

EVALUATING BUREAU OF LAND MANAGEMENT INFORMATION SOURCES FOR
PRIVATE WHITEWATER BOATERS ON THE LOWER SALMON RIVER

A Thesis

Presented in Partial Fulfillment of the Requirements for the

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by

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AUTHORIZATION TO SUBMIT

THESIS

This thesis of Cheston Crowser, submitted for the degree of Master of Science with a major in Resource Recreation and Tourism and titled "Evaluating Bureau of Land Management Information Sources for Private Whitewater Boaters on the Lower Salmon River," has been reviewed in final form. Permission, as indicated by the signatures and dates given below, is now granted to submit final copies to the College of Graduate Studies for approval.

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ABSTRACT

Understanding the information needs and preferences of recreationists is an important tool for public land managers. This tool enables managers to evaluate and consider current dissemination strategies and information sources in an effort to better reach their target audience. Despite its usefulness, there have been few studies within the recreation and tourism literature that have attempted to identify and understand visitor information needs and preferences.

This study used survey research methodology to understand private, non-motorized, whitewater boaters' information needs and use of Bureau of Land Management (BLM) information sources on the Lower Salmon River in north central Idaho. The study examined the use of BLM information sources in conjunction with the boaters' levels of experience, and within the context of different times and locations during the trip.

Results revealed that boaters who were aware of BLM information sources used those information sources when taking a trip on the Lower Salmon River. Results also indicated that information needs and preferences vary depending on experience level and changes in time and location during the trip.

ACKNOWLEDGEMENTS

I would like to thank LuVerne Grussing, for his commitment to river management and his support of providing students with opportunities to study issues related to river management. He has provided me with invaluable knowledge and experience, which not only has expanded my ability to further my professional career, but also given me a greater understanding of the proactive role individuals need to take in managing our natural resources.

I would also like to thank my major professor, Nick Sanyal, my committee members, and the professors in the Department of Resource Recreation and Tourism for challenging me to enhance my critical thinking skills and knowledge. I have learned more than I thought possible, and am sincerely grateful.

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CHAPTER 1

INTRODUCTION

OVERVIEW

This study was conducted as part of a cooperative research assistantship between the Cottonwood Field Office of the Bureau of Land Management (BLM) and the University of Idaho's Department of Resource Recreation and Tourism. The goal of the study was to provide valid and reliable data to the BLM, which will aid recreation planning and management of recreation on the Lower Salmon River in north central Idaho.

The focus of this study was to assess private whitewater boater use of information sources provided by the BLM and the perceived usefulness of those sources. One past study regarding information use, the 1992 Riggins Visitor Information Study, included BLM information sources in an effort to identify ways in which visitors to the Lower Salmon River corridor could be better reached through a variety of agency information sources. This study identified spatial information needs for the area and led to the creation of a comprehensive guidebook as key components to creating better information sources (Perin, 1994). While these suggestions were utilized in the creation of the current Lower Salmon River Boater's guide, web-site, and kiosks at put-in and take-out locations, no further studies have assessed the use and perceived usefulness of these sources as they pertain to private whitewater boaters. The results of this study, as they build on the results from the 1992 Riggins Visitor Information Study, will help the BLM in evaluating and adapting current information dissemination strategies to better inform boaters of important managerial concerns as well as providing information that can potentially heighten the recreational experience of private boaters on the Lower Salmon River.

STUDY AREA

The Lower Salmon River is a 112-mile stretch of the Salmon River, which flows from Vinegar Creek, above the town of Riggins, to where it meets the Snake River (Figure 1.1). There are two distinct sections of the Lower Salmon River that cater to different whitewater boating experiences. The first is the section from Vinegar Creek to Lucile Bar Recreation Site. This section of the river is primarily dominated by day-use whitewater boaters and is characterized by several road accessible sites and a high concentration of popular whitewater rapids. The second section has very few road accessible sites and is characterized by a multi-day wilderness-like river experience. The second, multi-day stretch of river was the focus for this study. Figure 1.1 shows a map of the study area including guidebook sections (1-23), which are available in the Lower Salmon River Boater's Guide.

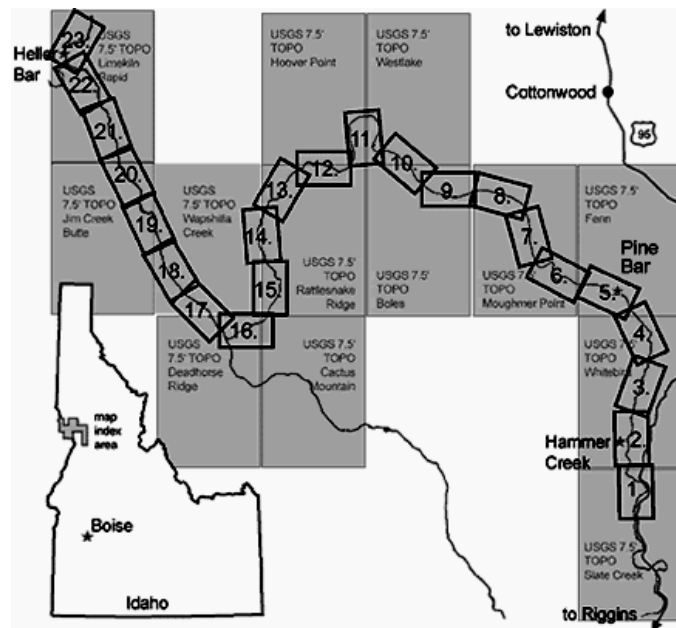


Figure 1.1 Map of Study Area on the Lower Salmon River

Trips on this section entail class III and IV whitewater, and travel 53 miles of the Lower Salmon River and 20 miles of the Snake River through Hells Canyon National Recreation Area. Most trips begin at either Hammer Creek Recreation Site or Pine Bar Recreation Site and end at Heller Bar, near the confluence of the Snake and Grande Ronde Rivers (Lower Salmon River Visitor Use Report, 2002). Percentages of trip put-in and take-out locations are listed in Table 1.1

Table 1.1 Put-in and Take-out Locations of Trips for Study Area of the Lower Salmon River

Put-in Location	% of Trips
Hammer Creek	66
Pine Bar	32
Take-out Location	% of Trips
Heller Bar	86

POPULATION DEMOGRAPHICS

The following four figures (1.2-1.5) illustrate the demographics of the study population of non-motorized, private, whitewater boaters on the Lower Salmon River. Ages ranged from 20 to 70 with a large segment of the population in their 40's and 50's (Figure 1.2). Both male and female boaters were represented in the study (Figure 1.3). The majority of boaters had educational levels that were senior level of college or higher (Figure 1.4). Boaters used rafts, catarafts, kayaks, and drift boats for taking trips on the Lower Salmon River, however rafts were the most popular type of boat used (Figure 1.5).

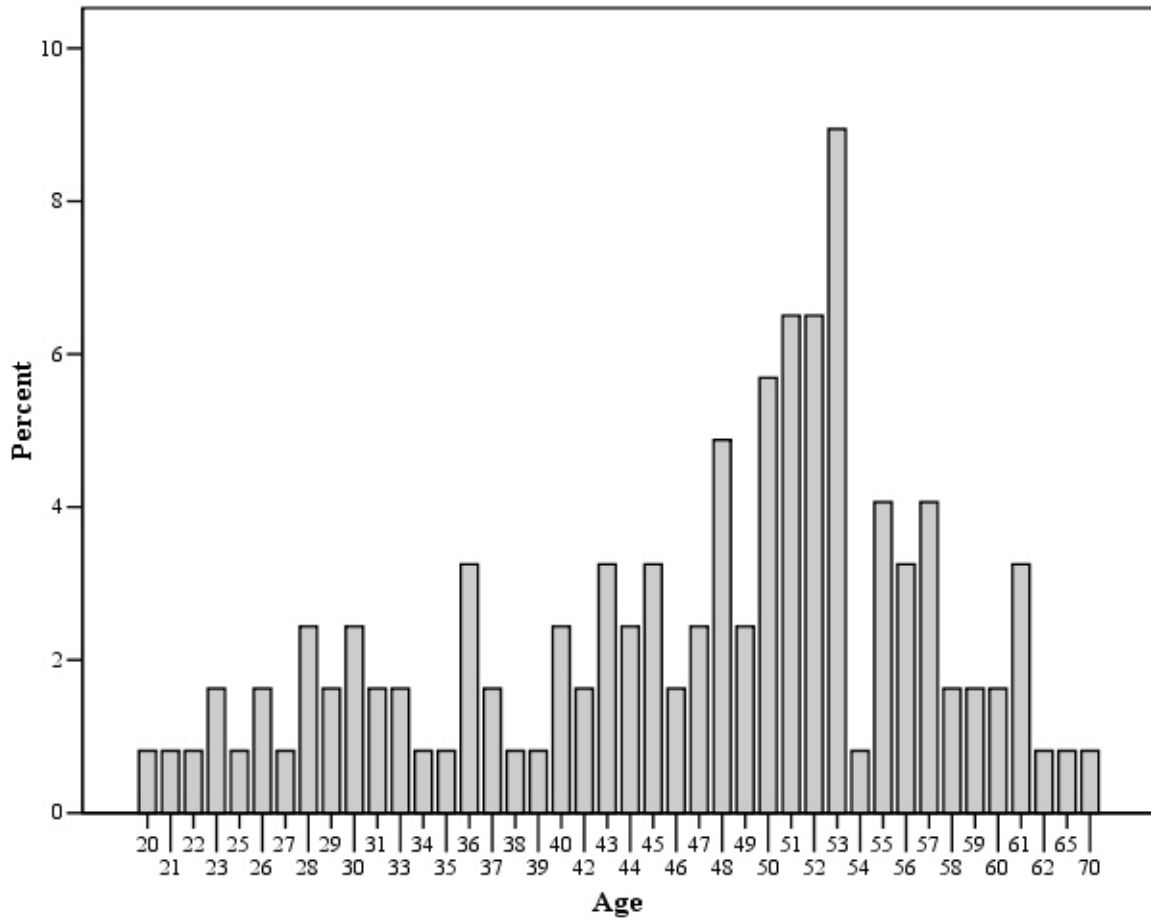


Figure 1.2. Ages of Respondents

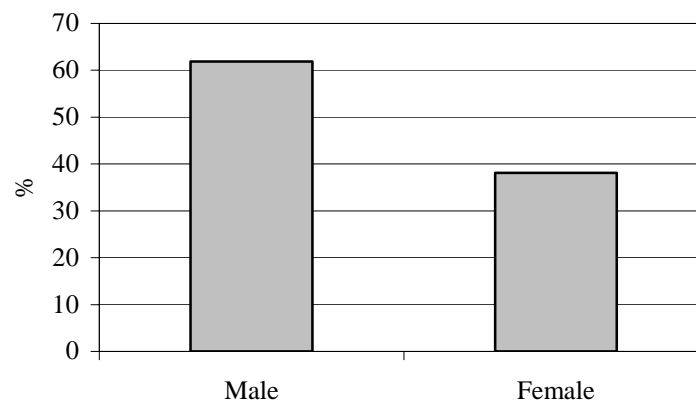


Figure 1.3. Gender of Respondents

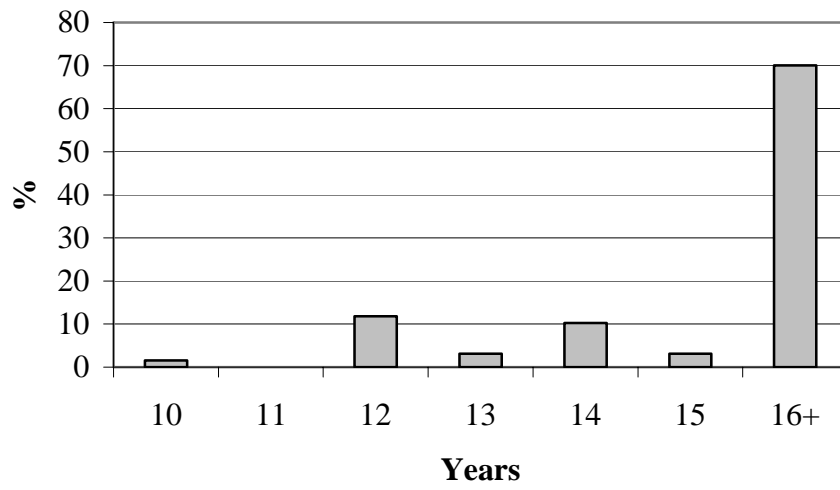


Figure 1.4. Educational Background

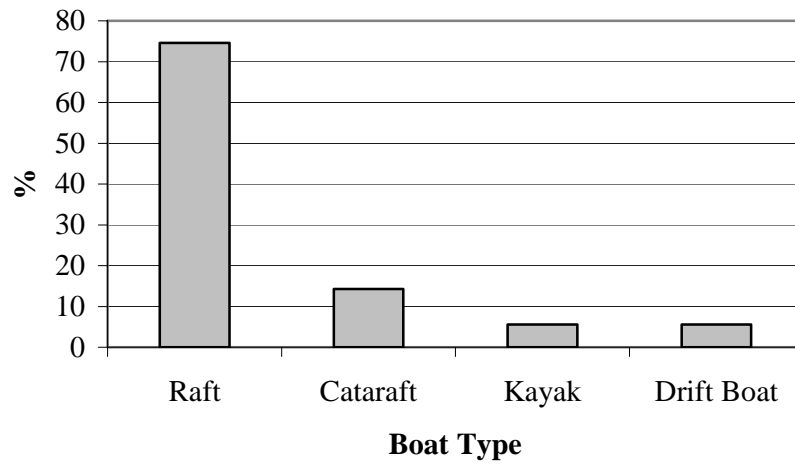


Figure 1.5. Type of Boat Used

STUDY PURPOSE AND OBJECTIVES

The purpose of this study was to provide the BLM with a profile of boater's informational needs, their use of BLM information sources, and their perceived usefulness of those information sources. This study was guided by the following objectives:

1. Compare frequency and duration of experience measures with measures established through use of a semantic differential scale.
2. Determine whether or not boaters are aware of current BLM information sources.
3. Determine whether or not boaters who are aware of BLM information sources use those information sources during their trip.
4. Determine whether or not the BLM currently provides information sources in locations where boaters seek information pertaining to trips on the Lower Salmon river.
5. Determine whether or not information use changes as the situational location of the trip changes.
6. Evaluate the current BLM information sources based on both a Hedonic and Utilitarian evaluation of information content.
7. Utilize Importance-Performance Analysis (IPA) to assess the efforts of the BLM to meet important whitewater boater information needs.

DEFINITIONS

Hedonic: The experiential and affective component of a consumption experience (Holbrook & Hirschman, 1982).

Situational Context: Different parts of the trip that are determined by time and location. Included in the situational context of this study are pre-trip, at the put-in, during the trip, and at the take-out.

Utilitarian: The motivational component of a consumption experience that is directed at or contributes to a purpose (Vogt & Fesenmaier, 1998).

ORGANIZATION

This thesis is organized into chapters. The first chapter has served as the introduction to the project and chapters 2 through 4 represent draft manuscripts to be submitted to refereed journals. Each chapter is a complete manuscript and thus each includes details of methods, sampling, analysis, results, and discussion. Each chapter is also followed by its own list of references.

This thesis will also be submitted to the Cottonwood Field Office of the Bureau of Land Management as one product of the 2002-04 BLM Lower Salmon Internship. The other product is a study of the experience and managerial preferences of motorized boaters on the Lower Salmon River.

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- Vogt, C.A., & Fesenmaier, D.R. (1998). Expanding the functional information search model. *Annals of Tourism Research*, 25(3), 551-558.

CHAPTER 2

A COMPARISON OF EXPERIENCE USE HISTORY AND SEMANTIC DIFFERENTIAL SCALE MEASURES OF RECREATION EXPERIENCE

INTRODUCTION

Experience within the context of a recreational activity is an important concept to many studies within the recreation literature. Many forms of experience variables have been used to quantify the differences between experienced and inexperienced recreationists, as well as to understand the affects that experience level has on attitudes, preferences, and behaviors (Manning, 1999). Experience has also been included in studies exploring the concept of recreation specialization. Specialization involves the progression in an activity along a continuum that is influenced by such variables as focusing of behavior, acquiring skills and knowledge, and commitment to the activity in a way that it becomes a central life interest (Scott & Schaefer, 2001). Both general experience measures and experience measures related to specialization have seen a variety of approaches aimed at how to best characterize the construct and use it in understanding additional aspects of the overall recreational experience.

MEASURING THE EXPERIENCE VARIABLE

The measurement of level of experience has generally utilized a measure related to the frequency of participation within an activity and the number of years that an individual has taken part in the activity. Some studies have chosen straightforward approaches related to individuals reporting their frequency of participation and the number of years that they

have participated, others have chosen more complex indexes to calculate the influence of participation (Manning, 1999). The number of categories used to explain experience level has also differed between studies. Some studies have chosen to differentiate between three levels; (Low, Moderate/Medium, High) (Hammit, Knauf, & Noe, 1989; Bricker & Kerstetter, 2000) while others have selected up to six levels; (Novice, Beginners, Locals, Collectors, Visitors, Veterans) (Schreyer, Lime, & Williams, 1984)

PURPOSE OF THIS STUDY

The purpose of this study is to provide concurrent validity of a new semantic differential scale for measuring experience level by comparing it with traditional frequency of participation and years of participation measures. Concurrent validity involves the correlation of the scores from known valid measures to a new as yet unvalidated measure. A measurement's ability to correlate to or vary directly with an accepted measure of the same construct can provide both predictive and concurrent validity (Neuman, 2004). The use of such a scale has the potential to create a simpler, more standardized, and more reliable measure of experience while also creating an easier questionnaire format for respondents as well as a more efficient and objective measure for data analysis that is immune from recall bias.

METHODS

STUDY AREA

This study took place on the Lower Salmon River in north central Idaho. The river provides a wilderness-like experience for boaters seeking a class III-IV whitewater multi-day

float trip. Trips are typically characterized by a limited access 73-mile float from Hammer Creek Recreation Site to Heller Bar on the Snake River.

SAMPLING PROCEDURES AND DATA COLLECTION

Sampling took place from June 1, 2003, to September 3, 2003, at the Heller Bar boat ramp. A stratified random sample was utilized with Neyman allocation to strata (Schaeffer, Mendenhall, & Ott, 1996). Strata were defined by the seven days of the week where days with higher user numbers were more likely to be randomly selected. All individuals 18 years and older who ended their private Lower Salmon River float trip at Heller Bar on a randomly selected day were asked to participate in the study.

Questionnaires were distributed on-site and participants had the option of filling it out on-site or taking it home and returning it in a postage paid envelope. Unreturned questionnaires were followed up with a reminder post card and then a second questionnaire. A total of 190 questionnaires were distributed and 128 were returned for a 67% response rate.

NON-RESPONSE BIAS

Non-respondents were those individuals who took a questionnaire at Heller Bar, but did not return it, or the second replacement questionnaire. Non-response bias can occur when non-respondents differ from respondents in how they would respond to questionnaire items. This leads to study results that are an inaccurate representation of the study population. The explanation of potential non-response bias was limited to a comparison of the zip codes of study participants, which revealed no difference. A past study on the Lower Salmon River has suggested that Lower Salmon River visitors who are less familiar with the

area were less likely to respond to questionnaires indicating that boaters who are less familiar with the Lower Salmon River may be under-represented. However, under-representation of less familiar boaters may not be relevant to this study due to the fact the beginning boaters made up more than half of the study population.

INSTRUMENTATION

This study utilized two measures of experience. The first was a measurement related to frequency of participation and the history of participation. Respondents were asked to recall the number of trips that they had taken on the Lower Salmon River and the number of years that they had been boating on the Lower Salmon River. In calculating the frequency and history of an individual's participation, this study did not evaluate experience on rivers other than the Lower Salmon. The reason for the omission of experience data on other rivers was because the study was concerned only with experience measures related specifically to the Lower Salmon River. The item used in the questionnaire to measure trips taken and years of participation is shown in Figure 2.1.

Which of the following best describes your past use of the Lower Salmon River? (*Please check only one response.*)

- This is my first time on the Lower Salmon River
- I have been on the Lower Salmon River one other time
- I am a repeat visitor, and have made about _____ previous trips here

IF you are a repeat visitor, which of the following best describes your river use?
(*Please check and complete one statement.*)

- I have been boating here for (*please write in a number*) _____ years, but usually only boat the river once each year
- I have been boating here for (*please write in a number*) _____ years, and usually boat the river about (*please write in a number*) _____ times each year

Figure 2.1 Questionnaire Items Used to Measure Number of Trips Taken and Number of Years Boating on the Lower Salmon River

The second measure of experience was an adaptation of a pre-established marketing scale, which was created to measure an individual's level of product knowledge (Bruner & Hensel, 1996). Responses were measured using a four-item, seven-point differential scale including, know very little about – know very much about, inexperienced – experienced, uninformed – informed, and novice boater – expert boater. The item from the questionnaire is shown in Figure 2.2.

How would you describe your personal knowledge of, and experience with, the Lower Salmon River? (*Please check one response for each pair of phrases.*)

Know Very Little About	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">1</td> <td style="width: 20px; text-align: center;">2</td> <td style="width: 20px; text-align: center;">3</td> <td style="width: 20px; text-align: center;">4</td> <td style="width: 20px; text-align: center;">5</td> <td style="width: 20px; text-align: center;">6</td> <td style="width: 20px; text-align: center;">7</td> </tr> </table>	1	2	3	4	5	6	7	Know Very Much About
1	2	3	4	5	6	7			
Inexperienced	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">1</td> <td style="width: 20px; text-align: center;">2</td> <td style="width: 20px; text-align: center;">3</td> <td style="width: 20px; text-align: center;">4</td> <td style="width: 20px; text-align: center;">5</td> <td style="width: 20px; text-align: center;">6</td> <td style="width: 20px; text-align: center;">7</td> </tr> </table>	1	2	3	4	5	6	7	Experienced
1	2	3	4	5	6	7			
Uninformed	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">1</td> <td style="width: 20px; text-align: center;">2</td> <td style="width: 20px; text-align: center;">3</td> <td style="width: 20px; text-align: center;">4</td> <td style="width: 20px; text-align: center;">5</td> <td style="width: 20px; text-align: center;">6</td> <td style="width: 20px; text-align: center;">7</td> </tr> </table>	1	2	3	4	5	6	7	Informed
1	2	3	4	5	6	7			
Novice Boater	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">1</td> <td style="width: 20px; text-align: center;">2</td> <td style="width: 20px; text-align: center;">3</td> <td style="width: 20px; text-align: center;">4</td> <td style="width: 20px; text-align: center;">5</td> <td style="width: 20px; text-align: center;">6</td> <td style="width: 20px; text-align: center;">7</td> </tr> </table>	1	2	3	4	5	6	7	Expert Boater
1	2	3	4	5	6	7			

Figure 2.2 Questionnaire Item Used to Measure Experience Level

ANALYSIS

The first step in the analysis of the data involved using two-step cluster analysis to specify three fixed experience clusters from the semantic differential scale. The SPSS version 12.0 Two-Step Cluster Analysis procedure is an exploratory tool designed to reveal natural groupings (or clusters) within a data set that would otherwise not be apparent. The algorithm employed by this procedure has several features that differentiate it from traditional clustering techniques, particularly:

- Handling of categorical and continuous variables
- Automatic selection of number of clusters. By comparing the values of a model-choice criterion across different clustering solutions, the procedure can automatically determine the optimal number of clusters. The procedure will automatically determine the "best" number of clusters, using the criterion specified in the Clustering Criterion group (SPSS, 2003). The three experience groups are referred to as beginner, intermediate, and advanced. Due to the exploratory nature of this study, the p value for determining admission into each cluster was 0.01 in order to establish three experience level clusters. The results of the cluster analysis are listed in Table 3.1. Missing or unusable responses that were not used in the analysis resulted in the total percentage not equaling 100%.

Table 2.1: Experience Cluster Results

Cluster	Frequency	%
Beginner	66	50.0
Intermediate	33	25.0
Advanced	23	17.4

The clusters were then compared using an analysis of variance (ANOVA) with an LSD post hoc test to determine whether there were significant differences between the clusters at the 0.05 level based on responses to the semantic differential scales. The ANOVA revealed that there were significant differences between the experience cluster groups for each of four scale items. The results from the ANOVA are listed in Table 2.2.

Table 2.2. ANOVA of Experience Scale Items for Each Experience Level

Experience Level	Personal Knowledge	Personal Experience	Personal Informedness	Personal Boating Skill	
Beginner (B)	3.5	3.5	4.3	4.1	
Intermediate (I)	5.7	5.8	5.9	5.7	
Advanced (A)	6.3	7.0	6.8	6.5	
ANOVA					
	F	101.759	122.354	97.801	35.01
	Significance	p<0.001	p<0.001	p<0.001	p<0.001
	LSD post-hoc	B<I<A	B<I<A	B<I<A	B<I<A

A factor analysis using principal components analysis was then conducted to ensure that each of the four items in the scale factored together and reliability analysis was conducted to obtain a Cronbach's alpha for the scale. A single factor, accounting for 77.8% of the scale variance was identified (Table 2.3). The factor loadings and the reliability measure (Cronbachs Alpha = 0.0893) suggested that the scale structure was strong and unified (Table 2.4).

Table 2.3. Factor Analysis Extraction Statistics for the Four Semantic Differential Scale Items.

Component	Eigenvalues			Extraction Sums of Squares Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.112	77.8	77.8	3.1	77.8	77.8
Extraction Method: Principal Component Analysis						

Table 2.4. Factor Loadings and Reliability Statistics for the Four Semantic Differential Scale Items.

Item	Factor Loadings	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if item Deleted
Personal Knowledge	0.909	15.03	17.586	0.817	0.853
Personal Experience	0.926	14.88	15.596	0.854	0.839
Personal Informedness	0.903	14.48	19.706	0.813	0.864
Personal Boating Level	0.784	14.68	18.864	0.653	0.913

The second step in the analysis was to compare the frequency and duration measures of experience with that of the clustered experience groups created from the semantic differential scales. Figure 2.3 illustrates the mean differences in number of trips taken and number of years boating for each of the experience levels.

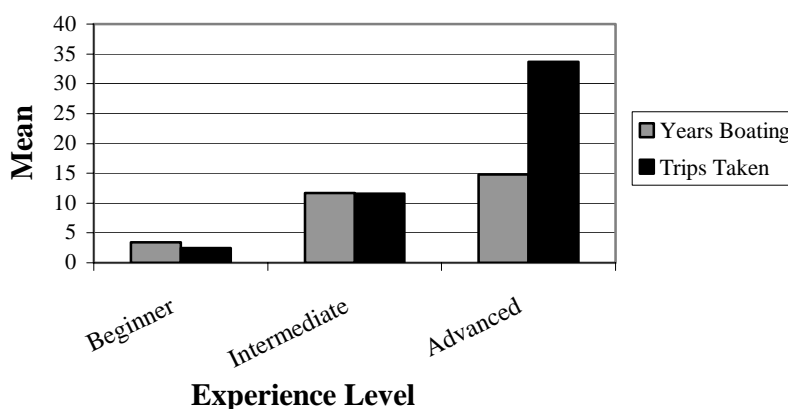


Figure 2.3. Mean Number of Trips and Years of Boating Experience by Experience Level

Beginner and intermediate boaters primarily took one trip per year with the number of trips and years increasing between beginner and intermediate boaters. Experienced boaters had been boating for more years than the other two groups, and took more trips per year. Tables 2.5 and 2.6 show the sample size, mean, median, mode, range, and standard deviation for each of the three experience levels. Measures of central tendency other than the mean for

each of the groups generally support the observation that the number of trips taken and the number of years boating increase as the level of experience increases.

Table 2.5. Comparison of Number of Trips Taken with Experience Clusters

Experience Level	Number of Trips Taken on the Lower Salmon River					
	N	Mean	Median	Mode	Range	s.d.
Beginner	64	2.5	1	1	1-17	2.516
Intermediate	33	11.9	8	6	2-50	10.158
Advanced	22	33.8	8	4	1-272	62.560

Table 2.6. Comparison of Number of Years of Participation with Experience Clusters

Experience Level	Number of Years Boating on the Lower Salmon River					
	N	Mean	Median	Mode	Range	s.d.
Beginner	64	3.4	1	1	1-20	3.375
Intermediate	33	12.0	9	4	2-40	8.259
Advanced	22	15.0	10	10	1-33	10.333

An additional ANOVA with LSD post-hoc test was used to determine if there were significant differences between the cluster groups based upon mean number of trips and years of participation (Table 2.7).

Table 2.7. Comparison of Number of Trips Taken and Number of Years Boating by Experience Level

Trips				
ANOVA				
	F	10.716		
Significance		p<0.001		
LSD post-hoc				
		Mean		
Experience Level (I)	Experience Level (J)	Difference (I-J)	Std. Error	Significance
Beginner	Intermediate	-9.078	5.802	0.12
	Advanced	-31.233	6.752	<.001*
Intermediate	Beginner	9.078	5.802	0.12
	Advanced	-22.155	7.460	0.004*
Advanced	Beginner	31.233	6.752	<.001*
	Intermediate	22.155	7.460	0.004*
Years				
ANOVA				
	F	29.531		
Significance		p<0.001		
LSD post-hoc				
		Mean		
Experience Level (I)	Experience Level (J)	Difference (I-J)	Std. Error	Significance
Beginner	Intermediate	-8.293	1.482	<.001*
	Advanced	-11.413	1.697	<.001*
Intermediate	Beginner	8.293	1.482	<.001*
	Advanced	-3.120	1.880	0.1
Advanced	Beginner	11.413	1.697	<.001*
	Intermediate	3.120	1.880	0.1

The trip data showed significant differences between beginner and advanced boaters and advanced and intermediate boaters. The data pertaining to years of participation showed significant differences between beginner and intermediate boaters and between beginner and advanced boaters.

DISCUSSION

The focus of this study was to compare the use of a semantic differential scale with that of frequency of participation and years of participation measures. One difficulty in the

study was the lack of coherence between studies in regards to the number of trips and the number of years of participation. For example, one study measuring experience of river boaters used 6 experience categories, with the lowest category being only one trip in any location (Schreyer, Lime, & Williams, 1984). A second study measuring experience of horseback riders had only three experience categories with the lowest category being characterized by 1-18 horseback trips per year (Hammit, Knauf, & Noe, 1989). There are a couple of obvious influencing factors. One is the number of categories that are to be used in determining experience level. The more categories that are used, the more specific the criteria will become for the differentiation of experience level as well as increased variation in how many trips or years of experience are used to establish categories. The second influencing factor is the activity itself. While the number of years of participation would remain constant between activities, one could make a reasonable assumption that the number of trips per year could vary based on the amount of commitment and involvement inherent within the activity. For example, the amount of time and effort to take one multi-day river trip may limit a participant to only one or two trips per year, while the individuals participating in routine horseback trips on several weekends may be able to take several trips per year. Other factors such as seasons of use, distance from an individual's home to the recreation site, etc. may all play a role in the number of trips taken. This variation between studies made the comparison of experience categories with a semantic differential scale difficult. The comparison of studies related to river recreation (Hammit & McDonald, 1983; Schreyer Lime & Williams, 1984; Bricker & Kerstetter, 2000) seem to show similarities with the number of trips and years of experience that are associated with the experience categories generated through cluster analysis from the semantic differential scale.

The use of the semantic differential scale as an experience measure, although created to measure product knowledge, did factor together when used in the context of measuring recreation experience. The reliability of the scale was strong with an alpha of 0.8983, which was very similar to the originally reported reliability of 0.90 (Bruner & Hensel, 1996).

The reliability of the scale and the factor analysis results suggest that the scale is applicable in a recreation context, and comparison with number of trips taken and number of years of experience suggest concurrent validity in differentiating between experience categories.

IMPLICATIONS

This study has explored the possibility of using a semantic differential scale to measure experience in a recreation context. While the results indicate that the use of this scale was a credible measurement instrument, other studies should establish validity in other areas of recreation as well as include experience in the activity within other similar recreational settings.

The appeal of this scale for measuring experience is apparent for both data collection and data analysis. It provides an easy format for respondents of questionnaires, is relatively short, and is in an easy format for data entry and analysis. The scale seems to include dimensions of experience that can reliably predict an individual's experience level and also fit within the context of some of the specialization literature. With additional testing of the scale as a measure for recreation experience, this scale has the potential to become a valid measurement tool for recreation studies involving measures of experience.

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CHAPTER 3

**AWARENESS AND USE OF SELECTED AGENCY RIVER RECREATION
INFORMATION SOURCES MODERATED BY EXPERIENCE LEVEL AND
SITUATIONAL CONTEXT**

INTRODUCTION

Information dissemination plays an important role in managing the recreational use of public lands. Understanding the information needs and search behaviors of visitors is an important tool for managers as they create effective information sources aimed at such goals as environmental education, low impact techniques, and informing visitors of changes in policy (Thapa, Graefe, & Absher, 2002). Information sources provided by the BLM for the Lower Salmon River have been used as communication platforms for management objectives such as: mediating conflicts between private landowners and the public, heightening visitors' awareness of safety, informing visitors of sensitive cultural and natural resources, and attempting to enhance visitor experiences (Wilson & Zinne, 1983). While information dissemination plays an important role in management, there have been few published studies within the parks and recreation literature that examine visitor awareness and use of information sources as well as the degree to which those information sources meet the needs and expectations of visitors.

INFORMATION SEARCH AND ACQUISITION

Within the recreation and parks literature regarding information search behavior, many studies have been adaptations of consumer behavior and information processing

models (e.g. Fodness & Murray, 1999; Vogt & Fesenmaier, 1998). These models address the premise that an individual will pursue information sources that meet the information needs of that individual. Most of the information processing models recognize that for information acquisition to occur, there must be events or phenomena that direct the need for acquisition (Vogt, Fesenmaier, & MacKay, 1993). The individual's evaluation of available information serves as a psychological interpretation of the event or phenomena, which satisfies their needs and enables them to choose an appropriate reaction or behavior (Schreyer, Lime, & Williams, 1984).

The actual gathering of information can be undertaken through either internal information retrieval or external information retrieval. Internal information retrieval occurs when the individual draws on past knowledge and/or experiences in an effort to satisfy an information need. External information retrieval occurs when there is insufficient information available to the individual through past knowledge and experience and the need arises to seek the information from an alternative source such as friends, signs, an informational brochure, etc. (Fodness & Murray, 1999). Understanding the external information search strategies of visitors, and the needs associated with those strategies, "holds promise for improving the effectiveness of directing visitor behavior, providing an educational experience for visitors to an area, and marketing and advertising tourist experiences" (Manfredo, 1989, p. 29).

PURPOSE OF THE STUDY

The purpose of this study is to examine whitewater boaters' awareness and use of agency information sources in different situational contexts of a whitewater float trip. The

study also examines the influence of knowledge and past experience on information use. The information derived from an examination of visitors' experience levels as well as awareness and use of agency information sources can provide a useful tool to understanding the public's impression of agency information campaigns and information sources. The data regarding information awareness and use not only provides a useful tool to developing more successful agency dissemination campaigns but also enables the agency to provide a better recreation experience for users.

Five research questions guided this study:

RQ₁: Are boaters of the Lower Salmon River aware of Bureau of Land Management information sources?

RQ₂: Do boaters of the Lower Salmon River, who are aware of Bureau of Land Management information sources, use those information sources?

RQ₃: Do boaters search for information sources in locations that the BLM is currently providing information.

RQ₄: Does the use of information sources change depending on the situational context of the trip?

RQ₅: Are there differences in the use of information sources based on boater experience levels and knowledge levels?

CONCEPTUAL BACKGROUND

SITUATIONAL CONTEXT

Situational context refers to the phases of a recreational experience within the context of changing locations during the recreational experience. Clawson and Knetsch (1966)

originally established a framework of five phases of the recreational experience. These phases included: (1) anticipation - planning and thinking about the trip, (2) travel to the site - getting to the destination, (3) on-site behavior - behavior on-site or in the destination region, (4) return travel - travel home, and (5) recollection – recall, reflection, and memory of the trip. During each of the 5 stages, an individual's behavior has the potential to change as the psychological interpretation of events and phenomena change (Clawson & Knetsch, 1966).

The research surrounding information acquisition in recreation and tourism literature has primarily focused on the use of information sources in a pre-trip context (e.g. Fodness & Murray, 1999; Manfredo, 1989; Vogt & Fesenmaier, 1998). The evaluation of information use as a trip unfolds has seen little research attention. Given the dynamic nature of many recreational experiences, where changing settings, moods, interactions with others, etc. all influence an individual's overall experience, an examination of information use at different stages during a trip may play an important role in the overall evaluation of information.

The concept of situational location provides an important aspect related to information use since the evaluation of information is tied to an individual's behavior and interpretation of an event or phenomena. Assuming that individuals will have changing interpretations of the overall experience as aspects of a trip evolve, it is likely that an individual's evaluation of information and information sources may also change. Examining information search behavior and information use may then be more effective when considering the presentation of information from a multi-phase view of the experience rather than a single experience at one stage of the trip. One past study, (Manfredo, 1989), suggested examining information use within the experiential context suggested by Clawson and Knetsch (1966).

EXPERIENCE AND KNOWLEDGE

The development of skills related to an activity and the acquisition of knowledge relating to that activity has been shown to be an indicator of an individual's progression in becoming more specialized in an activity (Scott & Shafer, 2001). Past research has indicated that experience is related to the amount of knowledge that an individual has pertaining to the activity and setting (Schreyer et al., 1984). An individual with high levels of knowledge, or the perception that they have sufficient knowledge, may gather information internally and forgo the need to gather information externally. This would indicate that individuals with differing levels of knowledge and experience have different information needs related to external information acquisition. There is an important distinction, however, to be made between knowledge and experience. This is because it is perceivable that an individual that has never taken part in an activity could be extremely knowledgeable about the activity and setting through extensive external information search.

INFORMATION SOURCES

There are currently four different information sources that the BLM provides for boaters: (1) river ranger contact, (2) the Lower Salmon River Boater's Guide, (3) signage, and (4) a web-site.

The BLM has regular patrols that float the Lower Salmon River from early summer to early fall every year. These patrols are usually done with two or more rangers and up to three crafts (14' raft, 16' raft, or drift boat) for patrols lasting four days. These patrols are active in maintaining beaches and checking groups for permit compliance and for having a

toilet to pack out waste. Overall, there is a good relationship between rangers and boaters of the Lower Salmon and it is not unusual for casual conversation to find itself as part of the interaction between rangers and boating parties. During these conversations, boaters have a chance to interact on a face-to-face basis and have the opportunity to have a variety of specific questions answered.

The Lower Salmon River Boater's Guide is a BLM publication that is available for purchase for a cost of \$5.00. The guide is an 8 ½" x 5 ½" booklet printed on waterproof paper. The information contained within it is relative to the Lower Salmon River from Hammer Creek recreation area to the confluence with the Snake River, and the Snake River from the Snake and Salmon confluence to Heller Bar. The content of the boater's guide includes facts about the Lower Salmon, historical information, detailed river maps, and information about wildlife, safety, rules and regulations, etiquette, and river ethics.

There are three locations on the Lower Salmon River where signs are provided as an information source. These are Hammer Creek Recreation Area, Pine Bar Recreation Area, and Heller Bar. Each of these locations has a boat launch and a significant portion of the sign content is aimed at those using the river for boating activities. In addition, all these signs, with the exception of Heller Bar, serve as self-service permit stations for boaters of the Lower Salmon River

The Lower Salmon River web-site (<http://www.id.blm.gov/cottonwood/lsr/>) is based on the current Lower Salmon River Boater's Guide and in many instances contains the same information. In addition, it provides current weather information, links to real-time river flows and a variety of other agencies and organizations that are related to river recreation. This site was made available to the public in February of 2003.

METHODS

STUDY AREA

This study took place on the Lower Salmon River in north central Idaho. The river provides a wilderness-like experience for boaters seeking a class III-IV whitewater multi-day float trip. Trips are typically characterized by a limited access 73-mile float from Hammer Creek Recreation Site to Heller Bar on the Snake River.

SAMPLING PROCEDURES AND DATA COLLECTION

Sampling took place from June 1, 2003, to September 3, 2003, at the Heller Bar boat ramp. A stratified random sample was utilized with Neyman allocation to strata (Schaeffer, Mendenhall, & Ott, 1996). Strata were defined by the seven days of the week where days with higher user numbers were more likely to be randomly selected. All individuals 18 years and older who ended their private Lower Salmon River float trip at Heller Bar on a randomly selected day were asked to participate in the study.

Questionnaires were distributed on-site and participants had the option of filling it out on-site or taking it home and returning it in a postage paid envelope. Unreturned questionnaires were followed up with a reminder post card and then a second questionnaire. A total of 190 questionnaires were distributed and 128 were returned for a 67% response rate.

NON-RESPONSE BIAS

Non-respondents were those individuals who took a questionnaire at Heller Bar, but did not return it, or the second replacement questionnaire. Non-response bias can occur when non-

respondents differ from respondents in how they would respond to questionnaire items. This leads to study results that are an inaccurate representation of the study population. The explanation of potential non-response bias was limited to a comparison of the zip codes of study participants, which revealed no difference. A past study on the Lower Salmon River has suggested that Lower Salmon River visitors who are less familiar with the area were less likely to respond to questionnaires indicating that boaters who are less familiar with the Lower Salmon River may be under-represented. However, under-representation of less familiar boaters may not be relevant to this study due to the fact the beginning boaters made up more than half of the study population.

INSTRUMENTATION

Awareness and use of information was measured by asking respondents to check each of the available information sources that they were aware of and had used for their trip. In addition, respondents were able to provide an open-ended response describing ways in which the BLM could make boaters more aware of information sources and ways in which the BLM could make information sources more useful to boaters. The questionnaire also asked respondents to indicate the main location that they used to search for information related to boating on the Lower Salmon River as well as any secondary locations that they would search for information.

The five-stage framework established by Clawson and Knetsch was modified to understand the influence of different stages during the river trip. We shortened the framework to four stages to address the low availability of information sources during the trip, and to aid in the recollection of survey respondents. The stratification of experience

stages that we used were, (1) pre-trip, (2) at the launch site, (3) on the river, and (4) at the take-out. The “pre-trip” stage included any use of information that boaters obtained prior to arriving at the boat launch for their river trip. The “at the put-in” stage included information that was used once boaters arrived at the launch site but prior to actually floating the river. The “on the river” stage included information that was used after beginning the float trip but prior to reaching the take-out for their river trip. The “at the take-out” stage included information that was used at the take-out location.

Past studies have evaluated experience level by categorizing users by the number of trips taken as well as the number of years that an individual participated in the activity (e.g., Bricker & Kerstetter, 2000; Manning, 1999; Schreyer et al., 1984). This study utilized a similar measure of experience level but in addition, adapted a self-assessment (Product Expertise) scale (Bruner & Hensel, 1996). This had originally been developed to measure an individual’s familiarity with shopping for a particular product but was adapted because of the simple format, ease of adaptability, high alpha coefficient (0.90), and freedom from recall bias that was present in asking individuals to count number of trips taken and number of years of participation. Responses were measured using a four-item, seven-point semantic differential scale (See Figure 3.1). The scale encompassed dimensions of knowledge, skill, and familiarity with the river, and was used to establish beginner, intermediate, and advanced experience levels.

How would you describe your personal knowledge of, and experience with, the Lower Salmon River? (*Please check one response for each pair of phrases.*)

Know Very Little About	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; height: 20px; text-align: center;">1</td> <td style="width: 20px; height: 20px; text-align: center;">2</td> <td style="width: 20px; height: 20px; text-align: center;">3</td> <td style="width: 20px; height: 20px; text-align: center;">4</td> <td style="width: 20px; height: 20px; text-align: center;">5</td> <td style="width: 20px; height: 20px; text-align: center;">6</td> <td style="width: 20px; height: 20px; text-align: center;">7</td> </tr> </table>	1	2	3	4	5	6	7	Know Very Much About
1	2	3	4	5	6	7			
Inexperienced	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; height: 20px; text-align: center;">1</td> <td style="width: 20px; height: 20px; text-align: center;">2</td> <td style="width: 20px; height: 20px; text-align: center;">3</td> <td style="width: 20px; height: 20px; text-align: center;">4</td> <td style="width: 20px; height: 20px; text-align: center;">5</td> <td style="width: 20px; height: 20px; text-align: center;">6</td> <td style="width: 20px; height: 20px; text-align: center;">7</td> </tr> </table>	1	2	3	4	5	6	7	Experienced
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1	2	3	4	5	6	7			
Novice Boater	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; height: 20px; text-align: center;">1</td> <td style="width: 20px; height: 20px; text-align: center;">2</td> <td style="width: 20px; height: 20px; text-align: center;">3</td> <td style="width: 20px; height: 20px; text-align: center;">4</td> <td style="width: 20px; height: 20px; text-align: center;">5</td> <td style="width: 20px; height: 20px; text-align: center;">6</td> <td style="width: 20px; height: 20px; text-align: center;">7</td> </tr> </table>	1	2	3	4	5	6	7	Expert Boater
1	2	3	4	5	6	7			

Figure 3.1. Questionnaire Item Used to Measure Experience Level.

RESULTS

The first stage of analysis for this study was the segmentation of experience level and knowledge groups. Two-stage cluster analysis (SPSS, 2003) was used to divide the adapted product expertise scale into three groups; beginner, intermediate, and advanced. Table 3.1 illustrates each experience level's percentage of the total sample population.

Table 3.1. Experience Level Frequency and Percentage of Total Sample Population.

Experience Level	Frequency	%
Beginner	66	50.0
Intermediate	33	25.0
Advanced	23	17.4

A comparison of these experience levels with the “frequency of participation” data from previous studies provided a measure of concurrent validity. Cronbach’s alpha, a coefficient of reliability, was used to measure how well the set of four items in the “scale” measured a single unidimensional latent construct that we call “experience level.” The calculated alpha for the semantic differential scales used to measure experience and knowledge for whitewater boating was 0.89, comparing well with a published alpha of 0.90 (Bruner & Hensel, 1996).

The second stage of analysis involved using descriptive statistics to illustrate the variables of awareness, use, search behavior, and situational location. Experience level was used in comparing the main location that boaters search for information regarding taking a trip on the Lower Salmon River, and in comparing the most useful source of information at different situational locations during the trip. Descriptive statistics (Figure 3.2) of information source awareness showed that the awareness of information sources was dependent on the information source.

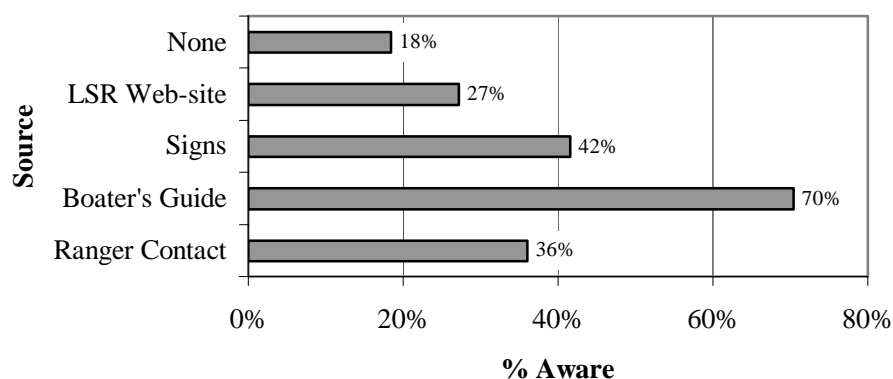


Figure 3.2. Information Source Awareness

Most boaters were aware of at least one of the information sources that the BLM currently provides. Of all Lower Salmon River boaters, only 18% were not aware of any of the information sources.

Information use was related to information awareness as shown in Figure 3.3. Those boaters who were not aware of sources did not use information sources.

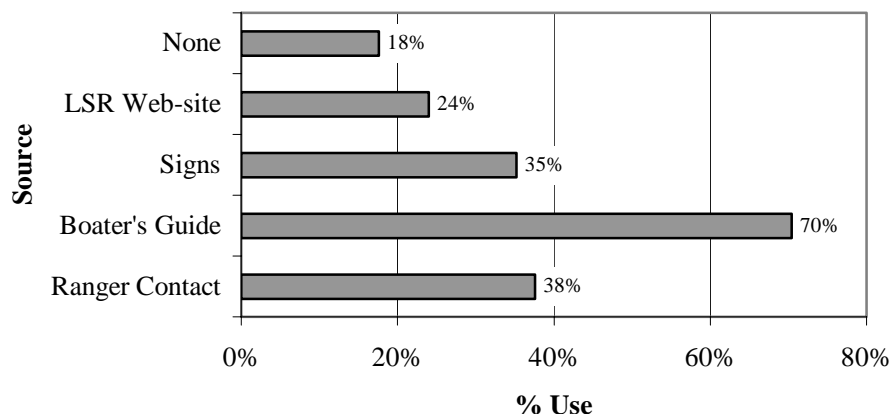


Figure 3.3 Information Source Use

In all sources other than the boater's guide, boaters indicated that they did not always use information sources that they were aware of. A McNemar test was used to determine if there were any significant differences between the level of awareness and use of each information source. The McNemar test is a nonparametric test for two related dichotomous variables that tests for changes in responses using the Binomial distribution. Table 3.2 illustrates that there were no significant differences between awareness and use for any of the information sources, indicating that boaters who are aware of information sources generally used them.

Table 3.2. Results of the McNemar test comparing boater awareness of information sources to their use of those sources.

	Contact with a River Ranger	Boater's Guide	Signs	Web-site
n	128	128	128	127
Significance	1.000	1.000	0.230	0.549

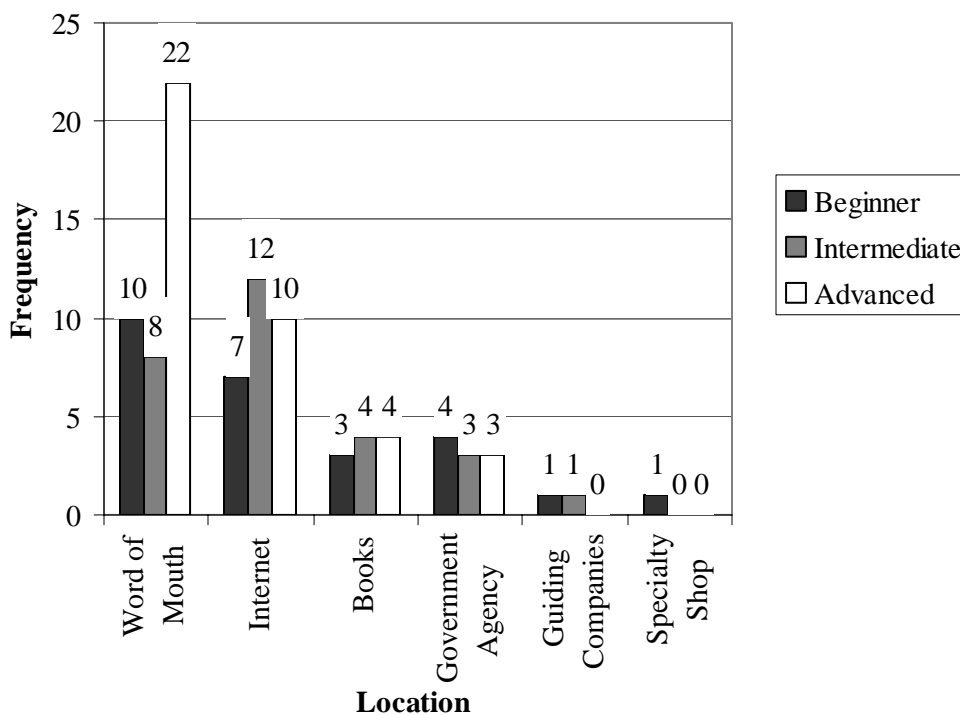


Figure 3.4 Main Information Search Locations for Information About Taking a Trip on the Lower Salmon River

Figure 3.4 shows that the most prominent source for information was word of mouth followed by the Internet. Books and government agencies were less used, followed by guiding companies and specialty shops, which were used least. Additional locations that boaters reported that they would seek information about taking a trip on the Lower Salmon River are listed in Figure 3.5. The results follow the same pattern as that of the main search location with word of mouth, Internet, and books being the top three search locations, but also include magazines and Chamber of Commerce as potential search locations.

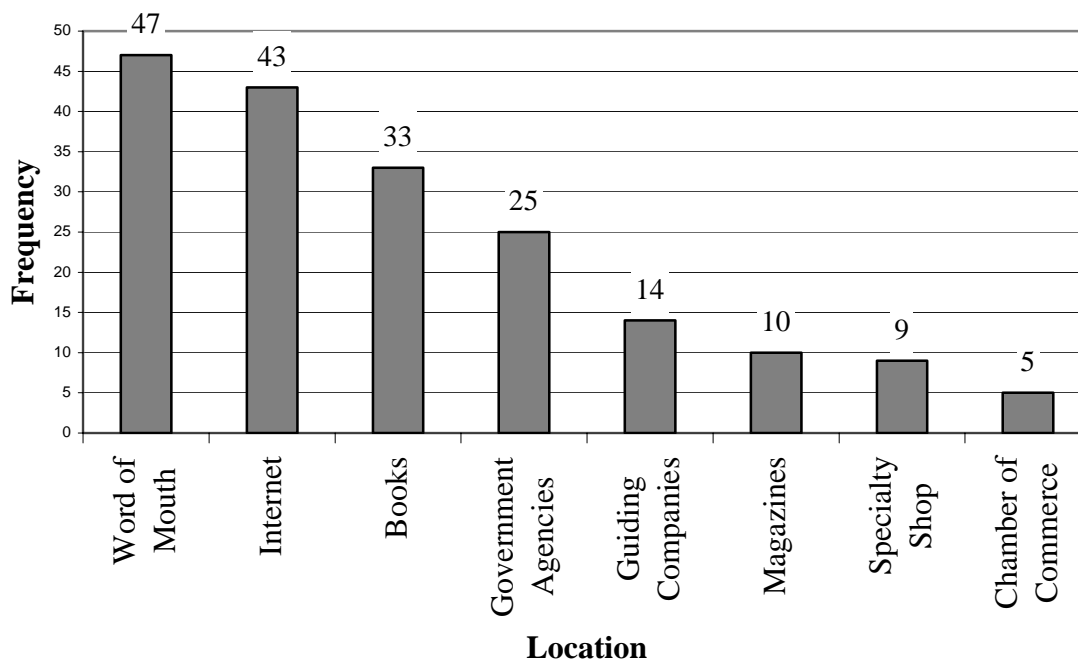


Figure 3.5. Additional Search Locations for Information About Taking a Trip on the Lower Salmon River

Information source selection at different situational contexts indicated that there were differences in information preference at different locations during the trip. The following tables (3.4-3.7) show differences in information source selection in different situational contexts and also differences in information selection at various trip stages dependent on an individual's experience level.

Table 3.4. Most Useful Pre-trip Sources of Information (n=94)

Information Source	Experience Level of Boaters			Total
	Beginner	Intermediate	Advanced	
Talking with Others	63%	41	13	49
Boater's Guide	25	50	50	35
None	4	5	19	6
Web-site	4	5	13	5
Signs	4	0	6	3
Ranger Contact	2	0	0	1

Table 3.5. Most Useful Put-in Sources of Information (n=104)

Information Source	Experience Level of Boaters			Total
	Beginner	Intermediate	Advanced	
Talking with Others	41%	42	13	37
Signs	24	15	50	23
None	20	12	19	18
Boater's Guide	14	27	13	17
Ranger Contact	0	4	6	3
Web-site	2	0	0	1

Table 3.6. Most Useful On the River Sources of Information (n=107)

Information Source	Experience Level of Boaters			Total
	Beginner	Intermediate	Advanced	
Boater's Guide	48%	70	80	60
Talking with Others	28	15	5	21
None	13	7	15	12
Ranger Contact	7	7	0	6
Signs	2	0	0	1
Web-site	2	0	0	1

Table 3.7. Most Useful Take-out Sources of Information (n=104)

Information Source	Experience Level of Boaters			Total
	Beginner	Intermediate	Advanced	
None	46%	64	65	54
Talking with others	42	21	12	32
Signs	8	7	12	9
Boater's Guide	2	0	12	3
Ranger Contact	0	7	0	2
Web-site	2	0	0	1

DISCUSSION

The results of this study suggest that awareness of information sources does relate to the use of information sources and that most individuals who were aware of BLM information sources did in fact use them. The source that boaters were most aware of and used most was the Boater's Guide. Respondents frequently listed the Boater's Guide as the

information source that added most to the overall quality of the trip. Eighty-two percent of all boaters were aware of at least one of the BLM's information sources. Boaters who were aware of a source also used that source most of the time.

The information search behavior of boaters seeking information about taking a trip on the Lower Salmon River seems to fit with current BLM information dissemination. Lack of web-site use was not surprising for this study due to the fact that the BLM's website became available for boaters during the winter prior to the 2003 boating season. A past study indicated that electronic media including the Internet showed low levels of satisfaction in terms of accuracy and usefulness. In comparison with other information sources including print media, signs, and rangers, technological media was least likely to be used by visitors to the Angeles and San Bernadino National Forests in California (Thapa et al., 2002). Results from this study showed that the Internet was a popular information search location for boaters of all experience levels when searching for information about the Lower Salmon River. The potential for whitewater boaters to become more aware of, and use the web-site remains to be seen as the site establishes a lasting presence. The creation of the Lower Salmon River web-site should increase the amount of Lower Salmon River information being used since a large number of boaters, regardless of experience level, utilized the Internet as a Lower Salmon River information Source.

Examining the use of information relative to situational context revealed that talking with others was most popular at the beginning stages of the trip, and more popular with less experienced individuals than experienced individuals. The Boater's Guide was the most popular source for all individuals while on the river. Signs were popular at the locations that they were available (put-in and take-out), and no selection of information sources, while in

the top three, was most commonly mentioned by a large number of individuals at the take-out, where information was typically not available. In addition to these situational context results, information from open-ended responses suggested the BLM should have a ranger or campground host who could provide information and copies of the river guide on site at the put-in or along the river.

The use of information is influenced significantly by experience level. The overall awareness and thus use of information sources increases with the level of experience that an individual has. The selection of information sources at varying stages of the trip also changes with respect to individual experience level.

IMPLICATIONS

This study provides valuable information for the consideration of management agencies as they assess their information dissemination strategies. Simply posting a new regulation or river condition in one location may not be sufficient in reaching the majority of the boating population.

Awareness and use of information sources are influenced by the location during the trip and the individual experience level of boaters. The results should act as a guide to matching the most likely place that an individual seeks particular information at various stages of the trip as well as the influence of experience on information needs at different stages of the trip. While a perfect solution for all of the boating population may not be attainable, these findings serve as a guide to the information search patterns of boaters and give indication to where messages may be most likely to be seen by a specifically targeted audience.

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CHAPTER 4

**EVALUATING WHITEWATER BOATER INFORMATION SOURCES THROUGH
THE USE OF HEDONIC AND UTILITARIAN CONTENT EVALUATION AND
IMPORTANCE-PERFORMANCE ANALYSIS**

OVERVIEW

Information use is viewed as a consumptive act (Vogt, Fesenmaier, & McKay 1993). The nature of this consumption could be defined in a variety of ways depending on the individual or situation involved in information use, and could vary from acquisition of interpretive information about the resource to specific regulations and policies. This not only fits within the consumptive context of much of the marketing literature that has been cited in recreation and tourism research regarding information needs, (e.g. Fodness & Murray, 1999; Vogt et al., 1993) but further exemplifies the need to address information needs from a broad standpoint based on the diverse nature of this consumptive experience.

CONTENT EVALUATION

Research that has explored information-related needs within the recreation and tourism literature has taken two primary theoretical approaches. Both of these approaches have arisen from an overriding management paradigm of current natural resource managers to utilize a user oriented management strategy. Fazio explains this approach more specifically within parks and recreation. “Agencies attempt to learn what diverse visitors want from their experiences and to provide satisfaction accordingly” (2000, p.10). This

management style is currently practiced on the Lower Salmon River as well, and guided the approach of this study in evaluating the content of BLM information sources.

The first of these theoretical approaches is the Uses and Gratifications Theory from the field of Mass Communications (Thapa, Graefe, & Absher, 2002). This theory operates on the premise that an individual will utilize the information that provides the most gratification in meeting the information need that is to be fulfilled. This approach has been successful in enabling information providers to address the specific information needs of their target audience(s). An example of this type of information needs study can be found in the “Effectiveness of Visitor Information Programs in Giant Sequoia National Monument” (James & Absher, 2002). This study investigated the ability of information sources to successfully communicate information to visitors through programs, while taking the information needs of visitors into consideration as part of the evaluation.

The major drawback to using this kind of approach is the lack of affective components in evaluating information needs. This is a drawback because evaluation on purely cognitive processes assumes that all decisions are made using rational thinking, and problem solving oriented approaches. This approach doesn't take into consideration whimsical or mundane decisions (Zaichkowsky, 1985), both of which can be found in recreation decision making (Vogt & Fesenmaier, 1998).

The second theoretical approach is an approach arising out of modern adaptations of several previous theoretical models from consumer behavior and information processing. (e.g. Bettman, 1979; Engel, Kollat, & Blackwell, 1973; Howard, 1977). Not unlike Uses and Gratifications Theory, these models address the premise that an individual will pursue information sources that meet the information needs of that individual. Where these two

approaches differ is in the addition of hedonic components, or components dealing with experiential and affective evaluations to those of strictly utilitarian nature which are used in the first theory. Since most recreational activities are not undertaken solely for utilitarian purposes, addressing boater information needs from both a utilitarian and hedonic aspect is paramount to providing user-oriented information materials. For this reason, this study approached information needs from the standpoint of including a hedonic content evaluation as well as a utilitarian evaluation.

It is important to note, however, that hedonic and utilitarian components of information needs are not mutually exclusive concepts. A general illustration of this coexisting nature is that “a toothpaste may prevent both cavities and provide pleasure from its taste” (Batra & Ahtola 1990, p. 161). River information on how to safely run a rapid serves utilitarian needs (safety) and hedonic needs (excitement). The degree to which an individual has predominantly hedonic information needs, utilitarian information needs, or some mix of both has the potential to vary not only among individuals, but also within the individual among differing circumstances (Batra & Ahtola, 1990). An approach toward assessing information needs on the Lower Salmon River from this standpoint allows for discovering the different information need profiles which allow the BLM to more efficiently serve its user population.

IMPORTANCE-PERFORMANCE ANALYSIS

Importance-performance analysis (IPA) is an analysis tool that was originally created for use in marketing (Hollenhorst, Olson, & Fortney, 1992). The concept behind its use is that there are specific attributes that are considered by an individual in their perception and

selection of a product or service. The identification of these attributes that influence selection, called determinant attributes, can enable product manufactures to focus their marketing strategies to improve and/or highlight determinant attributes (Alpert, 1971). Within the recreation and tourism literature, this approach has been widely used to identify areas in which management is succeeding or could improve visitors' satisfaction with some product or service. Each attribute is assessed by asking individuals to rate the attribute based on its importance and its performance. The comparison of importance ratings with performance ratings then leads to the creation of a grid with four separate quadrants (Figure 4.1).

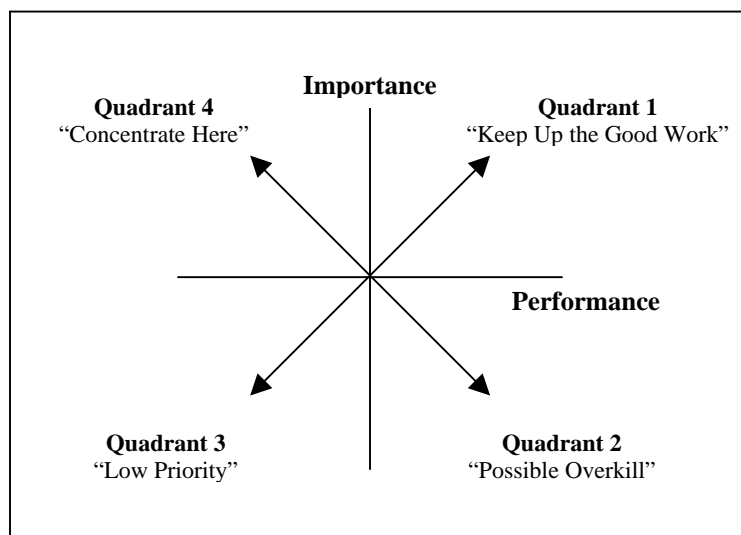


Figure 4.1. Importance Performance Grid (Oh, 2001)

The first quadrant, labeled "keep up the good work," is characterized by high ratings in importance and performance. This leads to the conclusion that management is providing for a need that is deemed important by visitors. The second quadrant, labeled "possible overkill," identifies that management is providing for a need that is somewhat low in

importance. While this leads to the conclusion that management is applying resources in areas where resources are not extremely important, overkill does not always point to wasted resources. In some cases, the allocation of resources has a relatively low cost, but provides a worthwhile level of satisfaction to visitors. The third quadrant, labeled “low priority,” indicates that the performance and the importance of the attribute are low. Although the performance rating in this quadrant is low, the perceived importance of the attribute is also low, suggesting that it is not as important for visitor satisfaction. The fourth quadrant, labeled “concentrate here,” indicates that an attribute is important and that the performance is low. An attribute falling in this category would be one in which management should direct attention in an effort to satisfy visitors (Oh, 2001).

In this study, IPA serves as a complimentary evaluation to the hedonic and utilitarian content evaluation measures. This is largely in part because there have been concerns regarding conceptual and methodological issues related to conducting IPA and reporting its results. The considerations that were made regarding IPA for this study are covered in the instrumentation section.

PURPOSE OF THE STUDY

The purpose of this study was to evaluate the content of the BLM’s current whitewater information sources. The content of each information source was evaluated on both hedonic and utilitarian components. In addition, the study identified six important attributes of information sources for boating the Lower Salmon River in an effort to understand how well the content of information sources was meeting the needs of boaters.

METHODS

STUDY AREA

This study took place on the Lower Salmon River in north central Idaho. The river provides a wilderness-like experience for boaters seeking a class III-IV whitewater multi-day float trip. Trips are typically characterized by a limited access 73-mile float from Hammer Creek Recreation Site to Heller Bar on the Snake River.

SAMPLING PROCEDURES AND DATA COLLECTION

Sampling took place from June 1, 2003, to September 3, 2003, at the Heller Bar boat ramp. A stratified random sample was utilized with Neyman allocation to strata (Schaeffer, Mendenhall, & Ott, 1996). Strata were defined by the seven days of the week where days with higher user numbers were more likely to be randomly selected. All individuals 18 years and older who ended their private Lower Salmon River float trip at Heller Bar on a randomly selected day were asked to participate in the study.

Questionnaires were distributed on-site and participants had the option of filling it out on-site or taking it home and returning it in a postage paid envelope. Unreturned questionnaires were followed up with a reminder post card and then a second questionnaire. A total of 190 questionnaires were distributed and 128 were returned for a 67% response rate.

NON-RESPONSE BIAS

Non-respondents were those individuals who took a questionnaire at Heller Bar, but did not return it, or the second replacement questionnaire. Non-response bias can occur when non-respondents differ from respondents in how they would respond to questionnaire

items. This leads to study results that are an inaccurate representation of the study population. The explanation of potential non-response bias was limited to a comparison of the zip codes of study participants, which revealed no difference. A past study on the Lower Salmon River has suggested that Lower Salmon River visitors who are less familiar with the area were less likely to respond to questionnaires indicating that boaters who are less familiar with the Lower Salmon River may be under-represented. However, under-representation of less familiar boaters may not be relevant to this study due to the fact the beginning boaters made up more than half of the study population.

INSTRUMENTATION

The evaluation of both hedonic and utilitarian information content was conducted through the use of 5 evaluation scales (Appeal, Interest, Need, Positivity, and Value) (Bruner & Hensel, 1996). The Appeal scale was a hedonic “three-item seven-point semantic differential scale measuring the degree to which one evaluates a stimulus as being desirable and appealing” (Bruner & Hensel, 1996, p.263). The Interest scale was a hedonic “five-item, seven-point semantic differential scale measuring the degree to which one evaluates a stimulus as being exciting and interesting” (Bruner & Hensel, 1996, p.265). The Need scale was a utilitarian “seven-item, seven-point semantic differential scale measuring the degree to which one evaluates a stimulus as being vital and necessary” (Bruner & Hensel, 1996, p.267). The Positivity scale was a hedonic “seven-item, seven-point semantic differential scale measuring the degree to which one evaluates a stimulus as being positive and agreeable” (Bruner & Hensel, 1996, p.269). The Value scale was a utilitarian “seven-item,

seven-point semantic differential scale measuring the degree to which one evaluates a stimulus as being relevant and meaningful to oneself” (Bruner & Hensel, 1996, p.271).

8 of the total 25 scale items were selected for use in this study due to space constraints in the questionnaire. These items were selected through the factor scores reported by Mano and Oliver (1993) and items that the BLM felt were most applicable for river users and least redundant. Table 4.1 lists the items selected from each scale and their reported factor scores.

Table 4.1. Content Evaluation Scale Items and Factor Scores Reported by Mano & Oliver (1993)

Scale	Item	Reported Factor Score
Need	Useful-Useless	0.57
Need	Not needed-Needed	0.91
Value	Irrelevant-Relevant	0.73
Value	Didn't Matter-Mattered	0.70
Positivity	Negative-Positive	0.86
Interest	Boring-Exciting	0.89
Interest	Unexciting-Exciting	0.89
Appeal	*Unwanted-Wanted	0.66
Appeal	*Unappealing-Appealing	0.62
* The unwanted-wanted item was substituted for unappealing-appealing in evaluating contact with a river ranger for the Appeal scale because it more adequately fit the context of being approached by a river ranger.		

All four of the BLM information sources (contact with a river ranger, Lower Salmon River Boater’s Guide, Lower Salmon River web-site, and signage) were evaluated with the eight items selected.

The IPA was conducted with six attributes measured on a seven-point scale ranging from not at all important – important, and of very low quality – of extremely high quality. The six attributes were generated by boaters at a kayaking clinic who were asked to write

down content of information sources that they would most like to have present in an information source related to boating on the Lower Salmon River. The attributes were selected by the frequency of the attribute in responses of boaters and by the managerial relevance indicated by the BLM. Oh suggested that “involving managers and consumer panels in the early process of IPA research is desirable, especially for developing a set of strategically important attributes” (2001, p.625). The attributes that were selected for the IPA were: (1) information about interacting with other river users, (2) information about the facilities that are available, (3) information about when the river is likely to be crowded, (4) information specifically for first time Lower Salmon River Boaters, (5) information about points of interest along the river, and (6) information about low impact river use techniques.

As previously mentioned, there are some inherent issues that have been raised regarding IPA which led to the use of IPA as a complimentary tool for the content evaluation in this study. One important consideration is that importance and performance may not be unidimensional concepts, but may be correlated. This correlation often leads to performance ratings that are highly similar to importance ratings. In the case of either a negative or positive correlation, there is a potential to interpret ratings as being extremely high, or extremely low, leading to inappropriate suggestions for management. In addition to the correlation between importance and performance ratings, determining the axes for creating the four quadrants can also be an issue. Axes are sometimes arbitrary, sometimes based on an scale mean, and sometimes on a scale median. The selection of axes has the potential to lead to significantly different suggestions for management attention. While scale means are able to more specifically fit the importance and performance ratings for a particular case, it decreases the overall validity of the scale due to differences in ratings between studies (Oh,

2001). When identifying where to locate the axes for quadrants, this study reports results using an importance performance grid based on scale medians as well as scale means.

RESULTS

The results of the content evaluation based on hedonic and utilitarian components of information sources revealed no significant differences between information sources. Overall there was a high rating for both hedonic and utilitarian components of content. Additionally there were no significant differences in information evaluation among the three different experience levels. Figures 4.2- 4.4 show the means of the content evaluations for hedonic and utilitarian components of each information sources by experience level. The results indicate that the BLM is doing a good job in providing both hedonic and utilitarian information content in information sources that are available for boaters.

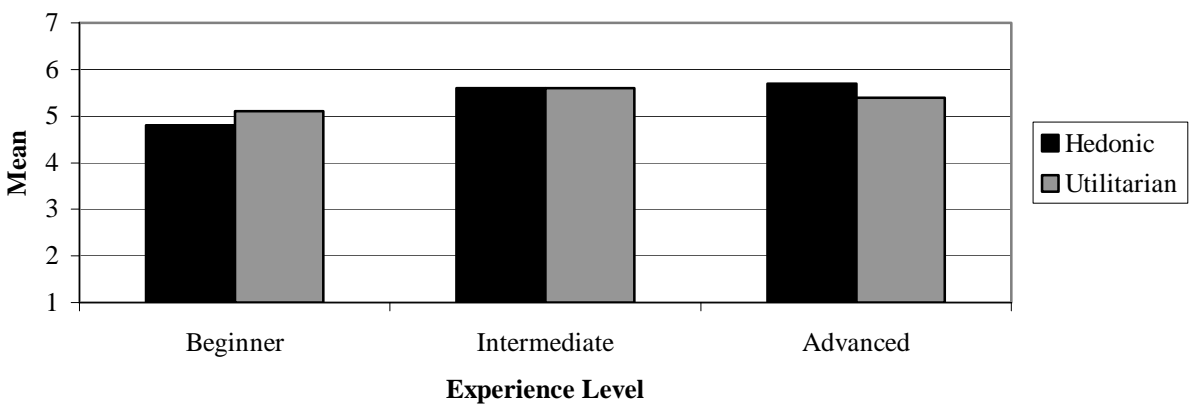


Figure 4.2. Content Evaluation for Contact with a River Ranger

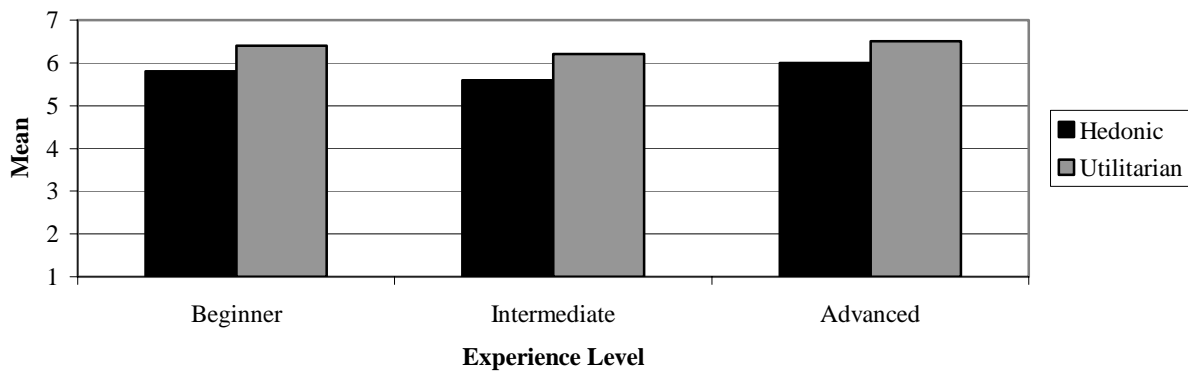


Figure 4.3. Content Evaluation for the Lower Salmon River Boater's Guide

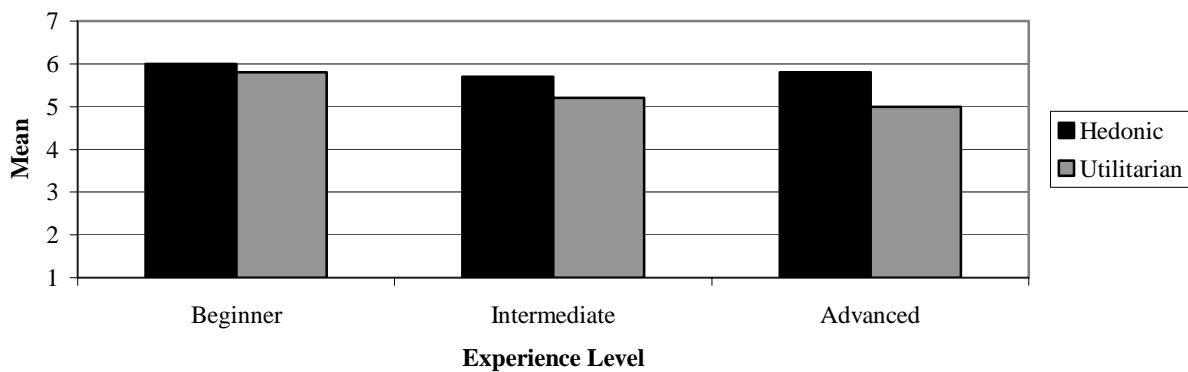


Figure 4.4 Content Evaluation for the Lower Salmon River Website

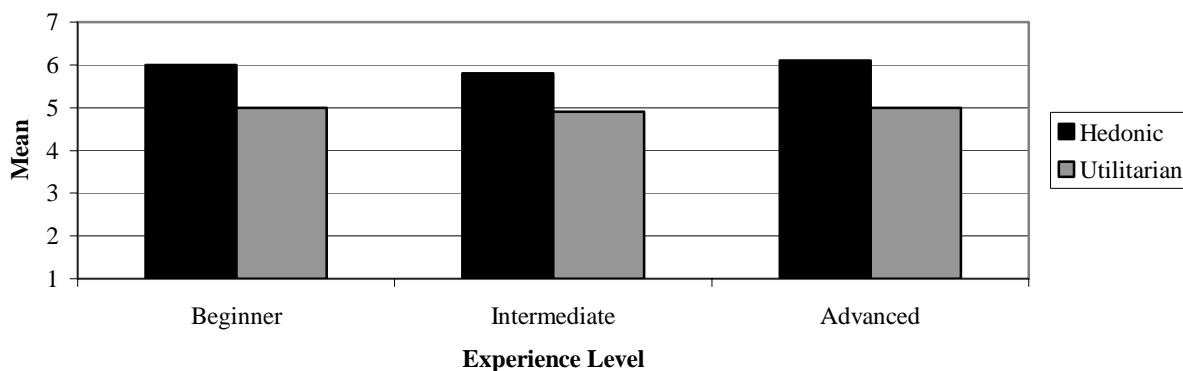


Figure 4.5. Content Evaluation for signage

A paired t-test revealed that there were significant differences between the overall means of hedonic and utilitarian content for the Lower Salmon River Boater's Guide, and signage. Results of the paired samples t-test are listed in Table 4.2.

Table 4.2. Paired Samples T-test for Hedonic and Utilitarian Evaluations of Information Sources

Information Source	Mean	Std. Deviation	t	df	significance
Boater's Guide	-0.619	0.857	-6.537	81	<0.001
Web-site	0.414	1.263	1.669	25	0.107
Signage	-0.976	0.890	-7.108	41	<0.001
Contact with a River Ranger	-0.029	1.323	-0.128	34	0.899

In the case of the Boater's Guide, content evaluation ratings were higher for utilitarian components suggesting that the guide may potentially be improved with the addition of more hedonic information content. Conversely, the signage was evaluated as being more hedonic. This suggests that the signs may be improved with more utilitarian information. Although these differences may suggest potential for changes to increase the content evaluation ratings, some sources may be inherently more hedonic or more utilitarian. If this is the case, changes may not necessarily improve the ratings in either category. Overall, there seems to be little,

if any, managerial significance between evaluations based on experience level or the hedonic and utilitarian content of information sources. In addition, the information sources tend to contain relatively similar information, which could be a confounding problem with finding differences in the evaluation between information sources.

The IPA revealed that for each of the six attributes, all were deemed important and high in quality. This may be the result of the correlation effect mentioned previously. There were no significant differences between the experience levels in their importance-performance ratings for each of the individual attributes, however there was a significant difference between the overall performance ratings and the overall importance ratings (Table 4.3).

Table 4.3. Comparison of the Mean Ratings for Importance and Quality of Information Attributes

	Mean	Std. Deviation	t	df	Significance
Importance and Quality	1.511	1.376	11.037	100	<0.001

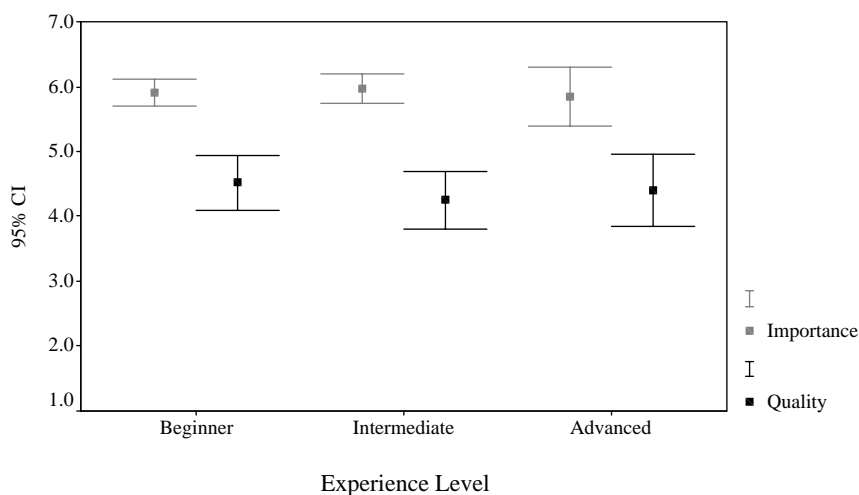


Figure 4.6 Error Bars for Attribute Means of Importance and Quality by Experience Level

The difference between importance and quality indicates that the quality of information attributes could be improved to meet the level of importance for the selected information attributes.

There are some slight differences in the distribution of importance-performance ratings between the different experience levels although, as previously mentioned, none are significantly different. The importance performance grids for each attribute by experience level are shown in figures 4.7-4.13. The reason for showing different important performance ratings for experience levels is to better illustrate the distribution of responses. The size of the marker represents the number of individuals with the same importance-performance ratings.

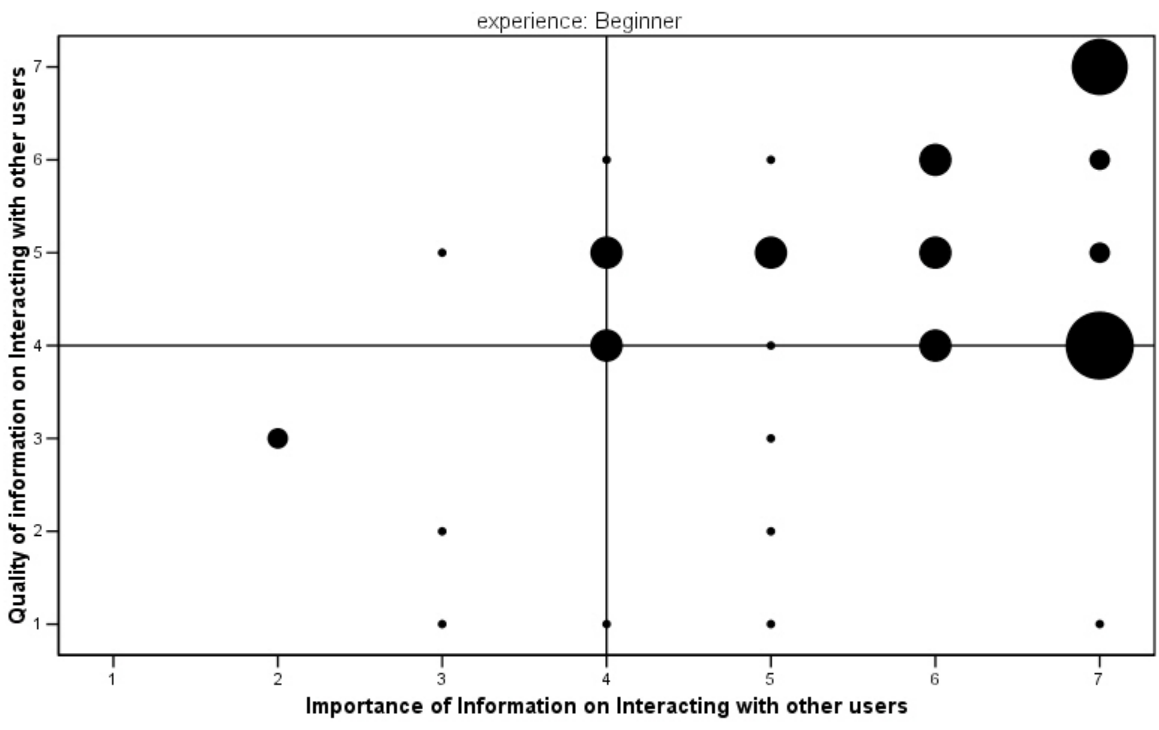


Figure 4.7. Beginner Experience Level Importance –Performance Grid for Information on Interacting with Other Users

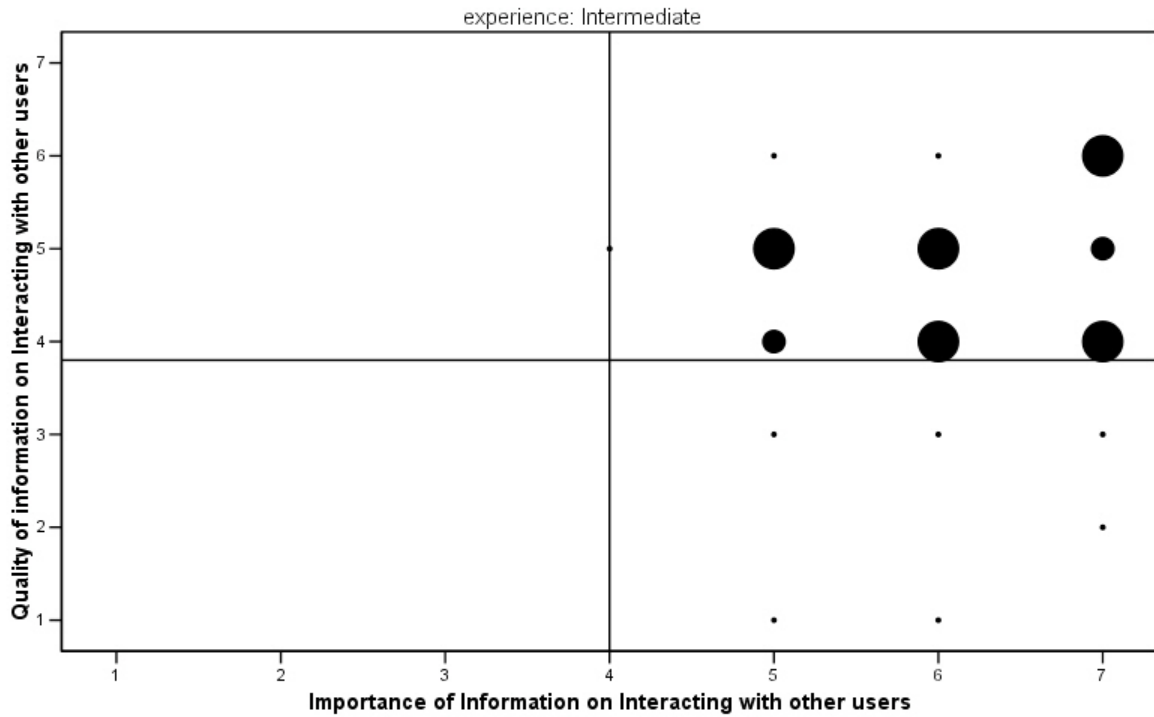


Figure 4.8. Intermediate Experience Level Importance –Performance Grid for Information on Interacting with Other Users

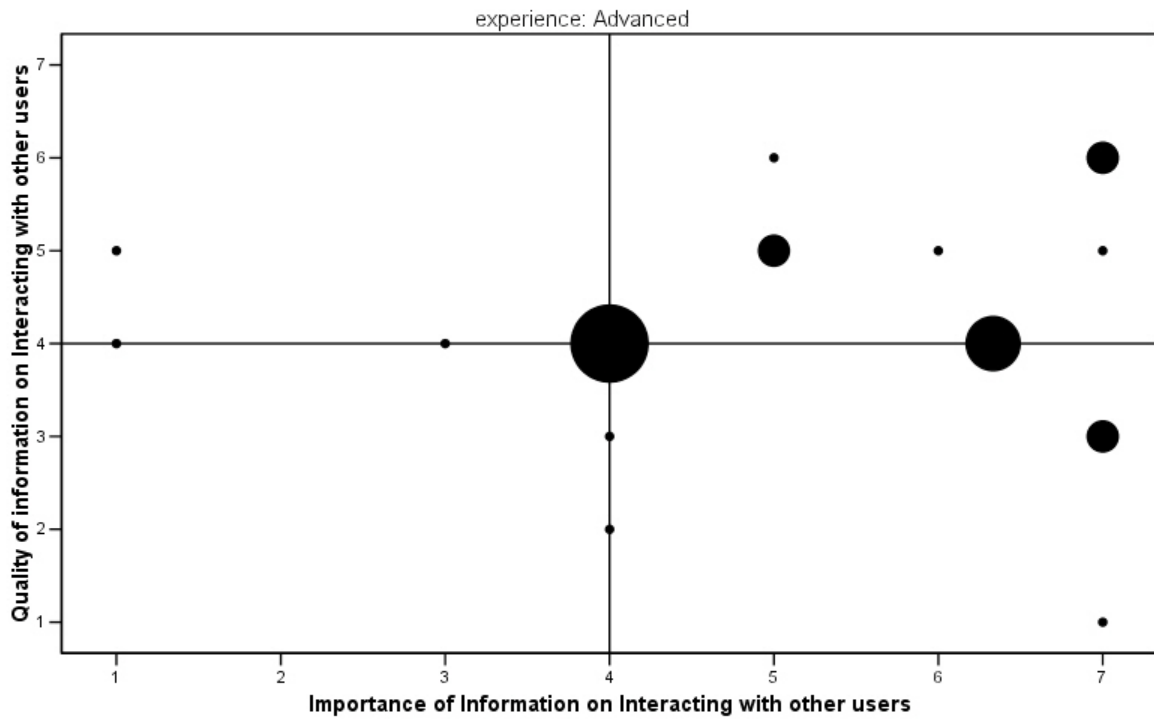


Figure 4.9. Advanced Experience Level Importance –Performance Grid for Information on Interacting with Other Users

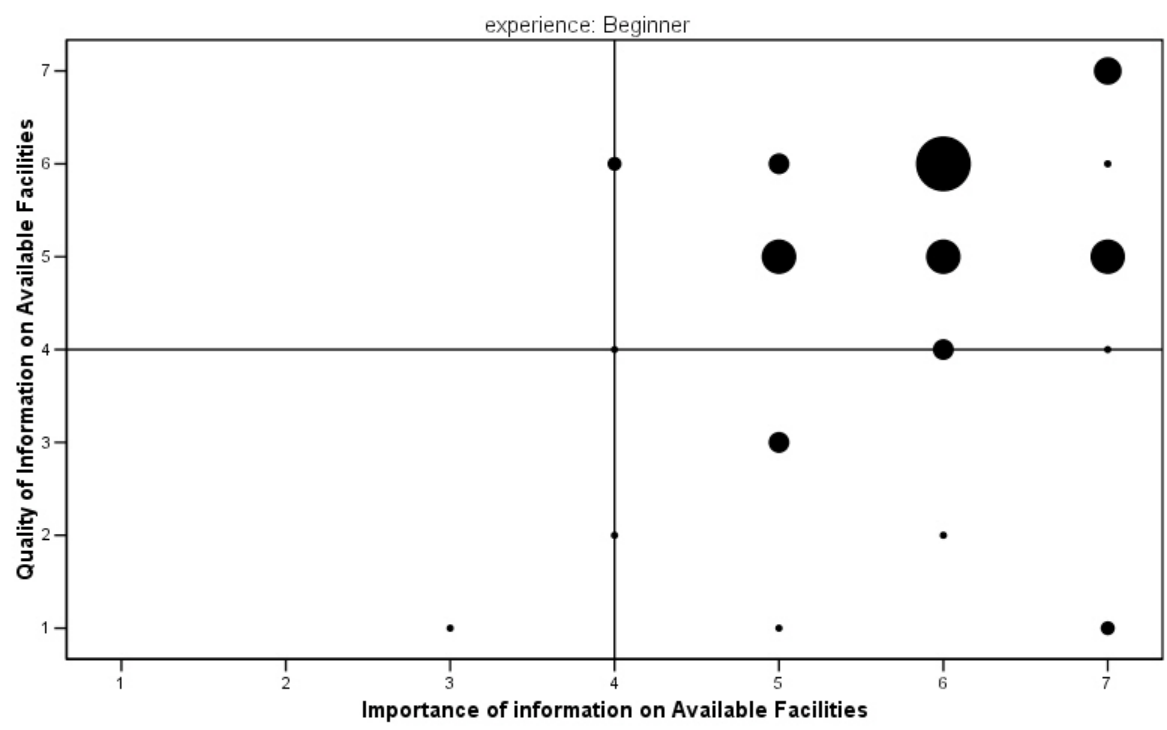


Figure 4.10. Beginner Experience Level Importance –Performance Grid for Information on Available Facilities

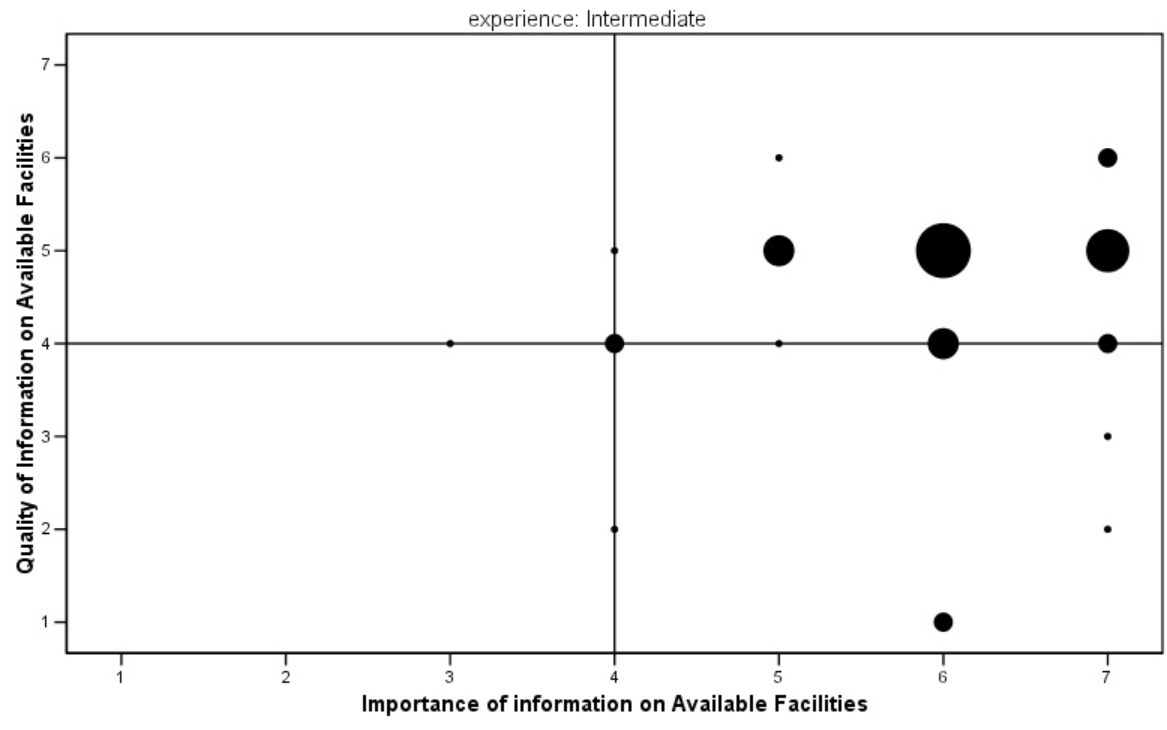


Figure 4.11. Intermediate Experience Level Importance –Performance Grid for Information on Available Facilities

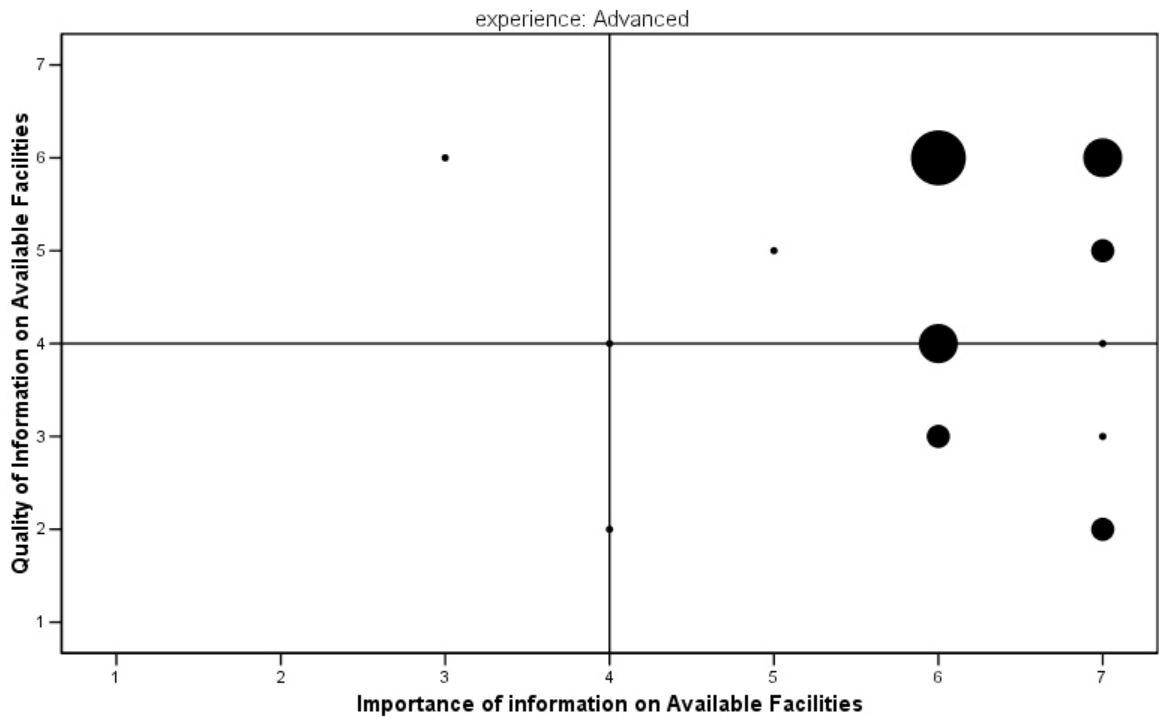


Figure 4.12. Advanced Experience Level Importance –Performance Grid for Information on Available Facilities

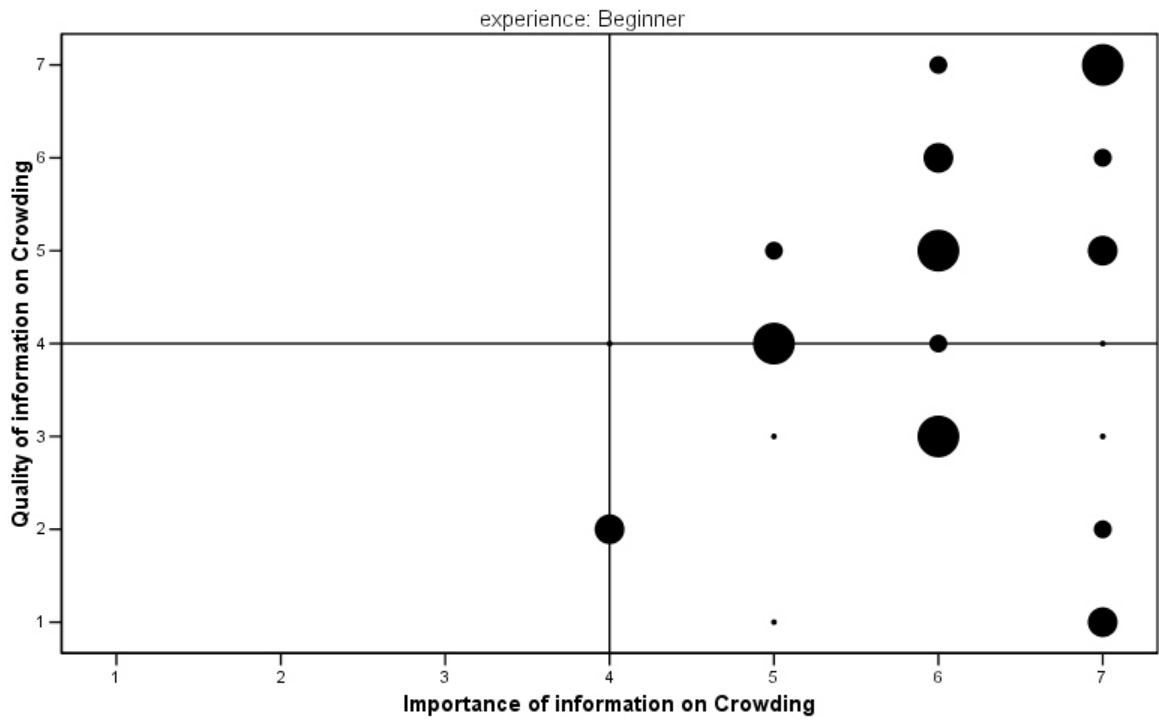


Figure 4.13. Beginner Experience Level Importance –Performance Grid for Information on Crowding

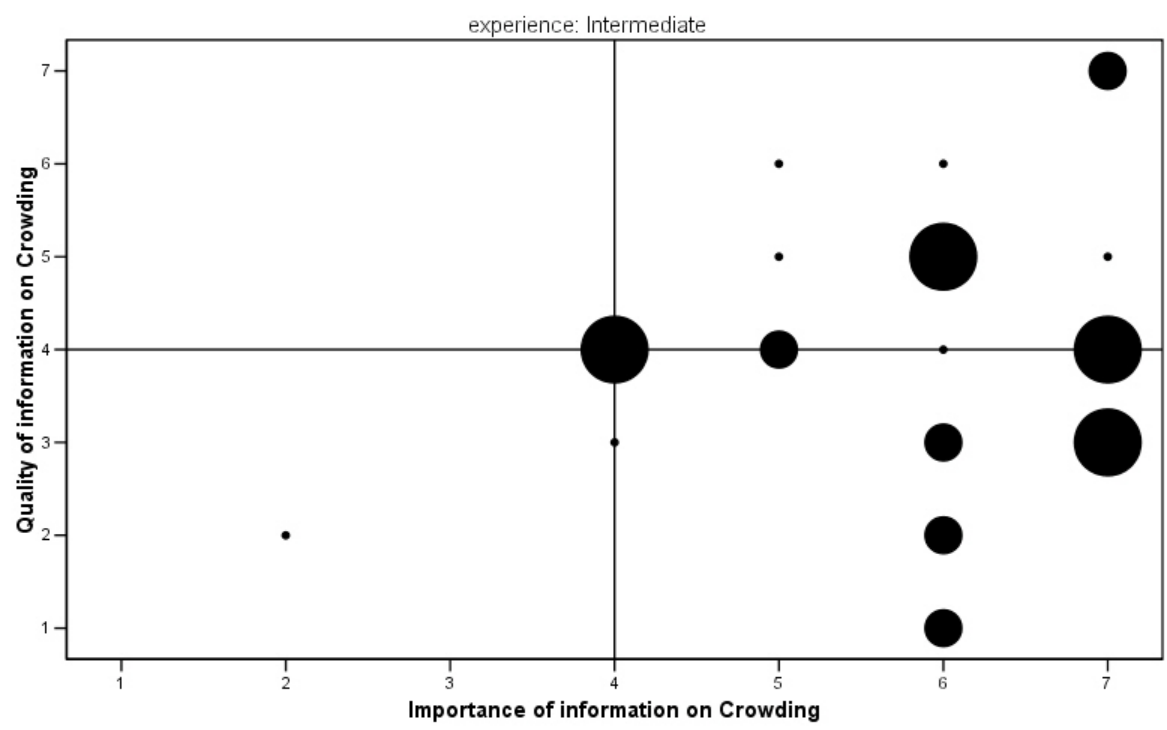


Figure 4.14. Intermediate Experience Level Importance –Performance Grid for Information on Crowding

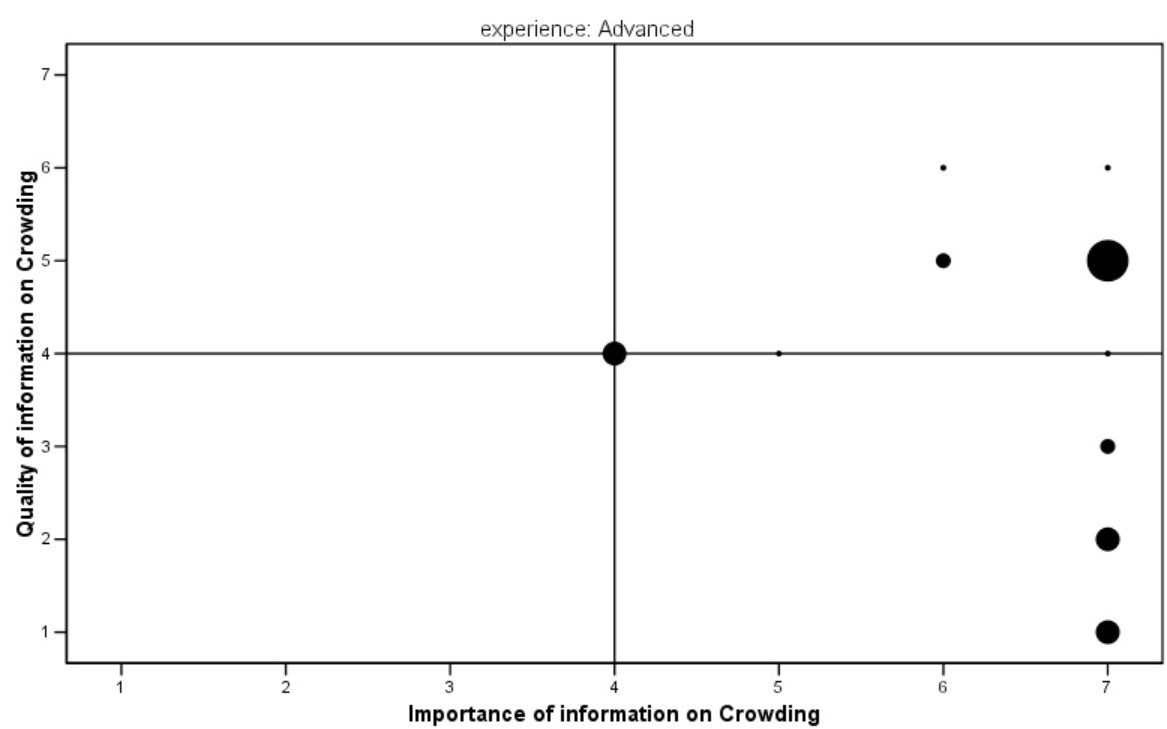


Figure 4.15. Advanced Experience Level Importance –Performance Grid for Information on Crowding

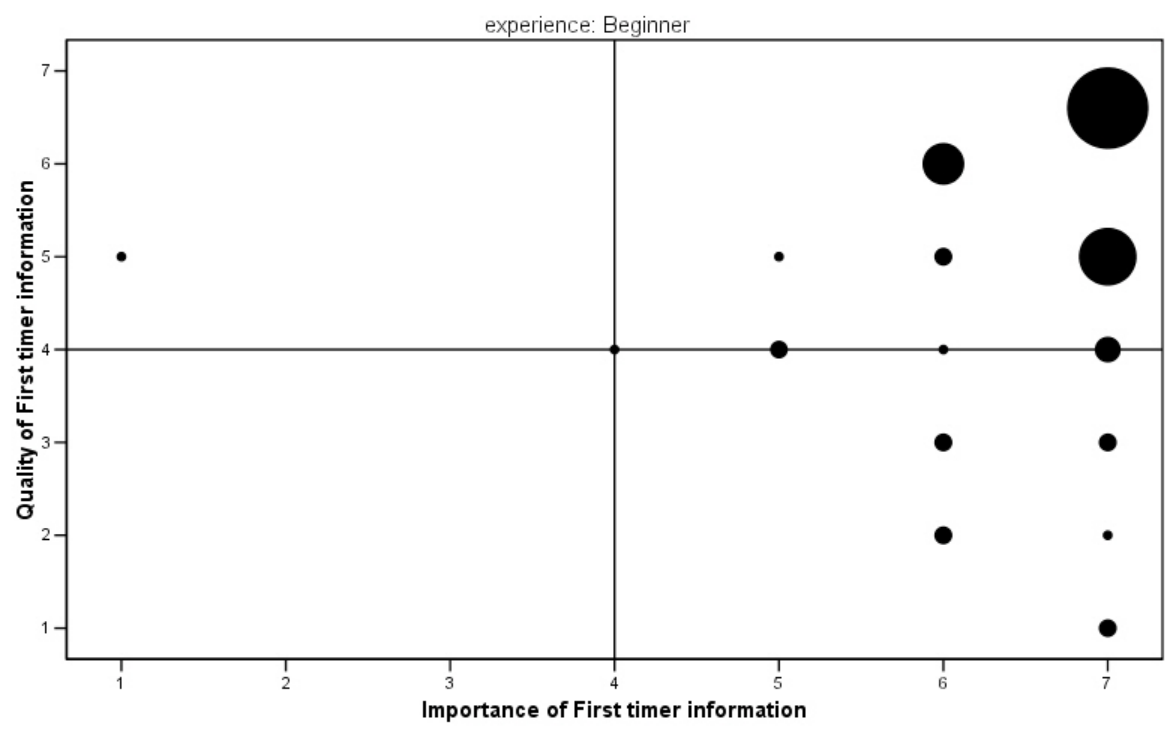


Figure 4.16. Beginner Experience Level Importance –Performance Grid for First Timer Information

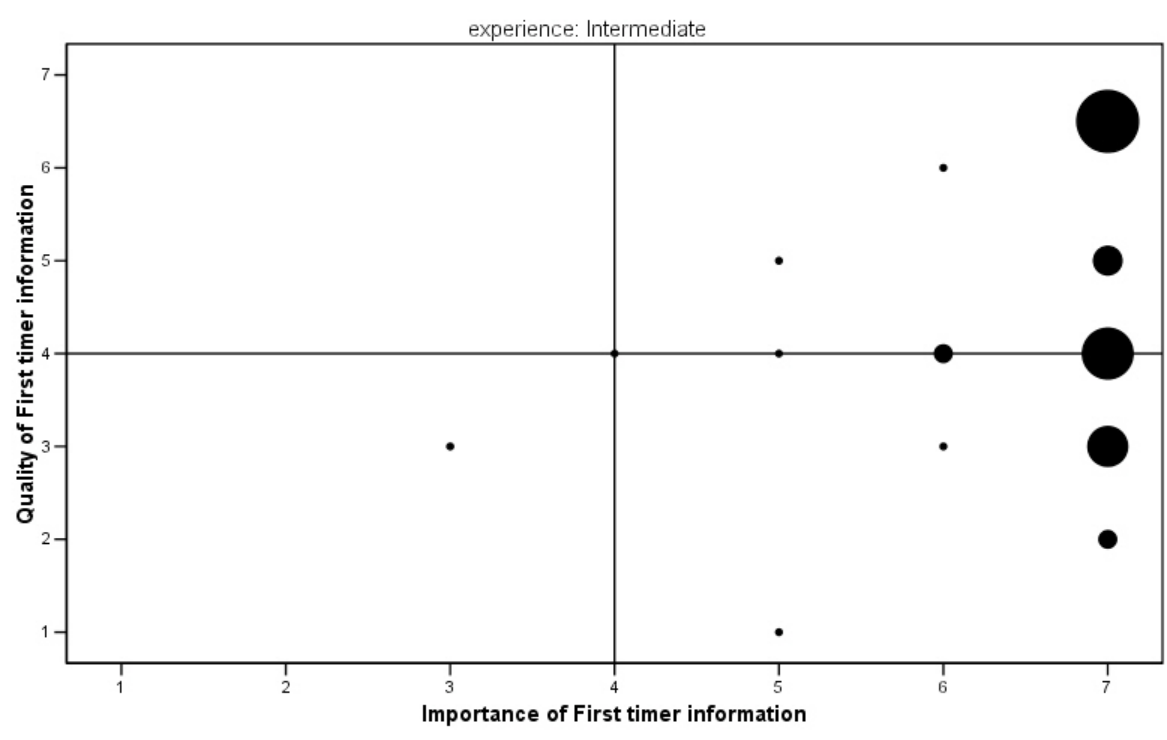


Figure 4.17. Intermediate Experience Level Importance –Performance Grid for First Timer Information

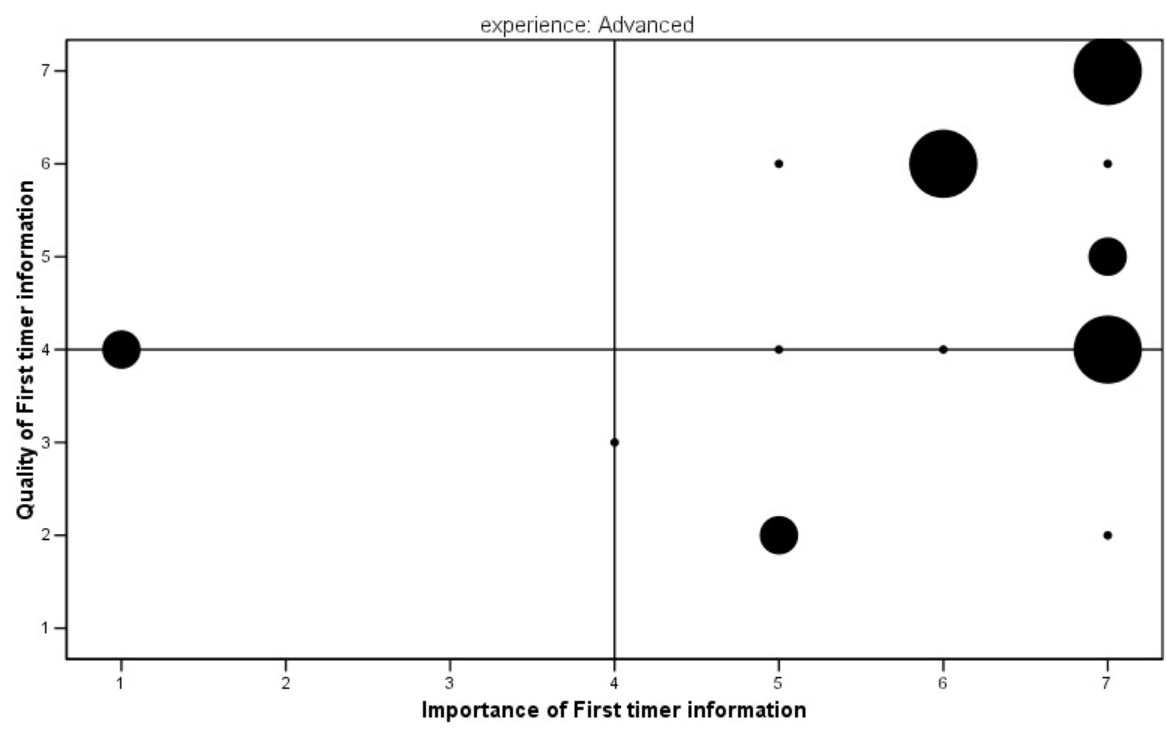


Figure 4.18. Advanced Experience Level Importance –Performance Grid for First Timer Information

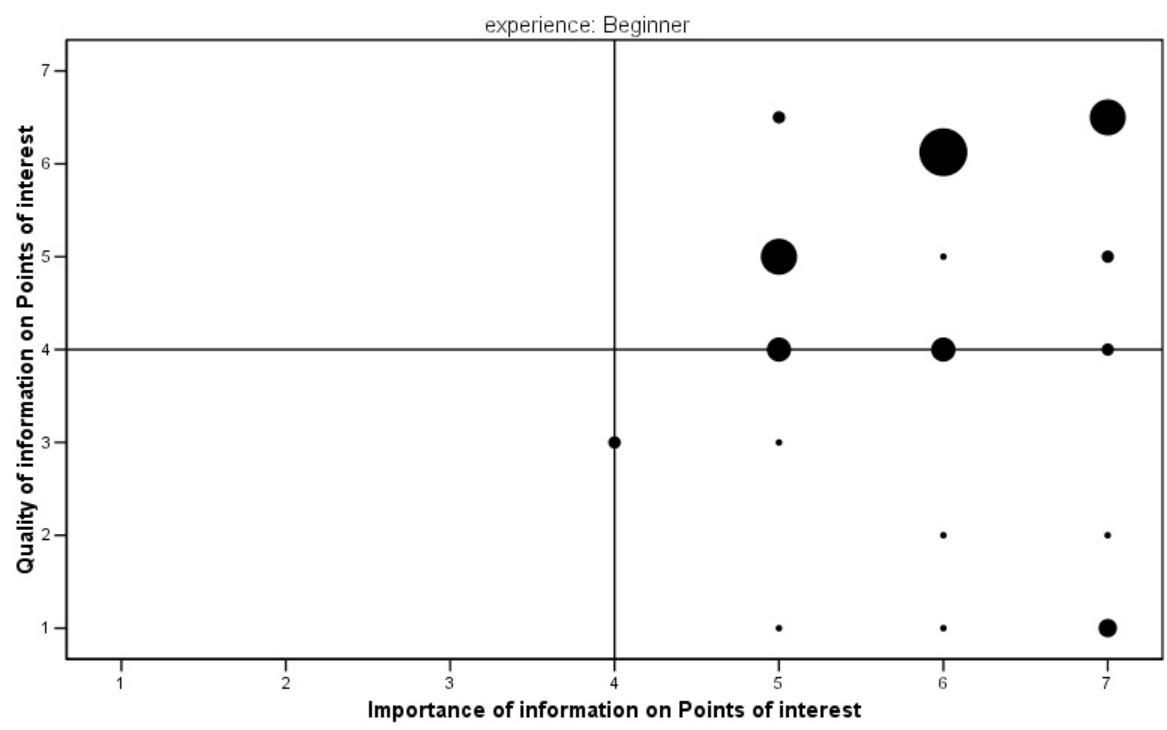


Figure 4.19. Beginner Experience Level Importance –Performance Grid for Information on Points of Interest Along the River

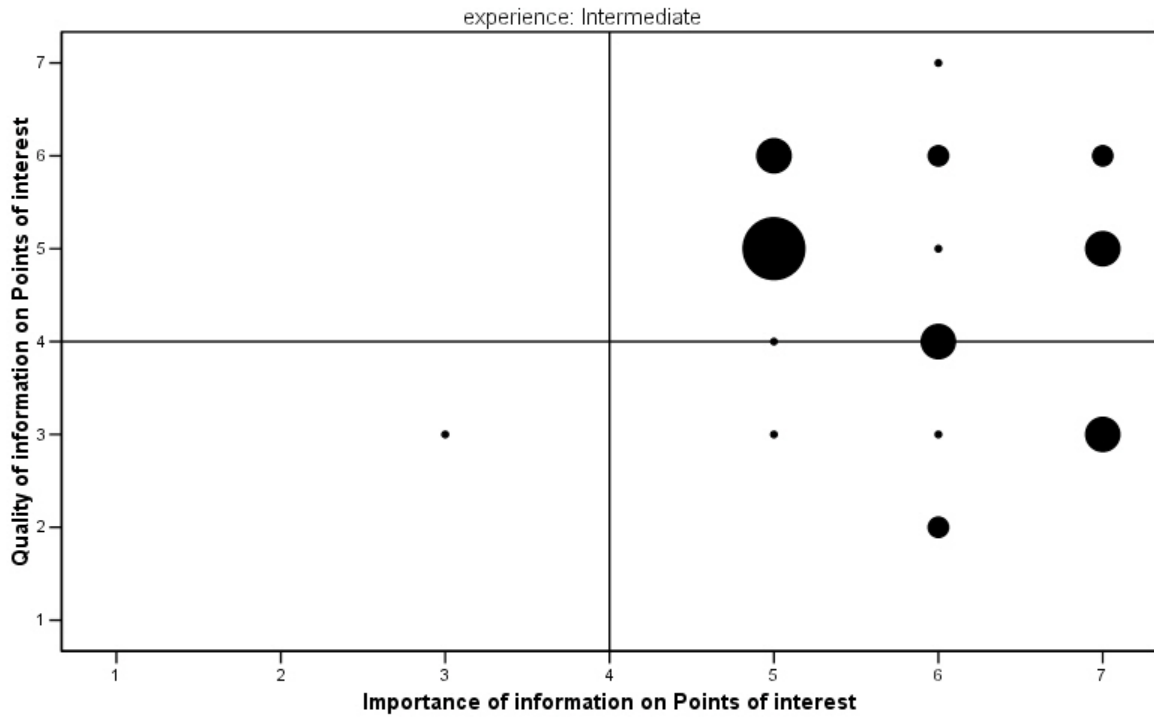


Figure 4.20. Intermediate Experience Level Importance –Performance Grid for Information on Points of Interest Along the River

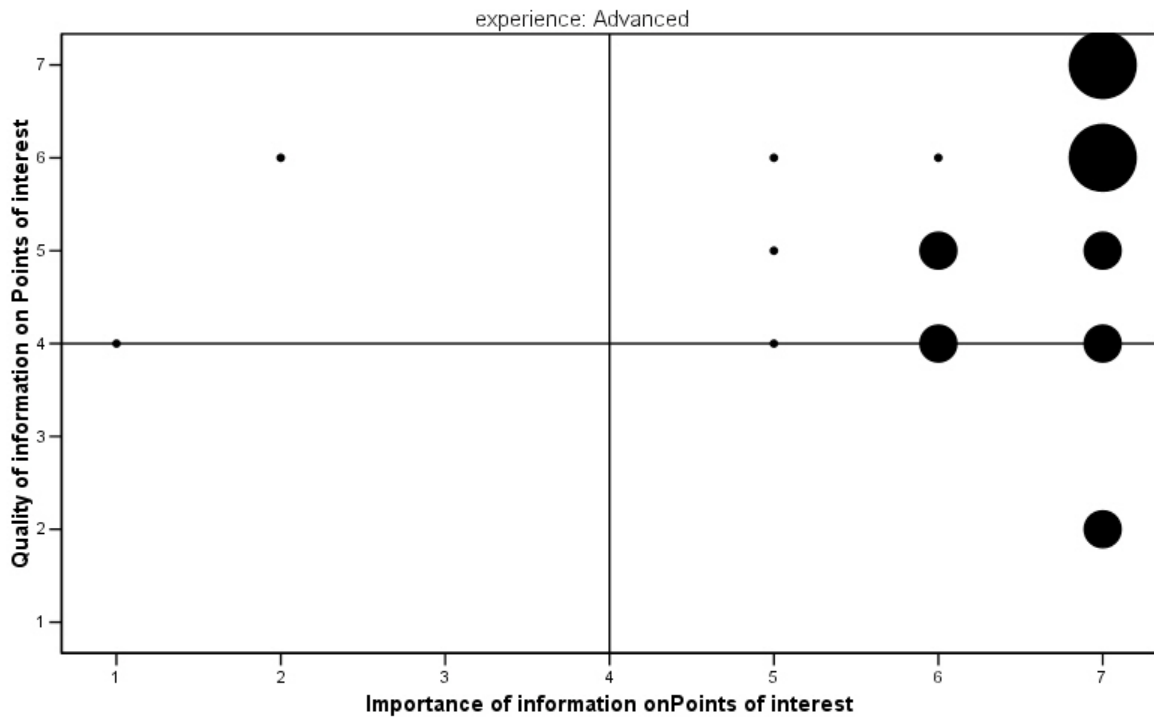


Figure 4.21. Advanced Experience Level Importance –Performance Grid for Information on Points of Interest Along the River

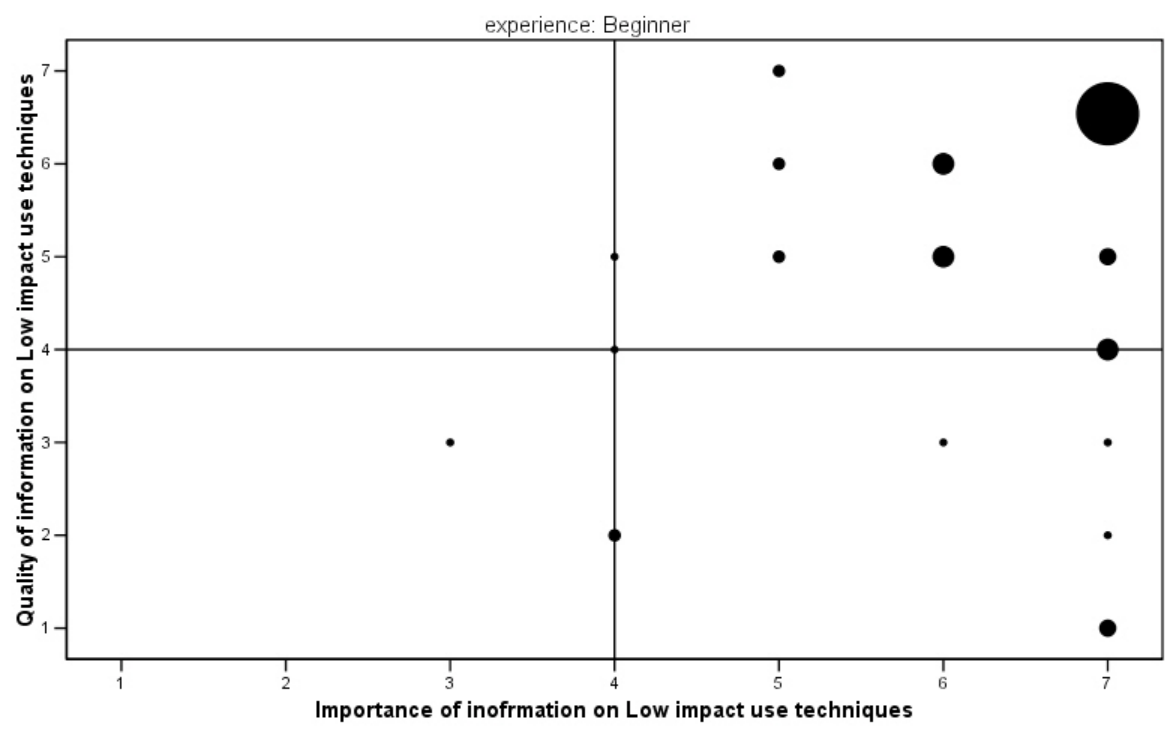


Figure 4.22. Beginner Experience Level Importance –Performance Grid for Information on Low Impact Use Techniques

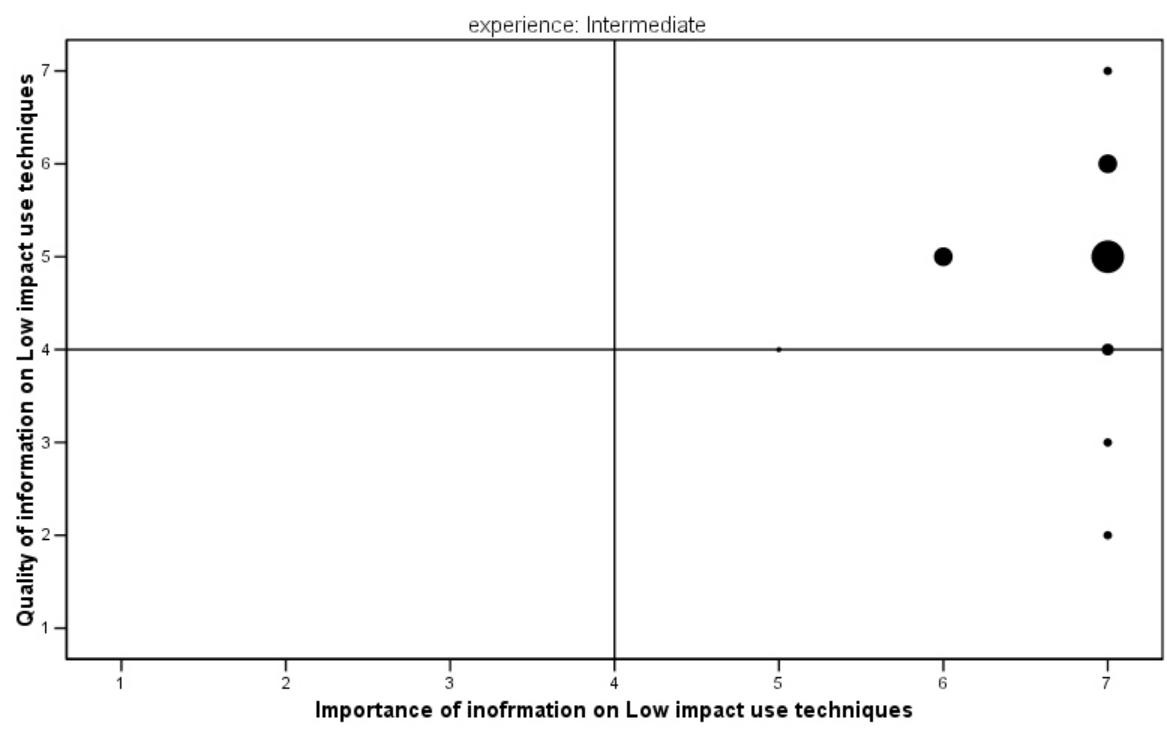


Figure 4.23. Intermediate Experience Level Importance –Performance Grid for Information on Low Impact Use Techniques

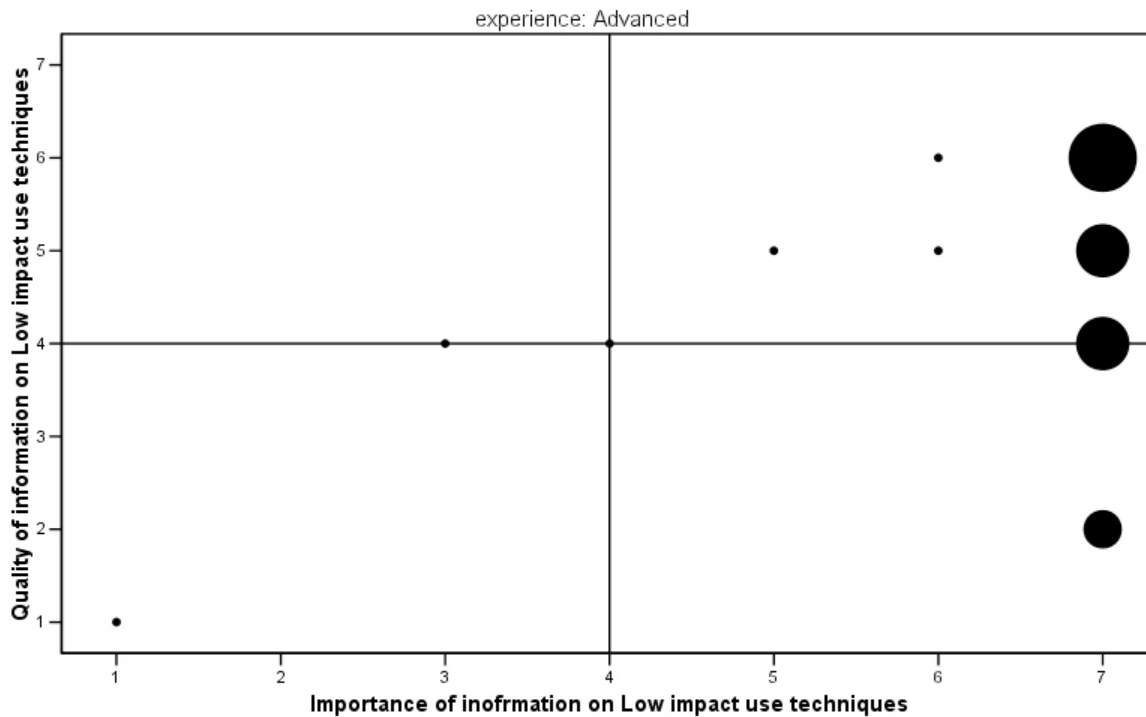


Figure 4.24. Advanced Experience Level Importance –Performance Grid for Information on Low Impact Use Techniques

Because the IPA ratings between experience groups were not significantly different, the overall means for the importance and performance ratings are used in the following IPA grids. Figure 4.25 shows the IPA grid with the axes positioned at the scale median and Figure 4.26 shows the IPA grid with the axes positioned at the scale mean.

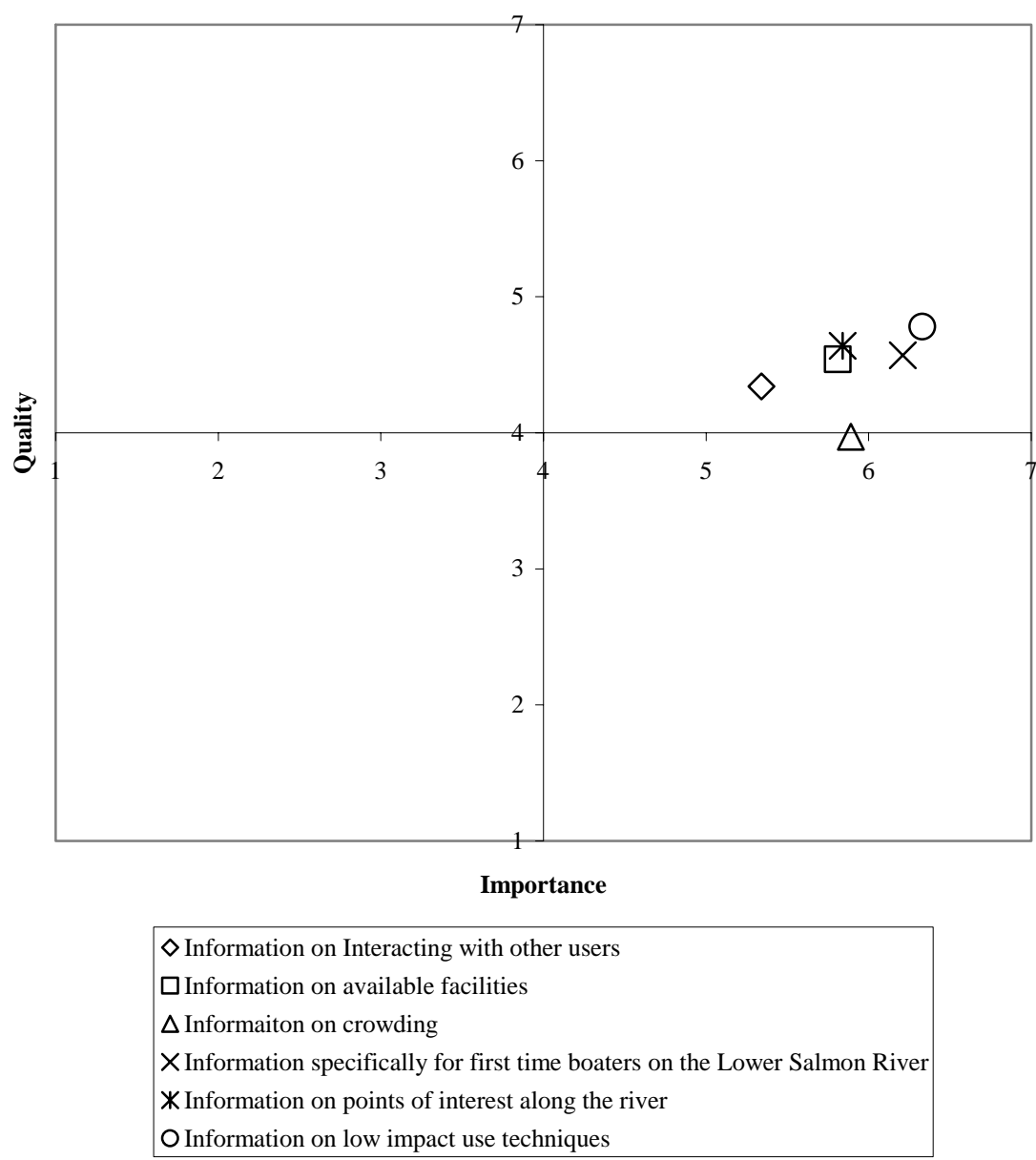


Figure 4.25. Importance Performance Grid for Attribute Means with Axis Shown on Scale Median

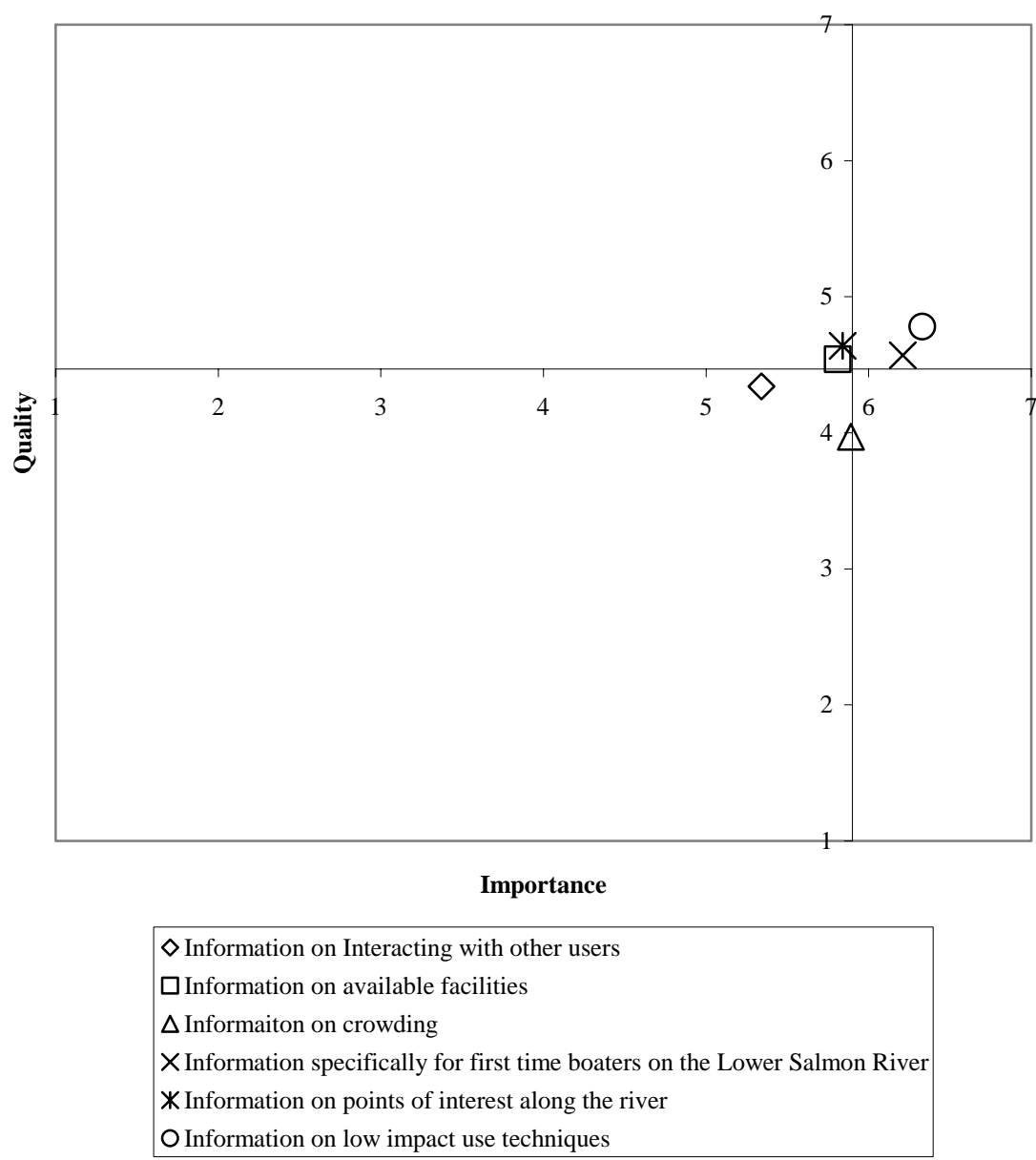


Figure 4.26. Importance Performance Grid for Attribute Means with Axis Shown on Scale Mean

All of the attributes used in this study ranked relatively high in importance and performance. The shifting of the axes from the scale mean to the actual mean does lead to somewhat different interpretations of which quadrant attributes fall into. Information on Low impact techniques and Information specifically for first time boaters was considered to

be high in importance and performance for both grids, but the other attributes shifted when moving the axis from scale median to scale mean. This leads to some subjectivity in interpreting the results.

DISCUSSION

The content evaluation indicated that overall, the BLM is doing a good job of providing informational content that is both hedonic and utilitarian in nature. One complication was the lack of differing content in each of the information sources. Open ended responses to a question asking boaters what type of information would have most added to their trip on the Lower Salmon River revealed a variety of topics ranging from more information about the geology and wildlife to the location of waste receptacles at the end of the trip. However, there was no solid pattern of responses to aid in the interpretation of the content evaluation. There seem to be some differences in the hedonic and utilitarian evaluations of information sources. This aspect of information evaluation could potentially be valuable in evaluating information sources with unique content.

Due to the fact that there are differences in the importance and performance ratings, Tables 4.25 and 4.26 together may be a good visual comparison of which attributes deserve managerial attention. There is however no concrete interpretation of the results. The attributes are all arranged relatively closely to one another and fit into different quadrants depending on the placement of the axes. The most appropriate approach to interpreting these results may be to compare attributes that indicate a need for managerial attention to current issues that the manager perceives with the resource. In this study, the IPA does not provide a comprehensive view of boaters' evaluations of information content, but does shed some light

on important attributes that due to the generation of attributes, are of concern to both boaters and management of the Lower Salmon River.

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APPENDIX A

Human Assurances Committee Protocol Approval