner*" (in the words of Defra, who used this approach on their Pro-environmental Segmentation Model – see e.g. Defra 2008, discussed in Darnton 2014). Effectively, the segments are constructed on determinants (which we can imagine as the x axis on a chart), but show variation in uptake of behaviours (on the y axis). If we were to include the uptake of behaviours among the cluster variables, then we would muddle the two dimensions – and **the composition of the segments would change every time we reported a change in the target**

behaviour we were focussing on. The Defra Pro-Environmental Model provides a particularly close point of comparison here, as it also was required to work across a wide range of behaviours, many of which were only vaguely specified or recognised as priorities for policy at the time the model was being developed. In the face of such diversity, and uncertainty, around the behaviours of interest, **segmenting on determinants offers the safest way to produce a model with the potential to predict a wide spectrum of behaviours, and hence have wide policy applicability.**

It is also important to add that this approach can always be altered or refined if it is found not to show sufficient variation in the uptake of the behaviours across segments. Recalling the principle that segmentation is an iterative process, **it is possible in the first instance to leave behaviours out of the cluster variables, and see how well the resulting segments discriminate on the priority behaviours. If that variation is deemed insufficient then we would recluster**, introducing behavioural items into the cluster bases, and thereby increasing the capacity of the model to discriminate on those behaviours. However if it is possible to generate a model which discriminates well on behaviours but uses only determinants for the cluster bases – as Defra achieved with their Pro-Environmental Model – then we feel that would be the ideal outcome.

In this way, determinants hold the key to a segmentation model which discriminates effectively on behaviours, and can thus be used to build insight and develop strategy for policy and behaviour change interventions. Our focus in this scoping study is then all on the conceptual model, which identifies the determinants which we believe most influence the wide (and as yet unspecified) range of travel behaviours. **Although this review has found that the conceptual model effectively shows more of what we don't know than what we know, we do know enough at this stage to begin to outline the shape of the potential segmentation model - or models – of businesses in relation to their travel and transport behaviours.** This likely shape chiefly arises from the sheer diversity of the behaviours under consideration, and in the businesses that undertake them, as follows:

- The **different types of travel and transport behaviours involve different audiences and actors:** for instance, senior management may set HR, CSR or travel policy, while rank and file staff may choose what modes to use for business meetings, or how to drive when making deliveries. It is also the case **that in order to build a complete picture of business attitudes, employees may also need surveying** (see 4.3.4 below on considerations for surveying). In such cases, views from multiple respondents within a business will need linking together before clustering.
- **The different types of travel and transport behaviours involve different determinants.** For instance, we believe freight and logistics behaviours are largely determined by the primary functions of a business (e.g. haulier; courier); by contrast, eco-driving is likely to have a

larger attitudinal component. It has already been discussed that broad-based models can sometimes show variation across a range of behaviours, but tend to be weak at predicting any one specific behaviour. Widely varying behaviours – and therefore determinants - are hard to incorporate in the same model.

- **The wide variation in the kinds of organisation under consideration may also argue against integration within a single segmentation model**. This is an inherent challenge of segmenting businesses, and not unique to the context of travel behaviours. The business population is 'bottom heavy' in that its numbers are skewed towards very small organisations. The most recent data suggest that there are 4.9 million private sector enterprises in the UK, of which 99.2% are small (under 50 staff) and 95.4% are micros (under 10 staff) (BIS 2013). By contrast 7,000 firms are large (employing 250 or more staff), and thus comprise 0.1% of the business population - but they employ 40.7% of the private sector workforce and create 51.9% of the turnover. Were all these enterprises to be included in a single model, it would either comprise even sized segments, in which large firms got lost, or it would comprise dramatically varying sized segments, in order to even out turnover (or environmental impact, as a related dimension) across the segments. Either way, unevenly sized segments are difficult to handle in a segmentation model, and best practice suggests segments should tend towards being evenly sized (or at least with no extremes of small and large) – one reason for this being the expense and difficulty of researching with or targeting very small segments. As a final point, it should be noted that the scoping work recently undertaken by BIS in pursuit of a growth segmentation of businesses was bounded only to include SMEs (see Darnton and Henry 2011).

On account of the wide variation between businesses, and between behaviours, and the different (and multiple) audiences whose perceptions and behaviours are implicated in different travel behaviours under consideration, we anticipate that more than one segmentation model will be required to cover all the organisations and behaviours under consideration. Given the iterative nature of segmentation model development, it is impossible to say how many models there will be, or how precisely they will be bounded, but we would suggest that different dimensions on which to draw up the multiple models could include the following:

- *By type of travel domain*

  Each type of travel domain (logistics; briefcase travel; commuting; customer) could have its own model. In turn this would reduce the numbers and kinds of organisation in each model, as not all organisations produce each type of travel flow. The benefits of this approach include that there are no redundant variables (e.g. questions relating to logistics) for any

firm, and that the segments overall can show variation within a single type of travel domain (rather than being say strong at predicting briefcase travel behaviours, and weak at commuting). One downside is that there will still be a wide array of organisations by sector and size to accommodate. A further, downside is that organisations do not fall neatly into one of four domains, very often having travel flows in more than one (e.g. hauliers are clearly dominated by logistics travel, but their employees also need to commute to the depots and travel between companies or branches for meeting or training etc). Moreover, given diverse travel behaviours can have similar determinants, by splitting behaviours across multiple models, we fail to capture the potential for interventions in specific determinants resulting in changes to multiple behaviours at once – and hence miss the potential for spillover between behaviours, or for prioritising interventions targeting one determinant over others. Nevertheless, as we say below, once exploratory statistical analysis has been undertaken, it may be possible to find common key determinants which allow one 'meta' model to be developed.

- *By size*

  A simple solution to the problem of unevenly sized (or unevenly impactful) organisations would be to produce multiple models by firm size. For example, splitting the universe of organisations into three size bands (e.g. micro; other SME; large) could result in models with much more evenly balanced segments. It could also help in the task of keeping all travel and transport behaviours in the same model (or models – cut by size). Finally, our review of the evidence base concluded that, although size can be associated with travel behaviours, there are big variations in a given behaviour *within* firms of the same size. Again this supports the case for separate models by behaviour type, for each size band.

- *By sector*

  A further option may be to produce different models for organisations with different ownership structures. For instance, cutting the universe into private, public and third sector organisations could increase the meaningfulness of each model. Another approach could be to split the model by sector or core function of the organisation (i.e. SIC code). Given the large number of sectors as defined by SIC code[60] it is unlikely that the resources needed to cover all these sectors could be justified. However, stakeholders may like to construct

[60] Standard Industrial Classification codes are the Office of National Statistics uses to classify business establishments and other standards units by type of activity in which they are engaged. The codes are grouped into progressively broader industry classifications – by trade group (of which there are currently 21), major group and division. For instance, trade group H refers to Transport and Storage businesses and within that group, 49410 refers to 'Freight transport by road'. The full list is available at: https://www.gov.uk/government/publications/standard-industrial-classification-of-economic-activities-sic

parallel models (based on similar variables) for a number of priority sectors. One advantage of this is that potentially small but important sectors (e.g. tech firms; food retailers) could be subdivided and examined in close detail, whereas in other methods they are likely to end up lost among other businesses in the same segment. This in turn is obviously beneficial for sectoral umbrella bodies, and others who seek to work within particular sectors.

4.2.2 Overview of evidence requirements and gaps

In light of the evidence review and the suggestions presented above on the way in which the published evidence and conceptual model can be transitioned into a segmentation model, the requirements for further evidence can be broken down into three main areas:

1. Evidence on the current reach, potential reach and environmental and growth impacts of business travel behaviours; and

Investigating the determinants of business travel behaviours broken down into:

2. Evidence of the effectiveness of policy instruments to mitigate environmental impacts of business travel and support business growth; and
3. Evidence on the organisational level determinants of business travel (as defined by the constructs in the conceptual model) and their relative importance for different behaviours and businesses.

We will now take each of these in turn and explain why this is a requirement in the context of a segmentation of business travel behaviour and the current gaps in the evidence to fulfil this need. Each of the following evidence requirement is associated with a Research Recommendation (RR) detailed in Section 5.2:

Evidence Requirement 1: Reach and impact of business travel behaviour

Any eventual segmentation model will want to be used by policy makers to influence the amount and composition of business travel and to decide how to design and target interventions. However, without knowing the potential reach (how many businesses are already adopting a behaviour and how many *could* adopt it) and the impact (how much travel/energy/carbon could the adoption save), and the relationship between the behaviour and growth, then it will be difficult for policy makers to target their engagement and interventions. In addition, there will be limited space on future questionnaires. Consequently, the long list of behaviours identified in Table 2.4 will need prioritisation. Setting priorities, however, is not a wholly scientific business –it involves balancing measures in various dimensions, including:

- **Universality** (i.e. who can undertake the behaviour)

- **Actual uptake** (% of businesses already undertaking it)
- **Potential Uptake** (% of businesses/vehicles/ employees that theoretically could be undertaking it)
- **Environmental impact** (e.g. CO2)
- **Growth impact** (e.g. potential increase in sales/jobs)
- **Pivotality** (i.e. a 'cornerstone' or linking behaviour, change in which may bring about or enable change in other related behaviours of interest)
- **External feasibility** (i.e. facilitating conditions are in place)
- **Internal feasibility** (i.e. within behavioural control)
- **Malleability** (i.e. potential for change / quick wins)
- **Saturation** (i.e. not yet normative)

Note that, above all, the choice of behaviours on which to focus ***also needs to be set in line with the policy priorities of all stakeholders***. Once these data are gathered or estimated for each behaviour, that is still not the answer to which behaviours to prioritise. In line with segmentation development being as much an art as a science, the decision over which behaviours to include is as much a political as a statistical one. The data gathering exercise will then lead into a collaborative stakeholder exercise, best conducted as a facilitated workshop (as described in Step 4 under 4.3.1 below).

As explained in Section 2.4, this type of information was not systematically uncovered in our review. The principle reason for this is that the remit of this study was not to uncover the evidence in such a structured way for each behaviour and therefore we did not structure the literature search to use terms related specifically to all of the long list of behaviours identified, nor the specific impacts of those behaviours. We do not suggest that uncovering the evidence on the above parameters for each behaviour would be *easy*. Nevertheless, we believe that it would be possible to carry out a desk study which collated the best evidence for each behaviour (likely to very largely exist in the form of grey literature), and to produce indicative and relative estimates for each. This approach is detailed in RR1.

Evidence Requirement 2: Determinants of business travel behaviour

The evidence on the determinants has been reviewed in the EBR and documented in Section 3 next to each construct in the Conceptual Model. Any gaps or inconsistencies in the evidence have been highlighted. Investigating the gaps in our understanding of the determinants of business travel behaviour can be split into two main strands of investigation:

2a: Effectiveness of policies influencing business travel behaviour

Government policy will clearly have an influence on what businesses do. However, it is itemised as a separate 'determinant' here in order firstly to specifically highlight the lack of existing evidence on the impact of government policy on business travel behaviour and, secondly, to underline the fact that it is both an evidence *requirement* to feed into the development of a segmentation model, but also a potential *product* of having a segmentation model. In other words, a segmentation of businesses could be used both to target policy and to monitor the responses of business to policy interventions.

As with the evidence on the detailed impact of each business travel behaviour, this evidence review did not set out to systematically document the effectiveness of individual government policies on business travel. Moreover, if business travel is taken to cover all four domains identified in this review (briefcase, commuting, customer and logistics), then the potential suite of policies to review is very large and arguably unmanageable. Just focusing on 'briefcase' and 'logistics' travel (the two domains that may be undisputedly considered to be the 'responsibility' of businesses (see Section 2.5), relevant policies cover a diverse range including, at the national level, air passenger duty; company car taxation policy, public sector procurement policy, mandatory carbon accounting, or at the local level workplace parking levy, congestion charging, local loading/unloading regulations. There are also EU-level policies to consider relating to vehicle emissions standards, working time directives, procurement and the emissions trading scheme.

The interviews with umbrella organisations left little doubt as to the importance of regulation (including carbon reporting) to the degree of attention afforded to sustainable transport issues. In particular, recent changes to legislation governing carbon reporting frameworks (Section 2.5) may be starting to focus some attention on transport emissions, albeit possibly only where vehicles are directly owned or controlled by companies themselves (Scope 1). The point is, however, that the responses to this legislation and others have not been well documented. It is important to understand which companies respond to these policies and why (or why not). We have structured a specific research recommendation (RR2a) relating to this issue of policy influence.

2b: The organisational level determinants of business travel

This study has found that research on how businesses make decisions is vast. Research on how businesses make decisions *about travel-related behaviours* is very thin. We note the most significant gaps in the evidence here:

- There are some behaviours (e.g. **travel planning, video-conferencing**), where a body of literature is emerging, but this literature is disparate, often contradictory (e.g. studies of the travel substitution effect of **videoconferencing**) and tend to be based on small (unrepresentative) samples and qualitative methods. This means that it is very difficult to

draw conclusions about the scale and nature of adoption of these behaviours and therefore what is driving them. (see RR1)

- There are some behaviours where the scarcity of evidence is particularly surprising given either the topicality of the issue including recent changes in trends, and/or because of the potential significance of the issue in terms of the amount of travel or carbon emissions it accounts for. (see RR1)
    - Company cars and use of grey fleet
    - Fleet purchasing (especially low carbon vehicles)
    - Pool cars/ use of car clubs for B2B travel
    - Increased uptake of rail for 'briefcase' travel (including substitution from air to rail)
    - Expenses policy and travel management policies more generally
    - Workplace parking management
    - Supply chain management and procurement (in relation to sustainable transport)
    - Location policy (with detail on the attraction of certain locations for each type of business travel and the actual influence of these factors on final travel behaviours)
    - Carbon reporting and Environmental Management Systems
- Travel dependency is a concept that has emerged out of this study and does not exist in the literature in relation to businesses. We contend that it would be useful, alongside the typology of business travel produced here, to profile businesses in relation to the dependency or salience of different types of travel flow to their activities as this will play a pivotal role in the degree to which the final travel-related outcomes (particularly in terms of energy or carbon emissions) can be influenced. It will also identify which businesses may need to be most targeted precisely due to the significant contribution they make to final policy objectives. However, we recommend that more work is done to validate this concept, as outlined in RR2b.
- Much of the evidence, including in the general business studies literature and literature focusing on broader sustainable business behaviour (such as corporate social responsibility), focuses on external factors (such as regulation or broad sectoral differences) but the understanding of the role of internal factors (such as the attitudes and values of individual employees, corporate mission and decision making structures) is much poorer.
- All of the determinants in the Conceptual Model require validation through further research. In particular, their relationship to specific behaviours and their interaction with each other are not well understood. As will be detailed in the research recommendations,

we suggest these relationships are explored through a quantitative survey instrument once some preparatory prior research is undertaken (see RR3). We also suggest the items which may be needed to be included in such a survey against each component of the Conceptual Model, in Table 4.2. However, there are some potential determinants of business decision making related to travel which are particularly underreported in the literature, for which we recommend some special attention in prior qualitative research (see RR2b):

- Role of location
- Role of regulation and policy
- Role of individual psychographics
- Size – SMEs are under researched in relation to travel
- Role of customer pressure on travel decisions
- Role of social capital

In Table 4.2 we present a summary of the topics (following the Conceptual Model) and associated areas of questioning that this evidence review revealed are potentially important determinants of business travel behaviour and could be included on a questionnaire prior to segmentation (RR3). This is effectively a shopping list of the variables that would enable us to populate, and in the process validate, the Conceptual Model. However it is still not exhaustive of the topics that could potentially be included. It is also probably too long already to be covered in a single questionnaire, and would need narrowing down once the objectives for the model have been agreed among stakeholders, and priority behaviours have been identified (see Section 4.3).

It should also be noted that the measures under each construct are not written here exactly as they should be asked in a survey: the next steps to model development require further literature reviewing in the areas prioritised for model development, and in the process existing questions should be identified which have worked well in previous surveys and could be borrowed for re-use in a bespoke travel and transport survey. Finally, those draft questions should undergo cognitive testing with an appropriate sample of potential respondents, to ensure they are easily understood by respondents, and are measuring the variables as intended.

Table 4.2: Possible topic areas to be included on a survey of businesses

Model Construct	Topic areas for survey questions
TRAVEL DEPENDENCY	
Travel Dependency	• How much spent/ how many miles travelled/ vehicle *tonnes* moved/ on each type of travel domain in the typology • Expenditure as a % of turnover • Number of employees commuting and average distance • Number of customers and average distance travelled • Size of (own) vehicle fleet (+ types of vehicles)
OPERATING ENVIRONMENT	
Regulatory Environment	• Environmental regulation(s) subjected to • Voluntary schemes available/ participated in
Size	• No of employees (in each site/location) • Turnover • Size of vehicle fleet
Sector	• SIC • NS – SEC of employees • Nature of the business (e.g. shift work) • % of employees with a fixed work schedule • Operating hours/ opening hours
Organisational Geography	• Number of sites • Distance of sites from each other, from HQ, from other key venues (e.g. suppliers; retail outlets) • International presence (sites and customers) • Customer spread/ How many customers within 50k • Amount of intra-company vs inter-company travel • Videoconferencing facilities
Ownership	• Publicly listed, privately owned (Ltd, partnership, cooperative or sole trader), not for profit (social enterprise), public sector or third sector
Growth Trajectory	• Growth history • Currently growing or not • Market position/ market share/ stock market value
ORGANISATIONAL STRATEGY	
Corporate Mission	• Profit orientated vs profit satisficing • 'Corporate' motivations for engaging in CSR (competitive, legitimation, sense of ecological responsibility) • 'Corporate' belief in link between ecological responsiveness and resource efficiency/ long term competitiveness/ profit/ enhanced reputation • 'Corporate' view of regulation a cost burden or driver of environmental practice • Innovation/ R&D
Organisational Culture	• Moral rules, standards, codes of principles which provide guidelines to behaviour • Culture of business travel (business travel as a status symbol; rewards for business travel; communications messages regarding travel/ environmental issues)

	• Levels of compliance/ non-compliance with travel policy
Management values/ attitudes/ beliefs	• Issue salience/awareness • 'Corporate' approach to travel costs during a downturn: can it be shaved without impacting on turnover? In recovery, do they explicitly or implicitly sanction increased travel to generate business? • Priorities for travel management • Beliefs about the business case for 'green travel' behaviours • Business travel and status • Perceived barriers to changing behaviour • Compliance with travel policy among senior managers – do they 'walk the walk'? • Are sustainable travel policies seen as 'ethical'? • Belief that managing the commute / customer travel is their responsibility or is too much of an invasion into personal life
Organisational Structure	• Sense of collective responsibility for travel policy • Who makes decisions about different areas of travel policy – cross-organisational approach? • Degree of employee involvement in decisions/ autonomy over travel choices • Description of travel policy management as high/med/low control • Existence of a company travel policy/ formalised Travel Management/ use of a TM company/ travel information management/ travel expenditure management • Status of the travel manager • Focus on measuring: Use of whole cost accounting/ environmental management system for business travel expenditure/ vehicle procurement • Desire for better measurement systems • Level of integration/ internalisation of travel planning/ travel policy part of CSM • Levels of compliance/ non-compliance with travel policy • Communication methods – what are employees informed about when booking travel • Training, information, support functions • Attraction to financial incentives versus regulation/mandates versus information and incentives • Feedback, incentives, targets

Risk Orientation	• Attitudes to risk (risk as an opportunity vs risk adversity)
	• Imperative to 'go green' due to perceived risk from:
	  ○ changing consumer preferences (reputation)
	  ○ environmental degradation
	• Attitudes to new vehicle technologies - perceptions as avoidance of loss or a gain

ORGANISATIONAL RESOURCES	
Finance	• Access to working capital/investment finance • Reserves/ debt • Finance/ cash flow a perceived barrier to action

	• Acceptable payback periods on investment in sustainable travel • Perceived financial cost of action
Fixed Assets	• Vehicle fleet, distribution centres, ICT infrastructure
Skills and Knowledge	• Skills a perceived barrier to action • Knowledge a perceived barrier to action • When information is most useful • Preferred information channels • Use/ interpretation of energy audits • Length of time initiatives have been in place
Absorptive Capacity	**Note: this is a construct in the model which links various strands together and, as such, is difficult to measure discretely** • Perceived adaptability • Utilisation of networks; membership of networks • R&D strategy and spend • Innovation performance • Level of graduate employment • Scale of investment in training
PLACE-BASED FACTORS	
Local Infrastructure	• Ranking importance of various local transport/ digital infrastructure factors (see Kimelberg and Williams, 2013) • Local infrastructure a perceived barrier to action • Perceived quality of local transport and digital infrastructure • Shifts in behaviour before/ after local infrastructure change
Social Capital	• Use of/ membership in local professional networks
PEOPLE'S MOTIVATIONS **Note:** the scope of these questions will depend on whether individual employees/ customers themselves will be asked to fill out a questionnaire. Some of the topics below could only be asked under these circumstances. Many more topics (such as the Golden Questions from the DfT Individual travellers segmentation model) could also be included.	
Employee Attitudes	• Belief that commuting behaviour is completely their choice until they enter the office premises • Attitudes to commuting: perceptions of walkability/bikeability/bus-train-ability/carshareability of their commute (reflecting actual proximity) • Belief that business travel improves career prospects • Belief that business travel commands respect, prestige • Desire to work in different ways • Resignation to the fact that travelling is part of the job • Perception of how well business travel time can be used • Enjoyment of business travel • Environmental awareness and sense of personal responsibility to change behaviour
Customer Attitudes	• Belief that organisations have responsibility to provide alternative/green travel options • Environmental awareness and sense of personal responsibility to change behaviour
BUSINESS TRAVEL BEHAVIOURS	

Note: again this list is not exhaustive, but indicative. The actual list of questions on the behaviours depends on the prioritisation process as outlined in Section 4.3.	
'Behaviours' by the organisation	- Existence/ Implementation of: o Company travel policy o Travel Manger (+ Status of Travel Manager) o Carbon Management Plan o CSR strategy o Flexible working policy o Videoconferencing facilities o Parking policy (+No of spaces per employee) o Driver training o ICT and Logistics systems o Collaboration with suppliers/ clients to reduce travel o Subsidisation of employee commute travel
'End Behaviours' By the employees	• Proportion of employees commuting by car/bus/cycle/ walk • Proportion working at home at least one day a week • Frequency of briefcase travel for each management level • Modes of travel for briefcase travel (+ distance/destinations) • Use of own car, company car, pool car
'End Behaviours' By the customers	• Proportion of customers by each mode of transport (+distance) • Home deliveries
'End Behaviours' By the suppliers	• Reduction of empty running/ increasing backhauling • Use of ICT and logistics systems

4.3 Practical steps to model development

4.3.1 Sequence of steps to a segmentation model

This scoping study is designed to explore the feasibility and desirability of a segmentation model of businesses in terms of their travel behaviours. So far, in this section on segmentation we have recommended that a quantitative model – or more likely, models – be developed, to build insight across stakeholders and subsequently to support the design and delivery of targeted policies and interventions.

The review will now address how to set about developing such a model. This task can be considered part of the process of scoping (to establish whether the steps are feasible for DfT to undertake), although it also shades over into the active process of model development, which is beyond the scope of this review. Given the principle that segmentation model development is an iterative process, questions of feasibility must continue to be asked and answered throughout the process of model development.

This section sets out the recommended steps to move from the end of this scoping review into the action process of model development: or, from conceptual model to segmentation model. While the later tasks are clearly part of model development proper, there are some initial steps which DfT will need to undertake beyond the scope of this review, but before commissioning researchers to develop the model itself. The process outlined here is necessarily idealised – being iterative, the feasibility to move onto the next step will depend on the outcomes of the previous steps – but is especially intended to demonstrate to DfT the steps they will need to undertake in order that they can develop an effective brief for primary research.

1. **Convene stakeholders**

   Whether or not DfT can sole-fund the development of a business travel segmentation model, to get maximum value from the model they will want to share it with delivery partners and other stakeholders who can use it to structure their own research (and so build new insights back into the model), and potentially to deliver partnered interventions. As such it will be necessary to build ownership of a future model among likely stakeholders from as early as possible in the process.

   Early engagement makes sense in terms of segmentation development itself: given that segmentation models are practical tools, designed for a purpose, establishing the likely needs of potential partners is best practice. In so doing, there is also the opportunity to share stakeholders' existing insights – and, where relevant, their datasets. Early engagement also

conforms to best practice in open policy making: as a form of co-production it *"breaks Whitehall's monopoly on policy development"* (so says the Civil Service Reform Plan: HM Government, 2012), increasing the chances that the resulting policy or tool will be fit for purpose. Lastly, in the context of co-production, there is the chance that stakeholders may wish to co-fund the process of model development, which is likely to be attractive to DfT, so long as common purposes and dimensions to the model can be defined.

It is important to note that stakeholder development should include those in and outside of Government, and across different divisions in DfT. Given the remarks in the section above about the likely need for multiple models, which may be divided based on the area of policy they cover (freight vs. commuting, for example), establishing which policy teams are most interested in using a potential model of businesses is the necessary first step to establishing the likely uses, and therefore, dimensions of a model or models: even before the conversation is opened up with other departments, and partners outside government.

2. **Agree model objectives and potential applications**

Once stakeholders have been engaged and the terms of their involvement agreed (including shared resourcing), key questions about the shape of the model (or models) and its future uses need to be addressed. These initial questions cover many of the issues raised above: what kind of model is required, in terms of the types of uses it will be put to (e.g. insight, delivery or comms), and what policy areas will it need to cover?

A particular question is about including a growth, or even a green growth, dimension. The review above has demonstrated that the availability of environmental impact data against specific travel behaviours is patchy. Meanwhile that on the links between travel behaviour and business growth is much more scarce; 'green growth' seems even harder to pin down as a concept, let alone to evidence at the level of travel behaviours. The answers to which of these dimensions should be included are largely political: to be established in line with the remits of those stakeholders who have bought into the model development process (literally or otherwise).

3. **Gather data to fill gaps**

Before the behaviours can be prioritised, further desk research should be undertaken to identify what data is available on each – in a range of dimensions including uptake, impact and determinants. This review has noted that there is a dearth of survey data on business travel behaviours; however, there are datasets relating to other areas of business's activity, including their core characteristics (see 4.1.1 above on non-travel related business surveys). It may prove possible to populate a number of the boxes and factors on the conceptual model – especially

those on the left hand side of the model, which are more to do with firmographic criteria (e.g. ownership, turnover) or organisational structure – using mainstream business surveys like the Annual Business Survey or English Business Survey, or by linking transport-specific survey data to an authoritative database like the Inter-Departmental Business Register (IDBR – see Section 4.3.2 immediately below). In this way, it may be possible to combine existing and authoritative data of businesses' main attributes with their responses to a bespoke survey of travel behaviour.

At this point, the source of the data is equally as important as the resulting quantities themselves – this is because our primary interest in whether the data can be built into any future model through data fusion, or whether new survey work will have to be undertaken. Data which are available but not part of a dataset which can be linked into the new 'mother' dataset will still need to be gathered through a primary survey: but they can give useful indicators as to the likely levels of uptake and inter-relationships with other variables, which in turn can help with the process of survey design.

At this point we should also be interested in the questions used to gather the data: questions which are seen to have worked in previous surveys could work well in a new survey, as well as providing useful comparative data. Should a large number of items be drawn from a single survey, it may be worth exploring whether that will run again in future, and if so, what the chances are to piggyback on that survey (say, by adding a special module of questions) for the purpose of segmentation model development.

The outcome of this exercise should be to help scope out the dimensions of a future survey, thus beginning the process of developing a brief for primary research.

4. **Decide priority behaviours**

Once the overall objectives and likely applications of the model are established, the subsidiary task is to identify the scope of the model coverage at the level of specific business travel and transport-related behaviours. It is essential that the model development process works at this granular level of detail: as has been established above, an effective model will show variation between segments on the behaviours of interest; it will also be constructed on the most proximal determinants of those behaviours (or failing that, on the behaviours themselves).

Having clarity over the behaviours of interest is also critical for the prior task of survey development: data must be collected on the levels of uptake (at least – potentially as well as the determinants of) each behaviour of interest. Experience of the process of survey development tells that it usually involves several rounds of cutting to reduce the survey length (hence the time

needed for each respondent, the response rate, and ultimately the costs of the survey). Being clear on which behaviours are essential is vital.

Like segmentation model development itself, identifying priority behaviours can be considered both a science and an art. On the one hand, the behaviours should effectively select themselves, based (among other things) on their levels of impact (here, on the environment and on growth) and the potential of businesses to undertake them. As described in the section immediately above on evidence gaps, data on the key attributes of each behaviour should be gathered through desk research, potentially supplemented by expert opinion where gaps exist. The 'art' element comes through the need to develop a list of priority behaviours in line with policy priorities and realities. These priorities could be debated and developed in collaboration among stakeholders, for instance through independently-facilitated priority behaviours workshops.

5. **Develop a brief for new primary research**

   By this point, enough should be known to draft a research brief, including an approximate sense of likely budget and resource needs. It is not worth speculating on the likely shape of such a brief here, but it can be suggested that the commissioners may want to think about commissioning both a qualitative and a quantitative phase, together or separately.

   Qualitative research could be very useful as preliminary to a survey. It can help to design questions, but more specifically, it could help to test and unpack some of the key factors shown in the conceptual model in this review, some of which are only lightly specified in the existing evidence – most obviously travel dependency. Qualitative work could effectively validate that construct, and help express it as measurable items.

   A key outcome from preliminary qualitative research would be a hypothetical model akin to a qualitative typology, devised by the qualitative researchers on the basis of the sample they had interviewed. This would show the likely number of segments, and the main dimensions on which they could be delineated. This step conforms to best practice in model development; without it, it is hard to know what patterns to look for in the resulting survey data. It should be reiterated that in the process of clustering, the statistician dictates the number of segments in each solution to be considered: a hypothetical model helps by identifying a more accurate starting point.

   Following the preliminary qualitative study, segmentation work can ensue; indeed it may be preferable to wait for the outcomes from the qualitative study before commissioning any primary survey. Critically, it will also be known by this point whether there are any existing

datasets which are to be fused into the new dataset: if so, the survey will need to be designed accordingly (e.g. with sufficient common, or 'linking', variables).

The quantitative agency should then either undertake the clustering process themselves, or pass their data onto an experienced statistician to cluster. Either way, the commissioning body should be closely involved throughout the clustering process – ultimately they will need to take ownership of the model, and oversee its embedding within their organisation and across stakeholder bodies.

4.3.2 Considerations for a survey of business travel

The survey element of a segmentation development process is always critical. Primarily this is on account of the iterative nature of segmentation model development: **until the dataset is assembled and analysis begins, it will not be possible to know what kinds of model are feasible**, or how complex (and therefore challenging, and relatively costly, to replicate and implement) they will be. For instance, **the survey may reveal that relatively few variables account for the bulk of variation in behaviours between different organisations, hence a simple model can be constructed**. Rather more likely, **the data may show that each behaviour has different determinants, meaning that each type of behaviour (and perhaps some specific behaviours within those types) needs its own model**. A further reason for the importance of the survey is a reflection of its cost, relative to the process of developing segments. Based on previous studies this research team have been involved in, the statistical task of clustering and profiling the segments could account for only 10% to 20% of the cost of the survey.

Both these considerations apply to a future model of business travel and transport behaviour. However, **the survey is likely to be particularly critical in this context as in itself it will fill critical (and extensive) gaps in the current evidence base**. Section 3.2 of this review has shown that the evidence on many business travel behaviours and their associated factors is very limited. Rather as with the lack of segmentation models of businesses in relation to travel and transport behaviours, so it is the case that **there is no current survey which covers the area of enquiry of this study.** Similarly to the review of segmentation models, this review has found that some existing surveys cover different aspects of our enquiry, but none brings them all together (see Annex 2 for a review of the travel surveys). Relevant available surveys in these categories include:

- **Business surveys, but not covering business travel behaviours**
  ONS Annual Business Survey; BIS English Business Survey (TNS); British Chambers of Commerce Quarterly Economic Survey; Federation of Small Businesses 'Voice of Small Businesses'

- **Business surveys with some business travel behaviours**

DfT Continuing Survey of Road Goods Transport; RAC Foundation & British Chambers of Commerce 'Business Travel: Choice or Necessity?' (2007) (see Annex 2);

- **Surveys of individuals (but not businesses) covering travel behaviours**
  DfT National Travel Survey (NatCen); Labour Force Survey (ONS)

Given that this review has identified no survey which covers the travel and transport behaviours of all UK businesses, we would argue that **the task of undertaking a business travel behaviour survey with a representative sample of UK businesses is of primary importance in the process of segmentation model development – and perhaps even more important than the model development in itself.** Without such a dataset, the task of developing a segmentation becomes very partial (based on what existing data can be fused together, then clustered) or potentially impossible (if so little data are available, which can then be fused). However, while most of these data do not currently exist, **we are in a strong position to develop such a survey following this study: we will know roughly what dimensions to cover in a survey, and will have access to some existing questions from other surveys** (albeit undertaken on only one or two types of business travel behaviour, and/or drawn from membership surveys, not nationally representative samples).

Existing surveys also provide indications of how the task of surveying businesses in relation to their travel and transport behaviours might best be approached. Details of the technical dimensions of any future business travel behaviour survey should be addressed as part of the process of commissioning and development of the survey tool; however, a few early pointers may be helpful here, both to the DfT as commissioner, and the incoming contractor who would be appointed to undertake any survey. These points have been gathered from comparable surveys (as listed above), the available literature which touches on survey methodology in the context of business travel behaviour is a very small field (principally depending on a set of reports for DfT (Faber Maunsell/Aecom, 2009), and comments from informal interviews with researchers involved in undertaking business surveys (in this research team; Helen Roby at the Open University; at the British Chambers of Commerce; at the RAC Foundation)). It should be stressed that these findings are designed as early pointers for DfT in the event they would wish to commission a business travel behaviour survey; it is anticipated that the contractor would bring considerable experience of their own in surveying businesses.

- **Sampling**

  The survey should provide a representative sample of the business population (in the UK, GB, or England, depending on DfT and any other owners' area of remit). This technically means a random sample (or stratified variation on such) is required, rather than a quota sample. Either way, it is more reliable to rely on a sample drawn from the national business universe for the specific purpose of the survey, rather than on some subset of that population, such as the

membership of a representative body (given limitations in the available data on the universe of all businesses, many studies revert to surveying member businesses).

The principal business register is **the Inter-Departmental Business Register** (IDBR), which is maintained by the ONS, and comprises all businesses registered to pay VAT or that have a PAYE scheme in operation. It is widely regarded as the most comprehensive business sampling frame available (claimed to cover 99% of all UK economic activity – see e.g. TNS for BIS 2013), although it does not cover unregistered businesses, so excludes the very smallest non-employing businesses that are not registered for VAT or PAYE. The effective exclusion of the smallest (micro) enterprises is one downside to the IDBR, as is the lack of phone numbers for all entries (especially at site, as opposed to head office, level) although this is worked around through matching the samples to databases of telephone numbers. A logistical challenge however is the timescales for drawing the sample, which arise from the data protection bureaucracy around the database (not least because it includes all tax return data) – only registered users can access the ONS Lab, and hence the register. **Given its extensive coverage of the business population, and the rich fields of data it includes, the IDBR represents the optimal frame for drawing a sample of businesses – however, it should be recalled that the scope of this Review (and any potential survey) also includes public sector and third sector organisations, both of whom do not feature on IDBR.**

Alternative options for drawing a business sample tend to feature commercial databases, such as the **National Business Database (NBD) run by Experian**, or **Dun & Bradstreet's business database**. The NBD is well-liked by commercial research organisations, as it includes businesses of all sizes (down to the self-employed), and some public sector organisations. It also provides telephone numbers for the majority of records (both head offices and sites).

It is notable that many business surveys are conducted among members –not least as tools to enable the organisation to establish, and then lobby on, the views of its members. The **Federation of Small Businesses' 'Voice of Small Business Survey'** is a case in point – but for the purposes of a business travel behaviour survey across the business universe, it is of limited value in only including SMEs. The **British Chambers of Commerce** (BCC) offer an interesting alternative, whereby sampling is undertaken by their regional Chambers, from their lists of members and other local registered businesses. The national data are then weighted, and analysed by BCC head office in London. Despite not being drawn from the UK business universe, it is noted that the BCC's approach produces trusted results: notably the **Quarterly Economic Survey**, which is much cited by the City and Bank of England as an accurate picture of business and economic conditions. In the context of this review, it is notable that the BCC undertook a

programme of annual travel-related surveys of businesses in the mid 2000s, leading to their joint survey of business (i.e. briefcase) travel, undertaken with the RAC Foundation (2007).

As an aside, it can be noted that, other than the National Travel Survey and Civil Aviation Authority surveys on departing air travellers, most of the available survey data on business travel behaviour is provided by membership organisations (most prominently the RAC Foundation and BCC, but also others including the Institute of Environmental Management and Assessment (IEMA) and the Guild of Travel Management Companies (GTMC)). While these data provide valuable insight in areas where there is little or none, it can be remarked that their membership does not necessarily comprise a representative selection of the business population, and **nor are they objective in the purposes of their surveying: usually to generate evidence in support of their lobbying positions**. A recent paper by transport researchers at the University of the West of England cautions against such surveys on these very grounds, and points to the paradox *"of the inverse relationship between lobbying intensity and effective impact"* on policy, putting this down to the flaws in their approach to surveying 'business attitudes' (Dudley et al., 2011).

- **Locations**

  As the discussion of registers and databases suggests, **which office or site in a business is surveyed is of critical importance.** The guidance for local authorities on surveying businesses in the context of travel and transport behaviour suggests that these topics may well require organisations to respond at multiple levels (Faber Maunsell/Aecom, 2009). For instance, they suggest that **questions about travel policies may need completing at head office level** (sometimes called 'reporting unit' in business surveying), **while questions about congestion – or indeed commuting behaviours – may need answering at site (or 'workplace') level**. Given the breadth of business travel behaviours covered in this review, and even the priority subset which are likely to go forward to a potential survey, it can be concluded that surveying at both (or multiple) levels in an organisation will be needed.

  It is notable that, while most business surveying is conducted at the head office level (see e.g. ibid.), the two current most robust sources of government-sponsored data take opposite approaches. Although both draw their samples from the IDBR, respondents to the ONS' Annual Business Survey are nearly all head offices ('enterprises'), whereas the newer English Business Survey samples sites ('workplaces') as that is the level at which government is currently most interested in tracking perceptions of economic conditions.

- **Respondents**

Similarly to questions about which part of an organisation to survey are questions over **who in the organisation should be responding**? The guidance for LAs suggests that **in larger organisations a number of different respondents may need to be targeted with business travel-related surveys, including: operations managers, site managers, environment managers and human resources personnel (ibid.)**. In the smallest SMEs, it may be that one respondent will know all the answers, but whatever the approach, the guidance for LAs suggests that it is important that respondents are frequently reminded during the survey interview or questionnaire that they should be responding in their professional capacity, as it is the views of the organisation that are being sought. The recent work by University of the West of England (UWE) researchers makes a similar point, arguing that surveys should stipulate which staff member(s) should complete the survey, and that the title and role of the respondent should be recorded within the questionnaire (Dudley et al., 2011).

However, this advice does not feel completely satisfactory for all areas of enquiry. Referring back to Conceptual Model for this study, it can be remarked that some questions about a business relating to its external dimensions (such as size, or growth trajectory) and some to its material attributes (including assets, or policies). Other dimensions will be harder to assess (like organisational culture – as discussed in 4.2 above), and some are clearly vested in the perceptions and motivations of individuals. In this last category, 'management values' would require owners or senior management to make a statement about how the organisation reflected their personal orientations. Finally, in some types of business travel behaviour such as commuting or shopping, the motivations of individual employees and even customers will come into play.

The recent paper by the researchers at UWE highlights the inadequacies in current approaches to surveying 'business attitudes' (Dudley et al., 2011). They point out that public attitudes are known for their multiplicity and variation – and yet the tendency is to try to identify responses from a single member of a business' staff as representative of the whole organisation (such that the business speaks with 'one voice'). The question of what a business attitude is (or indeed whether such a concept exists) is clearly an open one, even before one considers how best to measure it. The small body of literature reviewed here suggests that surveying businesses is already a complex endeavour, and that the level of complexity increases in a subject area as broad and lightly-researched as business travel behaviour.

- **Data Collection Methods**

  The method by which the survey is undertaken tends to reflect a trade-off between response rates and costs: the methods with the highest response rates tend to be the most costly. This

tension appears to be particularly acute in the context of surveying businesses; a study on 'smarter travel' practices for Transport for London (Roby, 2010) concluded that **businesses tend not to respond to surveys from external organisations – unless participating delivered some direct benefit to them** (e.g. access to the resulting data). By extension, it was noted that some firms were happier to share travel pattern data than they were to respond to surveys, on the basis that they were collecting those data already (e.g. briefcase travel information and company car mileage, through the booking and expense management tools).

This reported antipathy to surveys among businesses makes the choice of data collection methods even more important. Survey length is potentially a big problem, and it is reported phone interviews tend to be the most susceptible to 'timing out'; this problem is particularly acute for SMEs (the Faber Maunsell/Aecom guidance for local authorities recommends that SME phone interviews are kept to below 20 minutes in length). A similar dynamic applies to self-completion formats (postal; online), although **face to face data collection (by means of a site visit) seems to get round the problem**, as the SME respondent can break off and restart the interview whenever they need to attend to business. The local authority guidance concludes that non-self completion methods are to be preferred, and while that is doubtless optimal, this decision is likely to be primarily determined by available resources.

A further consideration in the choice of data collection methods arises in relation to the points above about different respondents in an organisation. **Some methods, such as face to face, would allow multiple respondents to complete a questionnaire** (postal and online could also be designed to do this). It may particularly be the case that if trying to assess softer factors, such as senior management or other staff motivations, group completion is highly appropriate.

One final dimension to this decision relates to the design of the survey itself. It is highly likely that, if all organisations (and not just all businesses) are to be surveyed across all types of business travel behaviour, **multiple questionnaire tools will be required**. This in turn ensures that the right questions are addressed to the right respondent, and in turn raises response rates by keeping questionnaire lengths down. The technical report on the ONS Annual Business Survey reports that there are 51 variant questionnaire types, largely to account for variation across sectors (ONS, 2012). Within these, there are also long and short versions of the core questionnaire (larger firms mostly all receive the longer format). It is highly likely that a similarly **tailored approach would be needed for a nationwide business travel behaviour survey**, and the situation may even become further complicated by the need to produce different questionnaires for each different type of business travel behaviour (although in a number of

cases this differentiation would overlap with sector). These observations go some way to underline the complexity and scale of the potential business travel behaviour survey task.

- **Data Analysis**

  Just as sampling the business population and surveying them are complex activities, a brief review of the leading business surveys shows how **challenging the task of weighting the resulting survey data** is. Each survey deploys slightly different methods, although they all tend to weight the data back to be representative of the distribution of businesses in the national population in terms of size, sector and region. In many cases this means down-weighting the number of larger businesses, who are likely to have been over-sampled in the first place, given their small distribution among all UK businesses.

  Specific surveys also cut the resulting data to show other variations: notably the Chambers of Commerce Quarterly Economic Survey divides its results into manufacturing and service sector organisations, and within both types, those who export and those who do not (BCC, 2013). The guidance to LAs on surveying business travel behaviours suggests that splitting the findings between urban and rural may be relevant, as this relates to patterns of congestion (Faber Maunsell/Aecom ,2009). Such a measure may also be a useful proxy for access to public transport and other infrastructure, and thus essential to understanding behaviour across different workplaces (even within the same enterprise).

3.3 Conclusions – Section 4

This section has set out both the challenges and the potential merits of producing a segmentation model of businesses in relation to their travel. Despite the challenges, the overriding conclusion is that the identified steps towards model development, even if this results in no model or multiple models for different purposes, will undoubtedly be of value given the gaps in the evidence base that could potentially be addressed by further work in this area.

Section 5 offers specific detail on these steps to model development by detailing the research recommendations and mapping out the recommended next steps.

SECTION 5: CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

This evidence base review of business travel revealed that there is no coherent body of research on this topic. Whilst there are many related references (with 363 papers uncovered and given an initial place in the database), the literature proved to be very fragmented across topics with much breadth, but little depth. This is partly a function of the wide remit of this study – to cover all four of what we, as part of this study, have classified as *business travel domains* (briefcase, commuting, customer and logistics). But it is also a function of the scant attention paid to the behaviour of organisations as compared to individuals in the field of transport studies, and the scant attention paid to travel in the business studies literature including in the investigation of energy efficiency in non-domestic settings.

The purpose of this study was to review the evidence in order to determine the feasibility and desirability of developing a segmentation of businesses in relation to their travel behaviours. Despite the disparate evidence base, we conclude that:

- Given that the poor evidence base is in direct contrast to the significance of the volume of travel flows ultimately generated by organisations of all types, **there can be no doubt as to the desirability for greater understanding of the determinants of this activity**.
- Given the diversity in the type of travel flows generated by organisations (covering individual and goods transport and travel by employees, customers and suppliers) and the multitude of behaviours that can be undertaken by the various actors involved, **a meaningful approach to understanding, engaging and targeting businesses will necessitate segmentation based either on behaviours or the determinants of those behaviours or both.**
- On this basis, and notwithstanding the challenges involved in this task, **we conclude that a segmentation of businesses on the basis of their travel is a desirable and feasible task to pursue, especially given that our recommended steps to achieve this goal will all deliver worthwhile outputs in their own right.**
- Nevertheless, given the above observations, **we hypothesise that it will not be possible to generate one segmentation model of all businesses in relation to all their travel flows and behaviours.**
- Given the current gaps in our understanding of business travel behaviour**, the first task of the segmentation model(s) should be to build insight among stakeholders.** Notwithstanding the iterative nature of segmentation model development, we argue that **a fully-quantified model will be most appropriate** to this core purpose, as it will provide

information on segment sizes, and enable stakeholders accurately to identify the segments in their own research, and so add insight back into the model.

We justify these headline conclusions with some reflections on the state of the evidence base which, in themselves, not only provide insight as to the lack of understanding of business travel, especially in relation to environmental and growth objectives, but also as to the need for this evidence base to be improved in the future.

- **There is no agreed set of priority business travel behaviours**, nor any consensus over which to encourage and which to deter. Building such consensus will involve data gathering on the growth and environmental impacts of business travel, and stakeholder engagement.
- **There is no currently existing segmentation model of businesses in relation to their travel behaviour**. This is clearly a gap in provision, for researchers and practitioners alike. Conversations should be held with potential stakeholders to assess their needs and uses for such a model, and build a business case for its development (via co-production).
- **There is no consensus over the best ways to segment businesses**, even in terms of their primary (economic) functions. Most existing models simply use sector and size, which may provide broad distinctions between some businesses in relation to the general composition and scale of their travel flows, but will lead to crude and unhelpful clusters of businesses, failing to account for the wide variety of behaviour within sectors.
- **There is no survey of businesses in relation to diverse travel and transport behaviours**. There are some surveys of businesses in relation to specific types of travel and transport behaviours, but these tend to be undertaken by surveying employees/travellers, not organisations. The lack of a single dataset of this kind is at the heart of the vacuum in evidence on businesses' travel and transport behaviours. We suggest the undertaking of such a survey should be treated as the number one research priority (following a number of preparatory steps, detailed under Recommendations below). The survey would be developed with potential for subsequent clustering of the data in mind but the task of segmentation model development can be only be restarted pending the findings from that survey.
- **There is little evidence on the relationship between business travel behaviour (or specific behaviours) and growth potential**. Those fragments which are available have been produced by organisations with a professional interest in promoting business travel.
- **'Green growth' is a little used term among businesses themselves**, which is liable to misunderstanding and multiple interpretations. We would suggest it is not a feature of

this programme of work going forward, and instead attention is focussed simply on growth impacts (which are likely to prove hard enough to evidence). If growth data can be obtained for a number of travel and transport behaviours, it should then be possible to identify win-win behaviours: a more straightforward categorisation than green growth.

Although these reflections may give the impression that little understanding of business travel has been uncovered in this study, the combined review of both the business studies and the transport studies literatures, together with interviews conducted with umbrella organisations and trade bodies, has enabled some important contributions to be made to the evidence base. These include:

- **A way of conceptualising and categorising the travel flows generated by organisations through a typology of business travel.** This is a bespoke output of this study and provides a way of either accounting for and quantifying the 'whole system' impacts of business travel, or using it to isolate certain types of flows, behaviours and impacts for further investigation or policy development.
- **A long list of behaviours either directly or indirectly related to the travel undertaken by the organisations themselves or their employees or customers** has been generated. 49 individual behaviours have been included on this list. Whilst not necessarily exhaustive, it is the first attempt that the authors are aware of to assemble such a list. It provides a means to understand the different actors involved in business travel behaviour and can be used to structure further evidence gathering and policy prioritisation as suggested in the Recommendations below.
- **A Conceptual Model of the determinants of business travel has been developed out of the evidence base.** This has been developed by bringing together both the theoretical literature from business studies and the empirical evidence from studies of sustainable business behaviour and business travel. Whilst we can conclude that much of the empirical evidence concentrates on the role of external factors (such as regulation), we uncovered sufficient evidence relating to organisational level as well as local and 'people level' factors to have confidence that this conceptualisation provides a sound basis for further work in this area.

Next, the research recommendations to fill the evidence gaps will be presented.

5.2 Research Recommendations

In Section 4.2 we identified evidence requirements and gaps, in Section 4.3.1 we identified next steps and in Section 4.3.2 we discussed issues and challenges with surveying businesses. We bring these three insights together here to outline specific research recommendations (RR's). These recommendations are tailored to the ultimate objective of this present study – to determine the feasibility of developing a segmentation of businesses in relation to their travel behaviours. However, it should be stated that each of the RR's stand alone as having independent merit towards a desirable goal of achieving a greater understanding of business travel behaviour in order to design more effective engagement and policy initiatives aimed at economic and environmental goals.

RR1: The reach and impact of business travel behaviours

Summary of the evidence requirement

This review has uncovered a 'long list' of 49 'behaviours' undertaken either at the individual level (as an employee, customer or supplier) or at the organisational level (akin to policies or procedures implemented by the business itself that have a direct or indirect impact on travel-related decisions). In order to both design a manageable questionnaire for segmentation and to design and target effective policy interventions, these behaviours will need to be prioritised. Although this will largely depend on the policy priorities of all stakeholders involved in the segmentation, the 'ranking' process will also require information about the reach and impacts (growth, environmental and potentially other priorities such as health and well-being) of each behaviour.

Proposed approach/method

We suggest this is undertaken through a desk-based study using a multi-criteria analysis approach, with the possible option of some targeted 'fill-in' qualitative data collection.

In Section 4.2.2 we proposed a set of parameters that would ideally be quantified or otherwise evaluated for each behaviour. In a similar fashion to other detailed policy analyses[61], a systematic review of the literature would be undertaken to gather the evidence on each behaviour and the impacts recorded from the literature on the reduction in car trips, air trips, size and composition of the vehicle fleet and achieved fuel efficiency for each of the four domains of travel identified in this study. A detailed proforma for each behaviour would be completed to document the ranges found in

[61] See for example: Gross, R., Heptonstall, P., Anable, J., Greenacre, P. & E4Tech (2009) What policies are effective at reducing carbon emissions from surface passenger transport? A review of interventions to encourage behavioural and technological change. UKERC Report ISBN 1 903144 0 7 8; Litman,T. (2005) Win-Win Transportation Solutions: Cooperation for Economic, Social and Environmental Benefits. Victoria Transport Policy Institute (www.vtpi.org); Cairns, S., Sloman, L., Newson, C., Anable, J., Kirkbride, A. and Goodwin, P. (2004) Smarter Choices – Changing the way we travel. Report for the UK Department for Transport, London.

the evidence, their sources and methods. The synthesised output would be in the form of a multi-criteria analysis table which judges each behaviour against each parameter. These could be added to or weighted. We offer an example in **Table 5.1** (but please note the figures included in the table are not evidence based and are included purely for illustrative purposes).

We also suggested that, for prioritisation, some more qualitative considerations might be necessary. For instance, we proposed that any prioritisation of behaviour would benefit from considering whether a particular behaviour, even if currently having a low impact (e.g. the installation of EV charging points), may be a 'pivotal' or linking behaviour which may bring about or enable change in other related behaviours of interest. In addition, we suggested that the following parameters would be useful: 'external feasibility' (i.e. whether the facilitating conditions are in place; internal feasibility (i.e. whether such a behaviour is generally within the control of organisations); 'malleability' (i.e. potential for change / quick wins) and 'saturation' (i.e. whether or not the behaviour is already widely undertaken or not).

Additional considerations

There will be some behaviours for which existing evidence on travel-related impacts is likely to be extremely thin. Examples may be EV charge point installation (how many businesses have installed these? what effect do they have on vehicle use?), expenses policy, working hours (shift work), relocation policies. It may also be that the impact of certain policies can be very different depending on how they are implemented. For instance, expenses policies may either reward unsustainable travel patterns (through mileage allowances) or discourage them (by restricting certain classes of air travel). These will be the challenges encountered in this research and the suppliers will have to propose ways of handling these challenges to come up with a final assessment of each policy and a potential weighting scheme to assist the final prioritisation. It may also be that some targeted qualitative interviews might be necessary to fill in the evidence on certain specific behaviours.

Table 5.1: Dummy specimen multi-criteria analysis table for BRIEFCASE TRAVEL behaviours [INDICATIVE FIGURES - Not based on evidence]

Behaviour	Reach		Potential Behaviour change (per business undertaking it)			Potential environmental impact		Growth impact	Trends	Other relevant impacts
	% businesses currently undertaking it	% businesses that could theoretically undertake it	Typical reduction in CAR trips (%)	Typical reduction in AIR trips (%)	Typical efficiency gain in fleet vehicle efficiency (mpg) (%)	Environmental impact per business	Aggregate environmental impact across all businesses	Growth impact	Trajectory	X Factor
	[actual or estimate – but needs to be in numbers]	[actual or estimate – but needs to be in numbers]	[actual or estimate – but needs to be in numbers]	[actual or estimate – but needs to be in numbers]	[actual or estimate – but needs to be in numbers]	CO2, other hard measures, or approx banding (H, M, L)	[potential reach x impact (H, M, L)]	Staff and/or turnover data, or approx banding (H, M, L)	[data re change year on year, or approx ('rising' 'falling' 'static')	[e.g. indirect effects of fleet buying/selling on has 'x factor' through influencing vehicle stock on the roads]
EXAMPLES										
Travel planning	10%	90%	3%	1%	~	Medium	M	M	Static	
Videoconferencing	20%	40%	5%	5%	~	High	M	M	Rising	
Ecodriving	10%	90%	~	~	5%	Low	L	L	Static	
CSR policy	25%	100%	3%	3%	5%	M	H	M	Rising	
.....										

RR2: The Determinants of business travel behaviours – additional qualitative work

We have split this RR into two sub-projects. They could be undertaken together, but they could equally stand alone.

RR2a The influence of policy instruments on business travel

Summary of the evidence requirement

Given the general lack of attention to business travel in the literature, it follows that there has been little analysis of the impact of government policies on these travel flows. With the exception of commuting or shopping from the individual employee perspective and perhaps one or two policy areas, such as workplace travel planning and congestion charging in London, many important initiatives such as the change in company car tax and the subsidisation of low carbon vehicles have not been accompanied by detailed study of the impact on decision making within businesses. Information is available with respect to the latter two policies which crudely quantifies *how many* businesses have responded, but it is much more difficult to understand which businesses have responded, why and what they have done instead. In the case of company car taxation, for instance, more research is required to understand to what extent the recent fall in company car ownership and trips for business (in all cars among men up to the age of 50 and particularly 'professionals' – see Le Vine and Jones (2012)) is due to changes to company car taxation regimes *vis a vis* changes in business practices (e.g. videoconferencing), changes in the structure of economic activity (less business-related travel) or substitution by other modes: rail, aviation, 'grey fleet'.

Likewise, a variety of new EU and government policies have been introduced recently to influence such things as carbon and energy reporting, evaluation of environmental performance and procurement policies. Some of these have an indirect or direct relevance to travel related business practices. The evidence so far does not allow us to conclude much about the relationship between energy practices and business travel in organisations. For instance, it is unclear whether there is a spill-over effect from energy efficiency practices to travel practices (even where travel practices are not included in the legislation) due to the increased salience of carbon and energy.

Proposed approach/method

We suggest this is undertaken through a **brief desk-based study** to draw up a short-list of priority policy measures (likely to focus on briefcase and logistics travel domains) combined with **qualitative data collection** (focus groups or interviews) in different sectors to understand these trends. The output would be a review plus empirical study of the influence of different policy measure on business travel.

Additional considerations

The impact of different policies and regulatory regimes on business travel is a vital area of government policy and the economy. As such, we recommend that additional consideration is given by the Department to boost the representation of the 'travel' topic in existing business surveys undertaken by government departments such as DECC and BIS to provide a longitudinal source of data. Similarly, the NTS has a unique capacity to examine company car use from the household perspective and we strongly recommend that questions on company car use are maintained in the NTS.

RR2b Organisational level determinants of business travel

Summary of the evidence requirement

The evidence review for this study, including the interviews with umbrella bodies, revealed that the weakest areas of understanding of the determinants of business travel relate to the internal decision making processes within organisations. To the extent that we understand who makes decisions in organisations, the evidence has been focused on general sustainability decision making, rather than allowing an assessment of how decisions are made about specific travel-related initiatives. We suggest that further in depth qualitative work is carried out on some suggested areas as a prerequisite to questionnaire survey development (RR3). In addition to gathering evidence on important decision making processes, this research would inform future survey development by assessing to what extent individuals responding to a survey reflect the corporate view (Lyons et al., 2009). Important lines of inquiry would be:

- *Who, what and where needs to be influenced in the organisation* – who are those in an organisation responsible for influencing customer travel patterns or the delivery of goods and services through the supply chain versus those making policy on expenses or travel planning.
- *The role that values and attitudes of employees play on organisational strategy for travel-related behaviours* - What are the mechanisms through which individual employee values influence wider organisational strategy? What are the features of the organisation that mean that individual employee attitudes are more likely to be recognised? To what extent are individual employees a target for government engagement and policy on sustainable business travel?
- *The concept of travel dependency* – is business travel thought about in terms of the proportion of turnover spent on these activities? If so, under what circumstances? Is this

related to issue salience and the motivation to control costs or respond to sustainability imperatives?

- *The concept of 'responsibility' and 'efficacy'* – to what extent do organisations consider commuting or customer travel as their responsibility? In the case of transporting goods, is the transport of a firm's products using a third party logistics firm seen to be the responsibility of both the logistics firm *and* the company producing the products? To what extent do businesses feel they can make a difference to the environmental impacts of these flows?
- *Business travel and growth* – do businesses have a handle on the relationship between their travel-related activities and the growth of *their* business?

Proposed approach/method

We suggest this is undertaken through **qualitative data collection** (focus groups or interviews) among businesses in different sectors to understand these trends. Qualitative work would allow an in-depth understanding of these processes and how they differ by organisation sector, type and other relevant characteristics. The output would include:

- a report of the interviews with reflection on and updating of the Conceptual Model presented in this review
- an assessment of how the findings could be translated into robust questions and statements for the quantitative survey proposed in RR3
- drawing up hypothetical segmentation model(s) to inform subsequent clustering.

RR3: A quantitative survey of business travel behaviours and model development

Summary of the evidence requirement

Once the above research recommendations have been completed and the model objectives have been defined, the Department will be in a position to commission a representative questionnaire survey of businesses as the penultimate stage before the development of the segmentation model. Section 4.3.2 set out detailed issues that need to be considered in a survey of businesses and section 4.2.2 went as far as to suggest what some of the topics and sub-topic items might be necessarily included on any such survey.

This data can then be used firstly to undertake exploratory analysis to identify the core determinants of business travel and secondly, cluster analysis to develop the segmentation model. However, given the lack of any survey of UK businesses that collects information on travel, let alone across multiple

travel domains, attention should focus on the *survey task*. The clustering task is secondary and our recommendation is that the bulk of the resource is allocated to this task. This is particularly important as a survey of business travel would ideally be something to be repeated at a regular basis, thus putting added emphasis on survey design, piloting and replicability of the method. Given the remit of this study and of any subsequent segmentation modelling exercise – to understand the determinants of business travel – **we recommend that this survey is produced in such a way that it is intended for repetition either in whole or in part**. Cross-sectional studies (i.e. one off studies) are by definition limited in the extent to which they can enable inference of causal effects and we suggest a regular organisational-level travel survey is undertaken on a regular basis. A precedent for this was discovered in the literature review with respect to the home-to-work travel survey undertaken with all businesses of over 100 employees in Belgium every three years focusing on the mobility measures taken by companies and the commuting behaviour of workers (see Section 2.2). This type of survey could be easily extended to cover briefcase travel.

Proposed approach/method

We suggest this is undertaken through a desk-based study using a multi-criteria analysis approach, with the possible option of some targeted 'fill-in' qualitative data collection.

In terms of the survey itself, we would anticipate it covering the following:

- Multiple domains of business travel behaviours. Businesses should be asked about their sense of responsibility for developing sustainable strategies for each of these domains and the actions currently in place to achieve this. However, it could be argued that both private customer travel and commuting will already be handled through the DfT Climate Change and Transport Choices survey/model and so less attention needs to be paid to these domains than Briefcase Travel and Logistics Travel (including fleet management).
- Multiple audiences per organisation (especially larger organisations): senior managers (in various roles, including MDs, HR managers, operations managers, CSR/Sustainability managers) and employees (again, in various roles, appropriate to the travel and transport behaviours under examination). This will entail data collection methods which allow for group or serial/linked responses.
- Multiple sites per enterprise (depending on the size of organisation, and the behaviours being covered in the questionnaire) in order to build a complete picture of corporate and local environmental influences.

- Multiple versions of questionnaires, with core questions and modules for instance varying by sector (as in the ONS ABR), or by behaviour type (especially if multiple models are to be produced, split by behaviour type)
- Ideally sampled via IDBR, for the most representative sample of the business population, plus a representative sample for a universe of public and third sector organisations

In terms of the development of the segmentation model, we strongly suspect that, based on variation in businesses, behaviours and determinants, multiple models will be needed. These models could be use the following bases:

- *By type of travel and transport behaviour* - Each type of behaviour (logistics; briefcase travel; commuting; shopping) could have its own model. In turn this would reduce the numbers and kinds of organisation in each model, as not all organisations undertake all the behaviours. The benefits of this approach include that there are no redundant variables for any firm, and that the segments overall can show variation on a single type of behaviour (rather than being say strong at predicting briefcase travel behaviours, and weak at commuting). One downside is that there will still be a wide array of organisations by sector and size to accommodate.
- *By size* - A simple solution to the problem of unevenly sized (or unevenly impactful) organisations would be to cut the model by firm size. For example, splitting the universe of organisations into three size bands (e.g. micro; other SME; large) could result in models with much more evenly balanced segments. It could also help in the task of keeping all travel and transport behaviours in the same model (or models – cut by size). This also fits with the evidence review which suggests that whilst size can be a crude determinant of behaviour, there are many variations within size categories.
- *By sector* - A further option may be to produce different models for different sectors. For instance, one approach could be to split the model by sector or core function of the organisation (i.e. SIC code). Given the large number of sectors as defined by SIC code, it is unlikely that the resources needed to cover all these sectors could be justified. However, stakeholders may like to construct parallel models (based on similar variables) for a number of priority sectors. One advantage of this is that potentially small but important sectors (eg tech firms; food retailers) could be subdivided and examined in close detail, whereas in other methods they are likely to end up lost among other businesses in the same segment. The disadvantage is the large sample sizes required to sub-divide in this way.

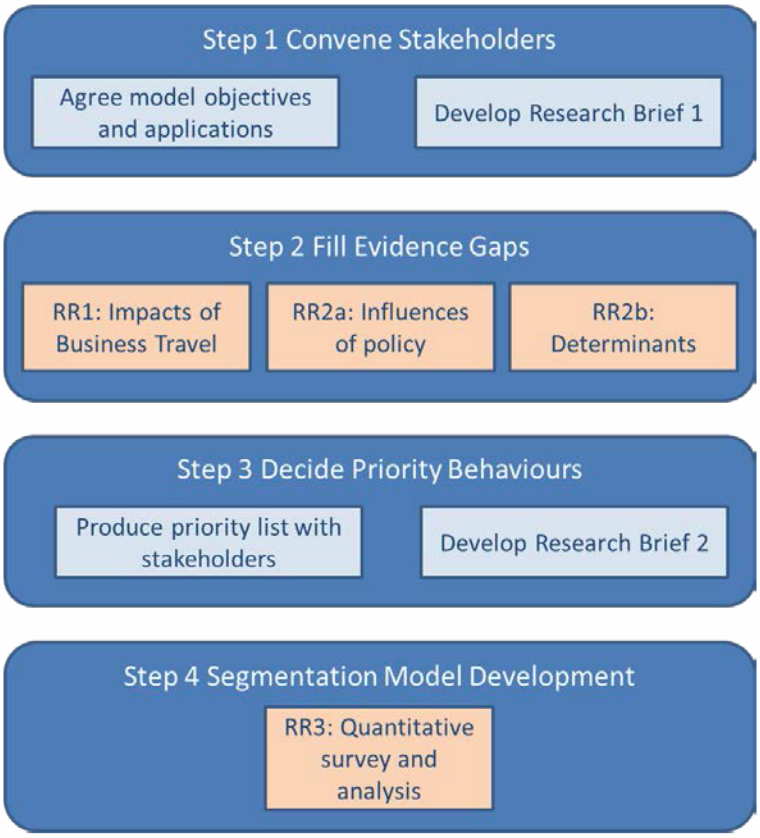
Additional considerations

Based on our review of business-related surveys in Section 4.3.2, we also recommend that a contractor who is experienced in business surveying should be commissioned. For instance, they should know the answers to the challenges laid out (in 4.3.2) above. Insights from this evidence base review should be used in preparing the terms of reference. In addition, we of course recommend a pilot survey is undertaken. However, we would recommend a particularly detailed pilot which also observes the process by which the surveys have been received and responded to. This builds in the observation by Lyons et al. (2009) who concluded that new research 'would need to include: … a recording of what happens in practice when a company is in receipt of a request to fill in surveys and questionnaires; … Questions should be piloted and cognitively tested, to help ensure question wording and framing elicits attitudinal responses in a neutral fashion.' (p69)

5.3 Recommended Next Steps

Combining the practical steps to model development presented in Section 4.3 with the research recommendations in the previous section, here we offer a summary of our recommended next steps towards the final objective of a segmentation of businesses in relation to their travel activity.

Figure 5.1: Recommended steps to a segmentation model of businesses in relation to their travel



Step 1: Convene stakeholders

To convene a core group of relevant partners and stakeholders to build support for the model and agree on the broad model objectives and applications.

The results of this study suggest that it is too soon for the DfT as owner of any model to be developing a delivery-focussed model in any specific area of business travel behaviour. We recommend the first task should be to convene a core group of delivery partners and other stakeholders who are keen to co-produce a segmentation model which they can use to deliver targeted strategies. The idea is to build knowledge and support for the model as a mutually-acknowledged potential means of sharing insight and developing strategy across interested stakeholders. Initially broad model objectives and applications need to be agreed which will then be shaped further by Steps 2 and 3.

Step 2: Fill evidence gaps

To refine the broad model objectives, evidence gaps need to be filled including exploring the reach and impact of business travel behaviour and investigating the determinants of business travel behaviours.

In order to help focus the model objectives, develop a refined conceptual model and sketch out hypothetical segmentation models to inform development of survey questions and subsequent clustering, the evidence gaps identified above need to be filled. We pose a number of Research Recommendations (RR) to do this: RR1: investigating the reach and impact of business travel behaviours (desk based study); RR2: investigating the determinants of business travel behaviours (qualitative work) potentially split into (a) understanding the influence of policy instruments on business travel and (b) the organisational level determinants of business travel.

Step 3: Decide upon priority behaviours

To identify a list of behaviours which are most likely to achieve policy objectives.

Given that multiple models are likely to be needed to capture the diverse set of determinants of such a large array of business travel behaviours in a way that will focus future engagement strategies, the long list of behaviours identified in Figure 2.3 will need prioritisation. The space constraint on future questionnaires also requires this. After the evidence gaps have been completed in Step 2, this will allow a list of priority behaviours to be identified collaboratively by the stakeholder group in line with policy priorities.

Step 4: Segmentation model development

To undertake a questionnaire survey to collect the data used as input in to a cluster analysis of businesses.

The task of undertaking a quantitative business travel behaviour survey with a representative sample of UK businesses (RR3), whilst challenging, is of primary importance in the process of segmentation model development – and perhaps even more important than the model development itself because of the insight it can bring. When it actually comes to the statistical stages of clustering, different outputs may need to be tested until the ideal solution is found. In other words, flexibility needs to be built in to this process. We also recommend that a regular survey of business travel at the organisational level is considered as a worthwhile task in its own right.

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ANNEX 1: EVIDENCE BASE REVIEW: SEARCH TERM MATRIX AND SEARCH RESULTS

Search terms		[a] Number of original search results	[b] Number of filtered research results	[c] Number of search results after manual sense checking	Comments
1st	2nd				
Business	Air Travel	165		77	
Business	Car tax	3		3	
Business	Carbon reduction	93		67	
Business	Carbon reporting	7		6	
Business	Cars	1,957	146	47	Search parameters restricted to terms appearing as 'keywords' due to high number of initial search results.
Business	Greenhouse gas reduction	38		17	A number of duplicate search results were observed and subsequently removed.
Business	Greenhouse gas reporting	66		44	
Business	Travel trends	3	3	1	
Business	Travel management	12		12	
Business	Travel planning	17		9	
Business	Meetings practice	1		0	Search yielded only 1 result which was not relevant and was thus deleted.
Business	Trade Shows	171		9	Majority of search results related to the practicalities of running trade shows and their economic impacts. These search results were deleted.
Business	Commuting	275		68	

Business	Conferences	10,751	191	10	Search parameters restricted to occurrences in the 'social' and 'physical science' literature only due to high number of initial results. Vast majority of subsequent search results were proceedings from unrelated conferences, and were thus deleted.
Business	Fleets	188		13	Majority of search results deleted as they did not refer to vehicle fleets.
Business	Sustainability	5,863	146	11	Search parameters restricted to occurrences in the 'social' science literature only, and with terms appearing in the 'article title' only due to very high number of initial search results. Search results relating specifically to non-related areas of sustainability, such as office energy use and recycling, were deleted.
Company	Air travel	68		37	
Company	Car tax	10	10	10	
Company	Carbon reduction	71		40	
Company	Carbon reporting	10		6	
Company	Cars	2,990	843	382	Search parameters restricted to occurrences in the 'social' and 'physical' science literature only, and with terms appearing as 'keywords' only due to very high number of initial search results.
Company	Travel trends	1		1	
Company	Travel management	7		3	
Company	Travel planning	3		1	
Company	Travel policies	5		4	
Company	Sales reps	26		1	
Company	Green certification	5		1	
Company	Environmental Management	1,284	29	20	Search parameters restricted to terms appearing in the 'article title' only due to high number of search results.
Company	Pool car fleets	0		0	
Company	Car allowance	0		0	
Company	Grey fleet	0		0	
Company	Commuting	132		10	

Corporate	Air travel	12		3	
Corporate	Travel management	13		10	
Corporate	Travel trends	1		1	
Corporate	Travel policies	7		7	
Corporate	Travel planning	0		0	
Corporate	Carbon reduction	20		9	
Corporate	Carbon reporting	9		3	
Corporate	Cars	218		51	
Corporate	Car tax	0		0	No search results found
Corporate	Corporate social responsibility	4,238	412	7	Search parameters restricted to occurrences in the 'social' science literature only, with terms appearing in only the 'article title', and only for literature published in 2012 or later due to the very high number of initial search results. The vast majority of search results did not consider travel issues in discussions of corporate social responsibility, and were subsequently deleted.
Corporate	Just in time	16		3	
Corporate	Environmental policy	228		7	Majority of search results were not related to travel, and were subsequently deleted.
Corporate	Relocation	51		4	
Corporate	Culture	2,659	209	2	Search parameters restricted to occurrences in the 'social' science literature only, and with terms appearing in only the 'article title' due to high number of search results.
Work-related	Travel management	1		1	
Work-related	Travel trends	2		1	
Work-related	Air travel	9		4	
Work-related	Travel policies	1		0	
Work-related	Carbon reduction	5		4	

Work-related	Carbon reporting	0		0	
Work-related	Cars	100		38	
Work-related	Car tax	0		0	
Carbon Energy	Reporting	4		2	
Carbon Energy	Measurement	58		2	Majority of search results derived from pure chemistry and chemical engineering literature, and were subsequently deleted.
Carbon Energy	Management	166		35	Majority of search results derived from carbon management in building construction, and were subsequently deleted.
Carbon	'Emissions' and 'Emissions Reductions'	57,026	143	51	Initial search yielded over 57,000 search results for 'carbon emissions'. Consequently, search terms were amended to 'Carbon' AND 'Emissions Reductions', and the search parameters restricted so terms appeared in the article title only.
Carbon	Reduction	56,592	122	22	Search parameters restricted to occurrences in the 'social' science literature only, and with terms appearing in only the 'article title' due to high number of search results.
Carbon	Footprints	4,245	606	276	Search parameters restricted to occurrences in the 'social' science literature only, and with terms appearing in only the 'article title' due to high number of search results.
Carbon	emissions	57,026	184	6	Search parameters restricted to occurrences in the 'social' science literature only, with terms appearing in only the 'article title', and only for literature published in 2012 or later due to the very high number of initial search results.
Carbon	Business Management	6		1	
Carbon	Measurement	22		1	
Carbon	Reduction	119		23	
Carbon	Air quality	5,853	19	2	Search parameters restricted to occurrences in the 'social' science literature only, and with terms appearing in only the 'article title' due to high number of search results.
Carbon	Greenhouse gases	7,991	35	2	Search parameters restricted to terms appearing the 'article title' only, due to high number of search results.
Carbon	CO2	52,614	52	5	Search parameters restricted to occurrences in the 'social' science literature only, and with terms appearing in only the 'article title' due to high number of search results.
Carbon	Strategies	16,998	59	7	Search parameters restricted to occurrences in the 'social' science literature only, and with terms appearing in only the 'article title' due to high number of search results.
Work-related transport	Air quality	1		1	

Freight transport	Air quality	17		17	
Sustainable	Practices	15,062	357	27	Search parameters restricted to occurrences in the 'social' science literature only, and with terms appearing in only the 'article title' due to high number of search results.
Sustainable	Procurement	156		7	
Sustainable	Supply Chain	131		24	
Sustainable	Logistics	1,303	35	24	Search parameters restricted to occurrences in the 'social' science literature only, and with terms appearing in only the 'article title' due to high number of search results.
Sustainable	Sourcing	7		3	
Sustainable	Distribution	12		4	
Sustainable	Electric vehicles	17		13	
Sustainable	Leadership	1,695	69	2	Search parameters restricted to occurrences in the 'social' science literature only, and with terms appearing in only the 'article title' due to high number of search results.
Sustainable	Alternative fuels	5		2	
Sustainable	Segments	4		2	
Sustainable	Auditing	65		3	
Sustainable	typology	16		1	
Travel	Procurement	119		4	Significant share of search results were related to procurement of organs and organ transplantation. These were subsequently deleted.
Travel	Policy	3,314	50	20	Search parameters restricted to occurrences in the 'social' science literature only, and with terms appearing in only the 'article title' due to high number of search results.
Travel	Behaviour	8,363	332	252	Search parameters restricted to occurrences in the 'social' science literature only, and with terms appearing in only the 'article title' due to high number of search results.
Travel	Management	6,060	109	38	Search parameters restricted to terms appearing the 'article title' only, due to high number of search results.
Travel	Costs	6,138	119	31	Search parameters restricted to terms appearing the 'article title' only, due to high number of search results.
Travel	Expenses	398		34	
Teleworking	-	166		19	
Company	Car fleets	12		3	
Workplace	Travel plans	14		14	

Workplace	Parking	66		42	
Workplace	Cash out	2		1	
Workplace	Parking levy	3		3	
Workplace	Distribution hub	0		0	
Workplace	Relocation	43		6	
Mobile workers	-	31		5	
Nomadic workers	-	68		9	
Remote working	-	8		5	
Virtual mobility		56		9	
Tele-conferencing	-	135		7	
Video-conferencing		2,166	130	13	Search parameters restricted to occurrences in the 'social' science literature only, and with terms appearing in only the 'article title' due to high number of search results.
Pro-environmental behaviour		66		34	
Total		**336,251**	**8,460[62]***	**2,179**	**25.76% of search terms[2] were found to be relevant for the review.**

[62] Total number of filtered research results plus the total number of original search results for those conducted with default parameters.

ANNEX 2: DATA SETS AND DATA PUBLICATIONS RELATED TO UK BUSINESS TRAVEL

The key points relating the data sources found are as follows:

- Abundant data exists at the **level of the individual employee** in the form of the National Travel Survey and Census. The former measures business trips undertaken by individuals although there are some caveats to this data. Firstly, car journeys are only recorded where they take place in the persons 'own' (household) car (including company car), which means that journeys in company pool cars are not explicitly recorded (as they are coded as 'other'). Secondly, business trips can be relatively infrequent and therefore unrecorded by this one week diary. The NTS tries to allow for this by including an additional one week (used to be 3 weeks before 2006) retrospective diary to record trips of longer than 50 miles. Finally, reports using this data often combine the commute and in-work travel into one category. Therefore, so much interesting analysis of the data does not provide any detailed understanding of 'briefcase' travel. The Census data only records the journey to work. Neither dataset records underlying motivations for mode choice.
- However, the NTS does have an exceptionally valuable and unique feature which is to ask people *which* household car they use to undertake car-trips and this therefore allows separate analysis of **company car usage** (and size and powertrain of the vehicles) (Le Vine & Jones, 2013; DfT, 2011b).
- Even where bespoke business travel surveys have been undertaken, they are also undertaken at the level of the individual rather than the business (e.g. Guild of Travel Management Companies Business Traveller Survey (2009 & 2010), sampled in travel termini, or 'Voice of the business rail traveller' (2013) sampled on trains, rather than via businesses.
- Abundant data exists through a myriad of policy and academic studies which inform an understanding of the **commute journey** from the point of view of the individual employee undertaking the travel and their underlying motivations. This behaviour can be tied to occupational group where this is measured. However, the ability to compare commuting behaviour across a number of *organisations* to understand what may make the difference is very poor. There is some data from company travel surveys. However, this data is not collected systematically and sample sizes are often too small to allow comparative analysis.

- Good data exists relating to the incidence of **working at home**. The Labour Force Survey includes questions on home workers, mobile workers and working from home. However, this once again exists at the individual level and although can be related to occupational group, does not provide an understanding of why individuals adopt these behaviours nor why certain businesses or even sectors display more of this behaviour than others. However, conflicting evidence exists on the role of ICT as a substitute for both commuting and business travel. This is compounded by the fact that these practices are fast changing but also require long timescales for their full impact to be understood which would ideally be captured using longitudinal/ panel surveys.
- Poor data exists on the composition of '**briefcase travel'** and the fine-grain of the myriad of activities which underpin this type of travel. The CAA Departing Passenger Survey is able to identify several different business-related purposes for air travel (attending internal company business, meetings with customers/others, conference/congress and others) (reported in CAA 2011). The balance between external and internal meetings, and the purpose of some of those meetings (training, conferences, and sales) is very valuable information to understand the malleability and decision making processes involved in the journeys. However, this data in relation to air travel was the only data uncovered which offered this breakdown.
- Analysis of 'briefcase travel' flows, particularly by air, is often done by using business 'class' statistics. However, as a review by Derudder et al. (2011) has shown, **business travellers do not necessarily travel** in business class, but some leisure travellers may do so.
- No data was found (other than data from the NTS on individual journey purposes such as shopping and personal businesses) which could provide an understanding of the level of **customer travel** and how this might be changing (e.g. with the incidence of on-line services) related to different companies, sectors etc. Once again, an understanding of who does what and why and the company level factors influencing these travel flows does not seem to exist.
- Data relating to travel flows relating to **freight and logistics** is plentiful. It is possible that a bespoke review of this area of focus might uncover additional data to that identified in Annex 2. However, from this review we conclude that there is a similar dearth of data at the level of individual businesses that can help to understand their characteristics in relation to the travel patterns they are responsible for.

- An understanding of sustainable business travel behaviour does not just require an understanding of the flows of movement generated but also the composition of those flows in terms of their **energy and carbon intensity**. An important component of this is a breakdown of the vehicles used to perform the travel. Generally there is very little data on important areas of vehicle growth such as light goods vehicles and low carbon (including electric) vehicles; and areas of declining trend such as company car use.
- There are indications in national data sources that the **use of rail for business travel** is growing (NTS[63]; Le Vine and Jones, 2012; GTMC 2011[64]). No data source or one-off study was found which provided an explanation of this trend (who is doing this, for what purposes and what are the driving forces?).
- The review uncovered a couple of bespoke or **'one off' surveys of business travel** (GAP, 2013; WWF/Critical Research 2008 & 2010; Guild of Travel Management Companies, 2009, 2010 & 2013; RAC/BCC, 2007; Barclaycard, 2006 (and other years)).
- We have not uncovered any **standard business surveys** which include questions on business travel behaviour[65], the adoption of related procedures or policies (e.g. travel planning) or the energy, carbon or expenditure related to this behaviour. This issue was highlighted in Dudley et al. (2011), particularly the fact that business travel information is not routinely sought from each business using standardised key indicators (even size, sector, region and industry) and the consequent lack of longitudinal data for trend identification. [66]

[63] The fastest growth in rail travel is for non-commuting business purposes (which rose by nearly 170% between 1995/7 and 2005/7).
[64] GTMC Response to Transport Select Committee's inquiry on High Speed rail said: between the GTMC's 2008 and 2009 annual transaction surveys, the only area of activity which showed an increase in the number of transactions booked by the GTMC member companies was rail travel (13% increase).
[65] Such as the ONS Annual Business Survey; BIS English Business Survey (TNS); British Chambers of Commerce Quarterly Economic Survey; Federation of Small Businesses 'Voice of Small Businesses'
[66] It is interesting to contrast this with Belgium, where, from 2003, it has been a legal obligation for all private and public companies employing at least a hundred workers to fill in a three-yearly questionnaire for each of their workplaces employing at least 30 workers. The home-to-work- travel (HTWT) survey is conducted by the Federal Public Service (FPS) Mobility and Transport. It mainly focuses on the mobility measures taken by companies and on the commuting behaviour of their workers. In 2005 and 2008, 3269 and 3733 companies filled in the forms. The databases contain information about 7460 and 9455 workplaces in 2005 and 2008, respectively. This represents the commuting behaviour of about a third of all workers in Belgium. This data was used in Van Malderen et al. (2012). We have not undertaken a systematic search to find out whether this kind of survey is undertaken elsewhere but this might be a worthwhile exercise.

Table A2.1: Ongoing datasets related to UK business travel

Name of dataset	Focus	Related publications of interest	Coverage	Benefits
COMMUTING AND BRIEFCASE TRAVEL				
National Travel Survey Source: DfT	Individual Travel + Long distance (>50 mile) travel sub-survey	NTS04- Why people travel (trip purpose). Especially report NTS0404 DfT (2011b) Personal Travel Factsheet: Commuting and Business Travel. TSG0101- Passenger transport by mode TSGB0104- Average number of trips by purpose and mode TSGB0105- Average distance travelled by purpose and main mode TSGB0108- Usual method of travel to work by region of workplace TSGB0111- Usual time taken to travel to work by region of workplace TSGB0112- How workers usually travel to work by car by region of workplace TSGB0116- People in employment in transport related occupations	2011, UK	Trip purpose, commuting and business travel Host of information and statistics relating to, amongst other things, commuting and business travel

Scottish Household Survey Source: The Scottish Government	Individual travel		2008-2009 (latest edition available online).	Large data set with travel diary
COMMUTING ONLY				
Census Source: ONS	Journey to work	Some relatively detailed analysis and mapping of the data has been done already	2001, 2011 (Does not cover Scotland or NI - separate Census stats available)	Large and detailed data set showing the total number of people travelling by different modes to travel to work on the day of the census, plus those working mainly from home on 27th March 2011. Split according to 10 regions in England and Wales, and further disaggregated into local authorities and super output areas (higher and lower) within each of those regions.
Labour Force Survey Source: ONS	Statistics relating to the UK workforce - relating to journey to work		1993-2012	Large data set, very detailed, although much of it probably isn't directly relevant in a travel context. Statistics relating to people who work 'mainly from home' (HOME variable in SPSS data set). This is subdivided into 4 categories; own home, same grounds or building, separate from home, different places with home as a base. Cohen (2010) used this fourth category as representing mobile workers. This info can be differentiated by occupation by cross tabulating it with 'industry in main job' (INDS07M or INDD07R variable).

BRIEFCASE TRAVEL ONLY				
Departing Passenger Surveys Source: CAA	Travel by air for business and other purposes	CAA (2011) *Flying on Business: a summary of the UK business air travel market*. CAP 796 (includes UK Business Air Travel: Traffic Trends and Characteristics first published in May 2009). Trends since 1996-2009 (Ch2), growth by route and carrier (Ch3) and socio-economic status of and source of demand for business air travel (Ch4)	1996-2009 (Need to pay for full data sets)	Examines how UK business traffic has changed by sector (long haul, short haul and domestic) between 1996 and 2007, and the characteristics of business passengers; It examines the drivers of UK business air travel and how they have been affected by the recent recession. It also looked at how companies manage their business travel, the changing role of travel management companies, how airlines compete for business travellers, and what may affect the demand for business air travel to and from the UK in the future. Useful background information, demand for business air travel is interesting. Mode of surface access to the transport also. Individual characteristics of the passengers include: (i) occupation group (from job dictionary produced by the Market Research Society (ii) Main Business of the persons firm (manufacture, sales (retail or whole), other (iii) income (iv) age Business travel is broken down into: • Business • Attending internal company business • Meetings with customers/others • Conference/Congress • Trade Fair/Exhibition • Armed Services • Airline Staff • Contract Home Leave • Overseas Employment - Less than 12 months • Overseas Employment - 12 months or more

				• Studies paid by employer - Formal academic course • Studies paid by employer - Other • Au Pair • Olympics
International Passenger Survey Source: ONS	UK Residents' visits abroad	700,000 and 800,000 interviews p.a. carried out at all major airports and sea routes, at Eurostar terminals and on Eurotunnel shuttle trains.	1993 onwards, updated quarterly	UK visits abroad by month broken down by 'holiday, business, VFM and Misc. 'Most useful dataset for international business travel plus this can be broken down into: 'business: work', 'formal course' and 'visit trade fair', 'conference 20+ people' Can break analyse by age and gender, but not profession. UK Residents' visits abroad by month broken down by 'holiday, business, VFM and Misc.' Number of visits abroad by UK residents by area and purpose of visit. Spending abroad by UK residents by area and purpose of visit.
FREIGHT/ COMMERCIAL				
RFS01- Domestic road freight activity, Source: DfT	Freight	RFS0105- Average length of haul (km) by rigid and articulated vehicles in the UK classified by weight category	1990-2010 and quarterly 2004-2011, UK	Could show quite simply how average travel distance by freight vehicles has changed over the last 20 years
		RFS0109- Total vehicle miles (millions km) by different road freight vehicle types	2000-2010, UK	Shows within year variation (quarterly)

		RFS0115- Average annual vehicle km (thousands) by vehicle type	2000-2010, UK	Shows total vehicle miles by different vehicle types (rigid and articulated) and total overall vehicle miles, but over a shorter timescale. Breaks down annual travel (km) by vehicle size and type.
		RFS0141- Fuel Consumption by HGV in Britain	1993-2010, UK	Shows average annual miles (not km) per gallon achieved by different categories of HGV in Britain. Might be possible to work out fuel use when compared with data about total distance travelled
TSGB07- Roads and Traffic Source: DfT	All road traffic - light goods vehicles and HGVs	TSGB0701- Road traffic (vehicle miles) by vehicle type in GB. There is also a (km) version available.	1949-2011, UK	Shows total mileage by light goods vehicles and heavy goods vehicles compared with the overall total.
Scottish Transport Statistics Source: The Scottish Government	Freight	Chapter 3- Road and freight		Shows quantity and distance of freight travelled in Scotland.
	Individual travel	Chapter 11- Personal travel and modal comparisons		Average number and distance of trips for individuals in Scotland by mode (based on Scottish Household Survey).
UK Environmental Accounts - Detailed Energy: Energy Intensity and Fuel Use Data	Fuel use by different industrial sectors (including transport)		1990-2010	Total fuel use (million tonnes of oil equivalent) broken down by petrol/ diesel etc by Industrial sector (using SIC) over the period 1990-2010.

Taxis and Private Hire Vehicle Statistics Source: ONS	Taxis and private hire vehicle stats	2011, UK	Details relating to the number of licenced taxis, private hire vehicles and drivers by region in the UK Headline figures: - 78,000 licensed taxis in England and Wales in 2011 - 155,000 licensed PHVs in England and Wales in 2011 - 299,200 licenced drivers in England and Wales in 2011 (54% were licenced PHV only, 23% taxi only, 23% dual taxi and PHV licences) Could be used to provide a rough comparison of the fuel use between detailed breakdown of industrial sectors, though it is not possible to break this into different domains of travel (business travel, freight, etc).
Transport employees DfT	Number of people employed by bus companies, rail companies and airlines in the UK	2011, UK	124,000 staff employed by local bus companies in Great Britain 2012 48,000 staff employed in railway sector in Great Britain 2012 72,000 staff employed by airlines in Great Britain Statistics refer to number of employees, rather than number of vehicles etc.

Table A2.2: 'One off' datasets related to UK business travel

Name of dataset	Focus	Related publications of interest	Coverage	Benefits
Barclaycard	Briefcase travel	The Barclaycard Business Travel Survey 2005/06 report has been used in the evidence review. Results are seemingly available for other years, but these are not easy to get hold of.	Annual survey of 2,500 Barclaycard Business commercial cardholders – CEOs, company directors, managers, from sole traders through to FTSE 100 companies.	Motivations for (reducing) business travel; awareness of company travel policies and environmental policies; compliance with travel policy; expenditure. Large sample size (~2500) means that some analysis by company size is found in the reporting. However, original reports are hard to find. Data is not analysed by type of organisation
Guild of Travel Management Companies (GTMC)		Business Traveller Survey. Summarised in GTMC 2010 & 2011.	2009 & 2010. N=~1,200. Sampling etc not detailed.	Questions asked of the individual traveller, not the organisation. Summarises key policies that business travellers want to see from the Government. Supports GMTC lobbying activities.
Guild of Travel Management Companies (GTMC) (2013)		Voice of the Business Rail Traveller's Survey.	2013. N=1055 respondents who travelled by train at least 6 times for business trips of >50km in the past 12 months (aged 18-65, UK wide)	Questions asked of the individual traveller, not the organisation.

RAC/BCC (2007)	Briefcase travel	Business Travel: Choice or necessity	Online questionnaire of BCC members (N=409). Report focus implies these were only SMEs - but is not definitively stated.	Business travel type; distances and nodes travelled; barriers to PT use; initiatives adopted by businesses; potential and barriers to reduce car use;
WWF/Critical Research (2008)		Travelling light: Why the UK's biggest companies are seeking alternatives to flying.	N=100 survey among FTSE 350 companies	Revealed that there was an appetite among businesses to use emerging technologies, such as high-definition videoconferencing, to reduce staff travel – especially flying. Data is not analysed by type of organisation
WWF/Critical Research (2011)	Briefcase travel - specifically air travel	Moving on: why flying less means more for business	N=158 of top FTSE companies	Number of businesses reducing flying (and what it is substituted with); Number intending on continuing to reduce flying (after recession); reasons for reduction; internal targets and policies Data is not analysed by type of organisation