Influence of prior knowledge on museum engagement

INTRODUCTION:

Minor attention has been given to level of engagement during consumption and how cultural consumers engage with a cultural place (Chhabra, 2008; Coulter, Price, & Feick, 2003; Goulding, 2000; Welsh, 2005). As museums recognise the greater complexity of their relationships with consumers, they have developed new mechanisms for enhancing the degree of engagement. The concept of engagement can be identified throughout a number of literatures spanning the disciplines of consumer psychology, education, leisure, tourism and the arts, with multiple, though related, definitions. Meaning is construed as variously the involvement (Higgins, 2006), commitment (Mollen & Wilson, 2010) or emotional connection (Rappaport, 2007) a consumer has with a product, process or brand; meaningful interaction resulting in learning (Kearsley & Schneiderman, 1998); the interchange and exchange between art exhibits and consumers (Edmonds, Muller, & Connell, 2006) and the ways in which consumers use museums to create images of themselves (Welsh, 2005).

Writing on creative tourism, Pattakos (2010) highlights the salient role of meaningful engagement in tourists’ satisfaction with their experiences. Similarly museums strive to retain visitor attention and increase satisfaction levels by engaging visitors with innovative presentation and interpretation techniques. Indeed engagement has come to be regarded as the key to both the education and entertainment roles of the museum (Welsh, 2005). A substantial body of literature has resulted, examining supply side influences on museum visitors’ consumption patterns and stressing the importance of the museum environment, in particular the physical environment on visitors’ willingness to engage and interact with it (inter alia Falk & Dierking, 1992; Piscitelli & Weier, 2002). A number of authors have proposed the case for different types and levels of visitor engagement, associated with particular, personal preferences, and subject to visitor characteristics. The earliest tourist typologies distinguish between psychocentric and allocentric tourists, the former preferring the familiar, the latter being at least partially motivated by the challenge of engaging with an unfamiliar host environment (Plog, 1973). A more recent distinction by Moscardo (1996) discriminates between mindful and mindless visitors at heritage sites, arguing that the mindful tourist experiences greater learning and understanding, as well as higher levels of satisfaction than mindless visitors, who exercise weak levels of real engagement. Pattakos (2010), meanwhile, contends that tourist levels of engagement can be considered to lie on a continuum with those at the highest level being pro-actively engaged in the co-creation of their tourism experience. Within the museum sector, level of engagement has also been classified, with particular reference to art works. Cornock and Edmonds (1973) identify four core categories of interaction between visitors and artworks, namely static, dynamic-passive, dynamic-interactive and dynamic-interactive (varying). At the highest level of interaction, Dynamic-interactive (varying) relationships between the visitor and the outwork occur when the experience is influenced by both players and changes over time as a direct result of the history of interactions. Thus general agreement appears to exist within the literature that level of visitor engagement varies and that higher levels of engagement bring superior rewards, but that not all consumers aspire to this. At the same time, greater levels of interactivity are not necessarily correlated with enhanced outcomes for all visitor segments. However, there is a
distinct lack of empirical work, and therefore clarity, surrounding the prior knowledge to actual engagement, which would allow researchers and managers to predict the level and nature of engagement associated with different visitor types. The paper seeks to shed some light on this.

Prior knowledge and experience have long been argued to influence the nature of consumption (Bettman & Park, 1980; Lee, Kerr, Kardes, & Kim, 1999). Notwithstanding the complex nature of the tourism product, past tourism experiences have repeatedly been shown to influence future tourist behavior and decision making (e.g. Kozak, 2001; Mazursky, 1989). Baloglu (2001) and Prentice (2003, 2004) explored five types of familiarity from the tourist’s perspective: *Informational* - the degree of sources of information used; *Experiential* - the extent of past experience; *Self-rated/Self-described* - how familiar respondents consider themselves to be with a place or how they express a place; *Educational* - the extent of personal educational association with a place (i.e. formal and/or mediated learning); *Proximate/Nationality* - Shared culture and popular media or how different nationalities experience the same destination/attraction. More recent research on tourist information search among resort tourists in Florida refined prior knowledge to a two dimensional construct, accumulated through familiarity/expertise and past experience (Kerstetter & Cho 2004). Alba and Hutchinson (1987) expound the distinction between the latter. Familiarity is measured according to accumulated awareness of a product or service, but need not come from actual experience. Kerstetter and Cho (2004) note that, in tourism research, familiarity is often operationalized by number of visits to a destination or attraction. Expertise, meanwhile, is considered to measure how well consumers can solve problems, or perform tasks related to a product or service (Alba & Hutchinson, 1987). Previous research has consistently treated prior knowledge as a reflective construct, despite its depiction as an ‘accumulated’ construct (Kerstetter & Cho 2004, p. 963). For the purpose of this research, the authors argue that it is theoretically and methodologically more defensible to treat prior knowledge as a formative construct. Thus, drawing on the above discussion, prior knowledge is measured as an aggregate of familiarity with the attraction (awareness of the product through acquired information), expertise (knowledge and skill) and past experience (level of previous visitation).

In forging a link between prior knowledge and tourist behavior with specific reference to level and type of engagement, recreation specialization theory provides a useful starting point, hypothesizing that greater levels of experience with a recreation activity are linked to increasing levels of specialization within that activity (Bryan, 1977). Lehto, O’Leary and Morrison (2004) found this to apply for the case of vacation behavior; prior experience being a strong predictor of choice of vacation activity. Additional evidence for a link is provided within the literature on arts consumption. Writing on the artistic experience of classical music concerts, Caru and Cova (2005) propose and empirically confirm the existence of an initial *nesting* stage, whereby individuals appropriate a part of the artistic experience that is familiar to them due to prior knowledge and experience. This comforting, familiar aspect becomes the starting point for further exploration of the artistic experience.

Visitors with high levels of museum experience and knowledge about or experience relevant to the content of an exhibition have been shown by Fienberg and Leinhardt (2002) to engage more deeply with the exhibition than those with lower, where engagement is measured on the basis of level of discussion with others in a small group. Other types of engagement were not investigated by the above study, however Black (2009) argues that regular visitors to museums are more likely to seek deeper levels of engagement during their visit, manifest
through higher levels of active involvement and participation in educational activities. Thus, museums act as a platform for consumers to directly interact with static and visual activities through their prior knowledge (Hein & Alexander, 1998). In some instances, prior knowledge (familiarity and expertise) may come not from previous visitation to the museum itself, but from awareness and knowledge of the exhibit. For example, Goulding (2000) cites the case of living museums where visitors’ level of interaction with the fabric of the museum is influenced by their experience (or lack of experience) of the lifestyle and time depicted in the museum.

Based on the above, it is reasonable to argue that museum visitors with high levels of prior knowledge, comprising familiarity, expertise and prior experience of the museum, will be more likely to involve themselves in deeper levels of engagement with a smaller number of exhibits. Therefore the following hypothesis is proposed:

\[ H = \text{There is a positive relationship between degree of prior knowledge and level of engagement} \]

**FINDINGS AND DISCUSSION**

Data was collected by means of a questionnaire survey at Kelvingrove museum and Art Gallery, Scotland’s most visited tourist attraction and the sixth most visited museum in the UK (Kelvingrove, 2009). Criteria for selecting the location was that entry should be free of charge, and that it should attract a diversity of visitor types and contain a wide selection of types of exhibits, offering the possibility for different types of engagement and interaction. Non-probability sampling was employed due to the lack of a sampling frame. A sample of 535 visitors was obtained over a period of 3 months between December 2009 and February 2010. Partial least squares (PLS) was chosen as the most suitable method of analysis for this study. PLS is suitable for predictive applications and theory building (Chin, 2010). It uses bootstrapping as a test of statistical significance for virtually any estimated parameter, regardless of the characteristics of the underlying data distributions from which the parameter is being estimated. 500 sub-samples were randomly generated. Thus, structural models can be tested which contain both formative and reflective latent variables. In addition, PLS can deal with small sample sizes and different levels of data (Camarero, Garrido, & Vicente, 2010; Henseler, Ringle, & Sinkoves, 2009). SmartPLS (Ringle, Wende, & Will, 2005) was used to undertake the analysis. As regards the measurement techniques, we measured both construct formatively. For the purpose of the research, engagement is measured as a formative construct comprised of the full range of indicators representing engagement and interaction with museum exhibits. Where a latent construct is specified as formative, the researcher must be concerned with including in the measurement scale an exhaustive list of indicators which does not allow for any part of the construct to be omitted (Diamantopoulos, Riefler, & Roth, 2008). The indicators were thus drawn from a review of the relevant literature on engagement and interaction with museum exhibits (inter alia Edmonds, et al., 2006; Welsh, 2005) and further developed by means of 25 in-depth interviews, with museum visitors undertaken over a six month period in 2009/10, as well as a participant observation exercise at the museum where the fieldwork was undertaken. Twelve items were initially included in the scale but, following the pilot test, one was dropped as it appeared to be redundant. The engagement construct is an aggregate of these eleven items. Prior knowledge
was also measured as a formative construct, contrary to previous practice. The construct measures specific knowledge of Kelvingrove museum, in which the research was undertaken and its exhibits, as opposed to general cultural tourism experience. The researchers believe a strong theoretical basis underpins the operationalisation of this variable as a composite of prior experience, familiarity and expertise.

The measurement model was estimated to assess the constructs and the properties of the scales are reported in Table 1. Reliability of the formative scales is assessed by the variance inflation factors (VIF). Thus, all measurement scales appear to meet reliability conditions.

### Table 1: Measurement Model

<table>
<thead>
<tr>
<th>Path</th>
<th>Scales</th>
<th>Weights/Loadings</th>
<th>Reliability *</th>
<th>Mean (SD)</th>
<th>Std. error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Familiarity → Prior Knowledge</td>
<td>Prior Knowledge (Formative)</td>
<td>0.173**</td>
<td>1.23</td>
<td>3.53(1.66)</td>
<td>0.100</td>
</tr>
<tr>
<td>Expertise → Prior Knowledge</td>
<td>0.345**</td>
<td>1.52</td>
<td>4.17(1.48)</td>
<td>0.097</td>
<td></td>
</tr>
<tr>
<td>Past Experience → Prior Knowledge</td>
<td>0.668***</td>
<td>1.10</td>
<td>4.10(1.62)</td>
<td>0.087</td>
<td></td>
</tr>
<tr>
<td>ENG1 → Engagement</td>
<td>Engagement (Formative)</td>
<td>-0.199**</td>
<td>1.60</td>
<td>3.83(1.82)</td>
<td>0.083</td>
</tr>
<tr>
<td>ENG2 → Engagement</td>
<td>0.121**</td>
<td>1.66</td>
<td>3.97(2.08)</td>
<td>0.090</td>
<td></td>
</tr>
<tr>
<td>ENG3 → Engagement</td>
<td>0.165**</td>
<td>1.58</td>
<td>5.34(1.20)</td>
<td>0.052</td>
<td></td>
</tr>
<tr>
<td>ENG4 → Engagement</td>
<td>0.163*</td>
<td>2.57</td>
<td>3.23(2.02)</td>
<td>0.087</td>
<td></td>
</tr>
<tr>
<td>ENG5 → Engagement</td>
<td>0.095**</td>
<td>1.97</td>
<td>3.47(1.88)</td>
<td>0.081</td>
<td></td>
</tr>
<tr>
<td>ENG6 → Engagement</td>
<td>0.223***</td>
<td>1.09</td>
<td>5.34(1.11)</td>
<td>0.068</td>
<td></td>
</tr>
<tr>
<td>ENG7 → Engagement</td>
<td>0.336**</td>
<td>2.11</td>
<td>3.51(1.83)</td>
<td>0.084</td>
<td></td>
</tr>
<tr>
<td>ENG8 → Engagement</td>
<td>0.159**</td>
<td>1.29</td>
<td>3.84(2.21)</td>
<td>0.096</td>
<td></td>
</tr>
<tr>
<td>ENG9 → Engagement</td>
<td>0.450***</td>
<td>1.47</td>
<td>3.49(1.98)</td>
<td>0.087</td>
<td></td>
</tr>
<tr>
<td>ENG10 → Engagement</td>
<td>0.169*</td>
<td>2.00</td>
<td>3.52(1.91)</td>
<td>0.083</td>
<td></td>
</tr>
<tr>
<td>ENG12 → Engagement</td>
<td>0.505*</td>
<td>1.19</td>
<td>3.23(2.00)</td>
<td>0.087</td>
<td></td>
</tr>
</tbody>
</table>

Non-standardized coefficients; (*) p< 0.10; (**) p<0.05; (***) p< 0.01. n.a. Not applicable.  
* Multicollinearity for formative measures assessed by VIF which should not exceed a value of 5 (Hair, Black, Babin, & Anderson, 2010; Ruiz, Gremler, Washburn, & Carrion, 2010)

In order to examine the hypotheses proposed above, the structural model was simultaneously tested within SmartPLS. Path loadings and $R^2$ values, used to assess the strength of the relationship between the independent variables and the dependent variable, are shown in Table 2. The influence of prior knowledge on engagement was found to be significant at the .05 level, so that H were accepted. As regards effect size, the model has good predictive power, with an $R^2$ of .557, denoting 55.7% of the variance in engagement explained by the independent variable. A significant path loading of .68 supports the influence of prior knowledge on engagement (See Table 2).

### Table 2: Structural Model

<table>
<thead>
<tr>
<th>Paths</th>
<th>Coefficients</th>
<th>Hypothesis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prior Knowledge → Engagement</td>
<td>.746**</td>
<td>Accepted</td>
</tr>
</tbody>
</table>

(****) p<0.05; (****) p< 0.01

The study used a structural modelling approach to identify predictors of engagement with museum exhibits, using a sample of 535 museum visitors. It was proposed that engagement is predicted by motivation to learn or be entertained (long and short term motivation). The dependent variables account for 55.7% of engagement, and should therefore usefully be
included in a predictive model of engagement. The $R^2$ values of the path mode are satisfactory to good, based on Chin’s (1998) values. Moreover, the findings represent an advance in the measurement of prior knowledge within the tourist behavior field. Whilst reflective measures of prior knowledge have typically been used in the tourist behavior literature (Kerstetter & Cho, 2004), this study applied formative indicators. The structural model shows this formative prior knowledge construct to influence visitor behavior. Whilst, there is no empirical assessment of indicator reliability possible for formative measures, Diamantopolous and Winklhofer (2001) highlight that if the overall model fit proves acceptable, this can be taken as supporting evidence for the set of indicators comprising the formative measure. It would be interesting to find out influence other drivers of engagement on actual engagement in further studies. It would also be appealing to investigate the role of socio-demographic information on engagement. Finally, the visitors’ experience helps to improve museum exhibition and programs with the purpose of making museum visits more rewarding. The value of research lies in collecting firm information to inform the producers’ choices and making connection with visitors with help of museums facilities and recalling visitors’ prior knowledge as a platform for meaningful interaction that, decisions museum managers have to make.
REFERENCES:


