

Institute for Transport Studies

FACULTY OF ENVIRONMENT



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PRE-SURVEY EXPLORATORY RESEARCH AND STUDY DESIGN

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ITS



- What is Pre-Survey Exploratory Research?
- What forms does it typically take?
- What can it address?
- Some practical examples

PRE-SURVEY EXPLORATORY RESEARCH



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UK National VoT Study 1994 (relatively straightforward)

“Qualitative research is commonly undertaken as an initial phase of SP work

- To allow a better understanding of the factors that drive the perceptual and evaluative process
- To ensure that the SP questionnaire is couched in the appropriate language
- To provide input to the design of the stated preference exercises, including the variables and levels necessary to influence choices”

QUALITATIVE RESEARCH



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The purpose of qualitative research is to find out what is in the consumer's mind..... Qualitative data are collected to know more about things that cannot be directly observed and measured (Aaker et al., 1995)

Qualitative data can be:

- A means to an end

Reveals key issues to explore (eg, central features of bus travel)

- An end in itself

Reveals series of negative images of bus which can be acted upon

- A test of methodology/identify problems

But not all exploratory research is qualitative!



- Focus Groups
- Depth Interviews
- Accompanied Journeys
- Prior 'Mini Questionnaire'
- and not forgetting
- Inspection of Literature

FOCUS GROUPS – KEY FEATURES



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- Around 8 people in a group discussion for about 1½ hours
- Fairly homogenous groups – avoid dominance
- Recruitment – incentive payment and usually outsourced
- Number of groups depends on segments and number of issues to cover
- Moderator facilitates discussion
- Discussion guide and stimulus material (client, literature review, subject matter, allow time for process to evolve both within and between groups)
- Venue – recording and viewing facilities very important



- Usually 1 person (but can be a family or other group)
- Recruited in advance
- Paid incentive
- Location is usually at home
- Up to 60 minutes
- More specific questions than focus groups
- Can follow up on issues raised in focus groups – particularly detailed presentation and interpretation issues

FOCUS GROUPS PROS AND CONS



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Advantages

- Less intimidating than depths
- Individuals' experiences spark off others – creative and dynamic
- Can probe differences in peoples' views – can test different ideas quickly
- Can be observed – useful for clients and colleagues
- Social and cultural differences highlighted

Drawbacks

- Group may inhibit frank exchange of attitudes – strong personality may dominate
- May react negatively to topic and freeze
- Minority viewpoints can be lost – insecurity if not in majority
- Loss of perspective – hothousing – can get carried away

FOCUS GROUPS 'FAIL' WHEN:



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- Intimate or controversial subject matter (eg, drinking & driving)
- Strong social norms pressuring for conformity
- When a detailed understanding of something or detailed life history is needed
- Where tastes are very wide and the group too heterogeneous
- Hard to reach groups – difficult to recruit
- Not done right/lip service
 - Used to win project*
 - Client insisted*
 - All too rushed*
 - All too 'obvious'*
- Moderator lacks appreciation of issues - particularly choice modelling
- Law out of an observation

DEPTHS – PROS AND CONS



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Advantages

- Complex decision making processes and perceptions can be explored in detail
- Majority and minority opinions can be recorded
- Personal/intimate/controversial opinions addressed
- No peer group pressure
- Sample can be more segmented and spread

Drawbacks

- Time consuming and expensive
- Limited sample size
- No viewing/recording

DEPTHS 'FAIL' WHEN



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- Small sample leads to atypical results
- Semi-structured interview fails to address key points
- Not done right/lip service (as focus groups)
- Does not evolve across interviews

But more prescribed than focus groups

Horses for Courses – hybrid approach



Accompanied Journeys

- Very good at identifying the characteristics (attractions as well as barriers) of particular forms of travel
- Expensive
- Not practical in some cases (proxy with video)

Mini-Questionnaires

- Useful to obtain factual information for design
- Can explore perceptions, satisfaction, expectations
- Avoids using valuable focus group/depth time on issues that can be covered in a questionnaire

USES (1)



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- What are the relevant variables?

New Liverpool Football stadium. Motorists want close parking, safe parking, cheap parking or quick getaway after the match?

- What are the valid ranges or combinations of the variables

Can more reliable routes realistically be slower? What is quickest bus could realistically be – can it be quicker than car?

- Presentation

How present travel time variability?

How present aircraft noise – categorical scales, proportionate changes, noise simulation, number of movements, spatial variations, temporal variations?

8 focus groups – few were willing to guess cents per mile fuel efficiency. But could give gasoline per month (year) and miles per month (year). Used \$ per year for given miles per year

- Support Analysis

Do package effects exist and why? Are small times savings of value? Are time (cost) savings more valuable on longer journeys. Absolute v proportionate time savings. Gains and losses – really an issue? Are there ‘halo’ effects?

USES (2)



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- Identify Choice contexts and Markets

When do people face small time savings? Which is best for situation of interest - real world choice context or unlabelled A v B.

- Check wording, layout, survey instrument, show material – pre-test SP exercise

- Interpretation

Are there confounding effects (congestion implies unreliability, aircraft noise implies air pollution)? Are attributes ignored (fuel) or contentious (toll).

Exploratory research:

- Sometimes states the obvious
- Sometimes reveals important insights
- Sometimes just confirms expectations

Of course, some issues can also be addressed in the main survey





- Focus Groups conducted to determine how best to value aircraft noise – a difficult issue with few prior SP studies
- Conducted in hall very near Manchester Airport
- For context and ‘warm up’, focus group commenced with general discussion of quality of life issues
- Became apparent that no-one realised that the discussion was about aircraft noise (until we raised it). BUT it was raised ‘naturally’ by the focus group
- Aircraft noise can be considered in a broader quality of life dimension
- Given aircraft noise is contentious, the latter has attractions over a much more transparent aircraft noise approach



INCENTIVES TO STRATEGIC RESPONSE BIAS



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- Early Stated Intentions and Willingness to Pay methods deemed crude and seemed unreliable
- Proponents of SP argued that broader range of variables meant purpose of study less clear, more realistic and more engaging and hence more reliable
- But here conventional SP purpose is very transparent
- Focus on aircraft noise and incentive to bias – naïve
- Quality of life SP considers a range of issues the focus group revealed as important to the community
- SP exercises done in focus group conditions – to emphasise the community aspect
- Quality of Life considered first



EXAMPLE QUALITY OF LIFE SP



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Local Crime: Burglaries per 1000 Households	10	5	2	1	0.5		
Local Schools: % GCSE Pass Rate	10%	25%	40%	55%	70%		
Area Wide Road Traffic Congestion	10% More Traffic	5% More Traffic	As Now	5% Less Traffic	10% Less Traffic		
Street Cleanliness	Very Dirty and Untidy	Dirty and Untidy	Neither Clean nor Dirty	Clean	Very Clean		
Traffic Noise at Home	Extremely Noisy	Very Noisy	Moderately Noisy	Slightly Noisy	Not at all Noisy		
Neighbourhood Air Quality	Very Poor	Poor	Neither Good nor Poor	Good	Very Good		
General Condition of Local Roads and Pavements	Very Poor	Poor	Neither Good nor Poor	Good	Very Good		
Planes Go By	Every 2m Daytime Every 2m Evenings	Every 4m Daytime Every 2m Evenings	Every 4m Daytime Every 4m Evenings	Every 4m Daytime Every 7½m Evenings	Every 7½m Daytime Every 7½m Evenings		
Council Tax	£8 more a week	£3 more a week	£1 more a week	As Now	£1 less a week	£3 less a week	£8 less a week
Recreation Facilities Locally Available	No Library			Library			
	No Sports/Leisure Facilities			Sports/Leisure Facilities			
Amenities Within Walking Distance	No Local Food Shops			Local Food Shops			
	No Local GP			Local GP			

CONVENTIONAL SP (NAÏVE 1)



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	A	B
Jumbo jets/large 4 engine planes	1 per hour (About every 60 minutes)	2 per hour (About every 30 minutes)
Two engines jets (e.g 737, Airbus)	20 per hour (About every 3 minutes)	30 per hour (About every 2 minutes)
Turbo-prop (propeller planes)	1 per hour (About every 60 minutes)	2 per hour (About every 30 minutes)
Total Flights	22 per hour (About every 2½ minutes)	34 per hour (About every 2 minutes)
Weekly council tax	£2 more	£5 less
I would choose ...	A	B

NAÏVE (2) VERSION OF QoL SP



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Aircraft Movements	Worse			As now	Better		
Every weekday 6-9am	60	40	30	20	15	12	10
Every weekday 9am-6pm	40	30	20	15	12	10	6
Every weekday 6-10pm	30	20	15	12	10	6	4
Saturday 6-9am	60	40	30	20	15	12	10
Saturday 9am-6pm	40	30	20	15	12	10	6
Saturday 6-10pm	30	20	15	12	10	6	4
Sunday 9am-6pm	40	30	20	15	12	10	6
Every night	6	4	3	2	1		0
Tax	£10 more	£5 more	£2 more	0	£2 less	£5 less	£10 less

RESULTS (QoL v Naïve1)



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Airport	Comparison	QoL	Naive	t stat
Manchester	Day Deterioration	0.79 (±0.28)	1.22 (±0.50)	1.50
	Evening Deterioration	0.0	0.85 (±0.40)	
Lyon	Day Deterioration	1.44 (±0.52)	4.27 (±2.00)	2.74
	Evening Deterioration	1.33 (±0.42)	2.39 (±1.30)	1.55
Bucharest	Day Deterioration	0.03 (±0.02)	0.59 (±0.25)	4.65
	Evening Deterioration	0.0	0.19 (±0.15)	

RESULTS: QoL v Naïve2



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	Quality of Life PR		Time Period PR		t statistics	
	Improve	Worse	Improve	Worse	Improve	Worse
Manchester Day	1.24 ±0.85	0.79 ±0.28	6.83 ±1.69	1.17 ±0.35	5.90	1.70
Manchester Evening	0.53 ±0.62	-	4.54 ±1.73	0.83 ±0.37	4.36	-
Lyon Day	1.06 ±0.40	1.44 ±0.52	31.89 ±7.10	3.02 ±1.20	8.67	2.42
Lyon Evening	1.59 ±0.25	1.33 ±0.47	23.95 ±5.79	1.62 ±0.87	7.72	0.59
Bucharest Day	0.49 ±0.43	0.03 ±0.02	1.76 ±1.00	0.16 ±0.02	2.33	9.19
Bucharest Evening	-	-	1.88 ±1.02	0.08 ±0.01	-	-

BENEFITS/IMPACT OF EXPLORATORY RESEARCH



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- Suggested alternative approach which less transparent and yielded much lower values
- Identified the broader quality of life dimensions
- Aircraft movements better than noise simulation, proportionate variations, temporal variations or spatial variations
- However, categorical scales (very noisy, quite noisy) had appeal to individuals and were used for half the sample

HELICOPTER DEMAND FORECASTING



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Main Study Objective

- Forecast likely demand for Helicopter Service between Cardiff (South Wales) Heliport and London Heathrow. No existing air link.

Involved

- Developing choice models on Stated and Revealed Preference data collected for international business flyers in the Cardiff area
- Main Choice between Helicopter and current mode. Also route choice
- Service Quality – Aspects of Helicopter Service

Objectives of Exploratory Research

- Investigate the key components of international business travel behaviour to aid the design of the Stated Preference experiment

EH101 – IN FLIGHT



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EH 101 INTERIOR



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HELICOPTER DEMAND FORECASTING



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KEY ISSUES

- Helicopter Passenger Services in UK are scarce
- EH101 will not fit with standard perceptions of helicopters
- How handle perceived issue of safety and also comfort?
- What are the relevant variables?
- What are the markets?

HELICOPTER DEMAND FORECASTING



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METHODOLOGY

- Two focus groups with Business travellers conducted at Cardiff Heliport
- General discussion of international travel and key factors
- Perceptions of Helicopters and likely use of a new service
- Demonstration of interior 'mock-up' of EH101
- Mini questionnaire to gain scores for importance of aspects of travel, and attitudes to flying with both fixed wing and helicopter
- Helicopter scores recorded for both before and after mock up demonstration

HELICOPTER DEMAND FORECASTING



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Initial Perceptions of Helicopters

- About half had experience of Helicopter flight but not same standard aircraft
- Expectations were:

Claustrophobic

Exciting

Not as comfortable as fixed wing

High noise levels

“I would expect we wouldn’t be able to have a conversation”

Bumpy

“Somehow you expect them to be bumpy”

- Provided initial ratings of Helicopter on 12 key attributes



HELICOPTER DEMAND FORECASTING



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Importance Ratings (1 Not Important, 10 Very Important)

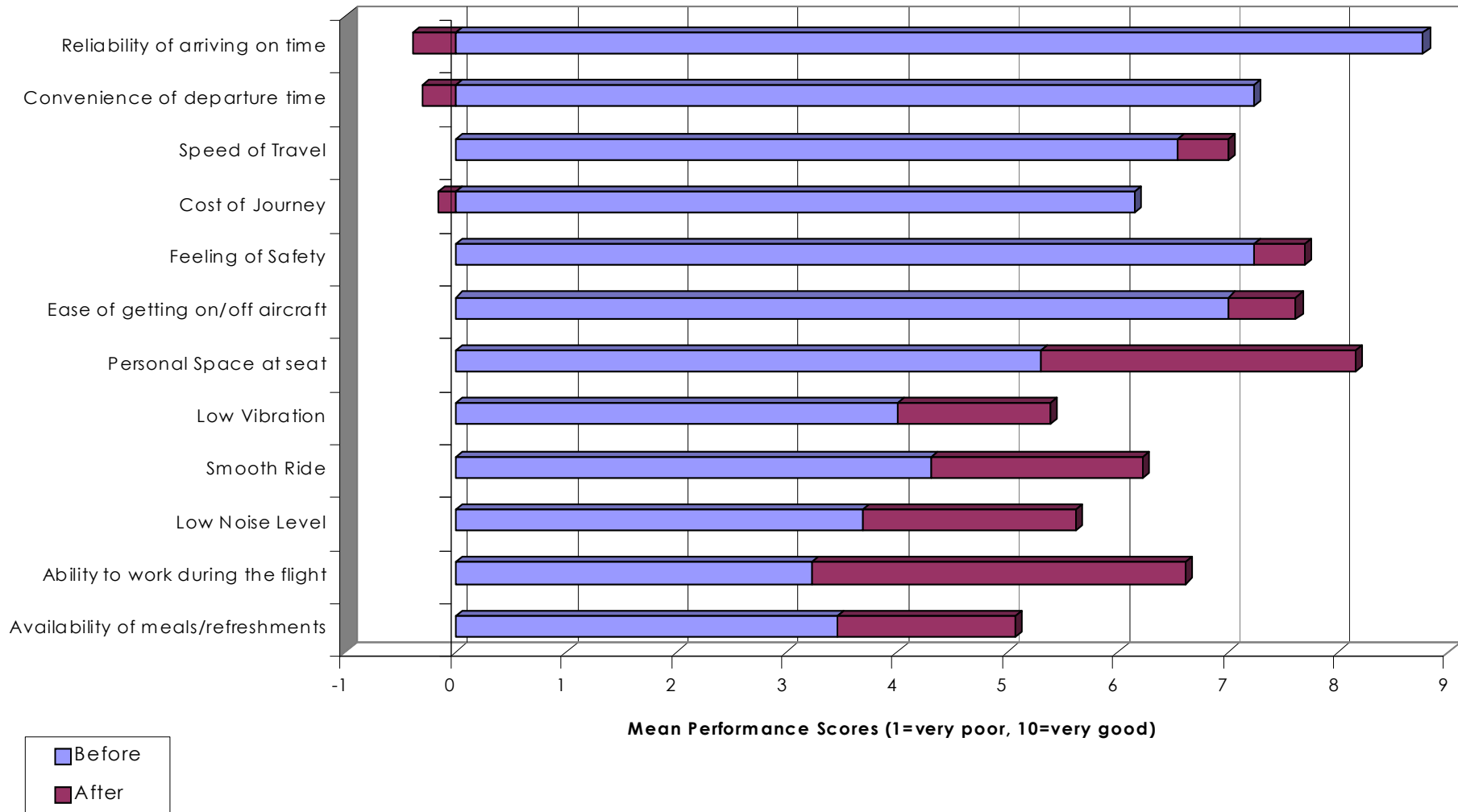
- Arrival Time Reliability (9.3)
- Convenience of Departure Time (8.6)
- Journey Time (8.2)
- Cost of Journey (8.1)
- Feeling of Safety (7.8)

- Ability to work during flight (4.9)
- Availability of means/refreshments (4.5)

Helicopter rated as worse performance than fixed wing in terms of less important factors



IMPACT OF HELICOPTER MOCK UP UNIVERSITY OF LEEDS



HELICOPTER DEMAND FORECASTING



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Other key findings:

- Reliability important but Helicopter perceived as reliable as fixed wing
- Reliability complex but best conveyed in terms of categorical representation and amount of buffer time
- Safety not an issue for seasoned air travellers
- Flying to connect at Amsterdam was a common occurrence
- Frequency on Return journey (wait time at Heathrow) was crucial.
- BUT SP exercises rarely allow for differences on return leg to influence overall choice

HELICOPTER DEMAND FORECASTING



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Thus mode choice SP offered Helicopter v current

- Travel Time by each mode
- Transfer Time at Heathrow (out and return separate)
- Cost
- Access Time
- Reliability could credibly be specified to be same for each
- Safety and comfort issues not needed
- Route choice (Fly Amsterdam v Helicopter Heathrow) also offered
- Supplementary SP covered reliability, operating company, through baggage/ticketing, fixed wing v Helicopter.

BENEFITS/IMPACT OF EXPLORATORY RESEARCH



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- Avoided need to tackle the tricky issue of safety
- We would have otherwise missed a key explanatory variable
- Turned out transfer time on return TWICE value of outward
- The mock-up demonstrated that care needed to be given to conveying the EH101 in photographs and written description
- It also demonstrated that comfort compared to fixed wing was not an issue that needed covering separately
- Identified new market of travellers interlining at Amsterdam and hence new route choice model needed
- Reliability important and best conveyed in terms of buffer time

IN SUMMARY



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- Can be very valuable
- Widely used – especially for ‘less routine’ applications
- Can help to win bids
- Need people with right skills to implement
- Do it properly