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Achieving Data Saturation: Evidence from a Qualitative Study of Job Satisfaction

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Received: 4 October 2018
Accepted: 12 October 2018

ABSTRACT

The concept of saturation is deemed necessary in qualitative research; however, existing literature discussing the point of saturation is relatively scant. Previous qualitative studies tend to describe the point of saturation but fail to demonstrate how the saturation occurred. This article provides evidence on how qualitative research might report the point of data saturation. The original study consists of a mixed method approach to develop and validate an instrument for measuring offshore catering employees’ job satisfaction. Notably, this paper reports a part of the qualitative portion of a mixed-method study. Using the data from a study involving 13 in-depth, semi-structured interviews, this study documents the degree of data saturation over the course of thematic analysis and demonstrates how data saturation was operationalised. Although the study reported 13 interviews, the saturation occurred within 12 interviews. The study findings are not extensively discussed; however, adequate information about the study background, data collection and sample characteristics are included. The technique presented in this paper provides practical guidance for qualitative researchers in reporting point of saturation. However, it is recommended that the evidence of data saturation occurred after 12 interviews should be applied with caution due to several factors.

Keyword: qualitative, interview, data saturation, offshore catering, job satisfaction
INTRODUCTION

In a qualitative study, there are general guidelines of how many interviews should be conducted to ensure quality data. Creswell (2009) recommends five to 25 interviews, while Morse (2000) suggests 30 to 50 interviews. Apart from that, Bertaux (1981) argued that 15 interviews are set as the minimum requirement for a qualitative study. Kuzel (1992) suggests six to eight interviews are required for a study of the homogenous sample. The suggested sampling size is helpful at a conceptual level and could not be determined precisely ahead of time, but it gives the idea of how many participants to be included in a study. However, Kumar (2005) highlights that the number of participants is not the primary concern if the focus of the study is to explore and describe issues of the phenomenon in determining new evidence. Although the number of participants plays an important part, a point of saturation should be prioritised in qualitative research. It is appropriate to ensure the data is saturated (Dibley, 2011), rather than the number of participants (Burmeister & Aitken, 2012). Therefore, the number of participants involved in the qualitative research should depend on the breadth and depth of the data. In this study, the research objective was to explore and identify the attributes of job satisfaction among offshore catering employees.

Determining the saturation point of the data is crucial as it indicates a comprehensive process of data collection and analysis. Morse (1995) emphasizes that saturation is the key to excellent qualitative work, highlighting its importance to provide an evidence of how a study reached the data saturation and when the interviews ceased. The idea of saturation originates from grounded theory (Creswell, 2014). Glaser and Strauss (1967) were the first who defined the milestone as the point, which no new insights or data emerged during the interviews. Similarly, a point of saturation reached when the data collected no longer offer new insights (Charmaz, 2006) and where no new codes are generated from the interviews. In a recent study of scale development, Bavik (2016) found that 18 interviews have occurred to reach the point of saturation. Moreover, Guest, Bunce and Johnson (2006) determine that, in their study, they conducted 60 interviews from two countries and systematically documented the degree of saturation reached within 12 interviews.
The concept of saturation is frequently stated in qualitative studies. However, limited evidence was shown to indicate how the saturation point occurred (Bowen, 2008). Moreover, little is known about how saturation might be determined (Guest et al., 2006). The authors affirmed the needs after reviewing 24 research method books and several databases. In most qualitative studies, authors might state ‘participants were recruited until data saturation was achieved’ or ‘recruitment continued until data are saturated’ to indicate the occurrence of the saturation. This implied that previous researchers describe the data saturation in their studies but fail to demonstrate how the point of saturation was reached. Thus, the process to indicate the saturation point remains unclear. In response to the issue, this study attempted to indicate how the data saturation is reached. Using data from a study involving 13 semi-structured interviews, the findings demonstrated the data saturation over the course of the analysis. Apparently, through the process, it can be concluded that the interview ceased after no new codes are generated, suggesting data saturation.

The study outcomes supported the qualitative results and proved the importance of data saturation in providing quality of the findings. This methodological article specifically explains how the study achieved the data saturation with adequate information about the study background, data collection and sample characteristics to inform about the study.

BACKGROUND OF STUDY

The full study consists of an exploratory sequential mixed method design to understand and explore offshore catering employees’ job satisfaction to develop and subsequently validate a bespoke job satisfaction instrument. The current paper reports on the qualitative portion of the study in which demonstrates explicitly how the study achieved saturation through the qualitative interviews. The second phase of the study, which is the quantitative research, is still ongoing.

The qualitative phase of this study investigated perceptions of offshore catering employees with their job. These employees usually perform a repetitive task in which required to provide sufficient meals for 24 hours,
housekeeping and laundry services. Mainly, current research on job satisfaction of offshore catering employees is weak at its best, despite their significant roles in the success of the offshore businesses. There are very few examples of research efforts involving offshore catering employees. In Krohne and Magnussen’s (2011) study among offshore catering employees on sickness presenteeism within the Norwegian context, they revealed that the understanding of participants on the concept of job satisfaction appeared to embrace elements that are different from onshore workers. Although a study (e.g., Majid, Othman, Mohamad & Lim, 2017) identified satisfaction of offshore catering employees with their job, the investigation was a pilot work.

Other than that, studies in offshore catering have devoted on adoption of collective bargaining (Buchan, 1985), the role of offshore catering in the work organisation (Holter, 1987), the importance of food hygiene and critical areas in offshore catering (Chalk, 1987), and changes in food preparation and presentation (Lockie, 1991). These studies showed that there are potential areas for further research, especially on job satisfaction that receive little attention. Therefore, due to the dearth of recent and empirical evidence in the literature, the research area requires further investigation (Majid, Othman, Abdullah & Derani, 2016).

METHODS

Permission to conduct the study was submitted to the Ethics Committee for Research Involving Human Subjects of the researcher’s institution. The formal ethical approval was obtained (Ethical protocol reference: JKEUPM(FSTM-P121)2017) and all participants provided their informed, written consent. Informed by basic qualitative inquiry, semi-structured interviews with 13 offshore catering employees in Malaysia were conducted. An interview is widely acknowledged as a suitable technique for basic qualitative study to seek insights of those who have experienced or are experiencing the phenomenon (Collingridge & Gantt, 2008; Wimpenny & Gass, 2000). Data were collected between March and September 2017. Non-probabilistic, purposive sampling was employed. Creswell (2014) supports the notion of using purposive sampling technique for a qualitative study. Since qualitative researchers are less concerned with generalisation
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(Harding, 2013, p.17), the researchers chose those participants who were best fit the aim of the study. Similarly, the sample must be appropriate to ensure the informants best represent and have knowledge of the research objective (Morse, Barrett, Mayan, Olson, & Spiers, 2002).

Inclusion criteria of the participants were those who were active employees in the industry, able to communicate in either English or Malay and have working experience of more than four trips in the sector. The reason this study chose informants that had an experience of more than four trips was to ensure that each informant understood and had familiarity with the job and job environment. This study assumed a certain degree of informant homogeneity because, by definition of purposive sampling, informants were selected based on the shared criteria. On the other hand, the exclusion criteria were those who had poor English or Malay language skills and suffering from sickness. The reason this study did not choose informants based on the criteria as mentioned above was that both interviewer and interviewee might have difficulties in having mutual understanding and the information might not reflect the true experience. Therefore, by choosing the participants that were currently working in the offshore catering, it was anticipated that they could reflect on their experiences and give the opportunity to accomplish research purpose.

DATA COLLECTION AND ANALYSIS

All interviews were conducted in the Malay language with the occasional use of English. All interviews were tape recorded and transcribed later for analysis purposes. The interview framework included the following main areas: (1) employees' description of their background and their involvement in the industry; (2) descriptions of their work attitudes and experiences, particularly on job satisfaction; and (3) conclusion. It began by asking the participants about their demographic backgrounds and how they became involved in the sector. The focus of inquiry then shifted to their experiences within the sector. In this segment of the study, the study was interested in learning how they defined job satisfaction and their feeling about their current job. Moreover, the participants were queried to recall a situation when they felt happy with the job. Probing questions were used regarding the issues raised from the previous interviews to elicit deeper explanation.
and seek clarification. It was found that the probing questions were useful to explore these issues further to prompt deeper insights (Harding, 2013). Before the researchers ended the interview sessions, participants were enquired to provide pseudonym to represent themselves in which it was used to protect participants' true identities, and the researchers made full effort to secure this throughout the research work. Table 1 presents the characteristics of the study participants.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>32.3</td>
</tr>
<tr>
<td>Range</td>
<td>23-51</td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>7</td>
</tr>
<tr>
<td>Married</td>
<td>6</td>
</tr>
<tr>
<td><strong>Educational level</strong></td>
<td></td>
</tr>
<tr>
<td>Diploma</td>
<td>9</td>
</tr>
<tr>
<td>Secondary school</td>
<td>2</td>
</tr>
<tr>
<td>Bachelor's degree</td>
<td>1</td>
</tr>
<tr>
<td>Certificate</td>
<td>1</td>
</tr>
<tr>
<td><strong>Position</strong></td>
<td></td>
</tr>
<tr>
<td>Camp boss (catering supervisor)</td>
<td>5</td>
</tr>
<tr>
<td>Cook/ chief cook</td>
<td>3</td>
</tr>
<tr>
<td>Baker</td>
<td>2</td>
</tr>
<tr>
<td>Assistant cook</td>
<td>2</td>
</tr>
<tr>
<td>Chief steward</td>
<td>1</td>
</tr>
<tr>
<td><strong>Years of experience in the sector</strong></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>5.5</td>
</tr>
<tr>
<td>Range</td>
<td>1-24</td>
</tr>
</tbody>
</table>

All participants took part in the study are male. Their age ranges between 23 and 51 years. Of the 13 participants, six of them in their 20's, four in their 30's and two in their 40's and one participant aged 51. Seven participants (53.8%) are single and six (46.2%) are married with a child/children. Concerning educational level, the majority of them (69.2%)
have a diploma from various institutions such as public and private universities, polytechnics, institutes and colleges. One of the participants had a bachelor’s degree, one participant had a national vocational training council qualification, and the other two participants had secondary school qualification. Of the 13 participants, five (38.5%) held the position of camp boss and two (15.4%) were assistant cooks. Camp boss is a term used in offshore catering in which similar as catering supervisor. The other participants, whom each of them is holding positions of chief steward, baker, Western cook, Eastern cook, cook/baker, and chief cook.

In the analysis, the study followed the six phases of thematic analysis proposed by Braun and Clarke (2006) with the aid of QSR International's NVivo 11 Software. The analysis started with familiarising with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and finally, producing the report. The researchers created the code development and updating the codebook after each analysis. The first transcript was analysed and then moved to the second interview, and the process continued until the researchers had completed 13 interviews. In short, the researchers finished analysing the particular transcript before moving to the next interview. However, the process of analysis was iterative rather than linear. The process is comprehensively iterative where it requires the researcher to moving back and forth between the entire set of data (Vaismoradi, Jones, Turunen & Snelgrove, 2016; Braun & Clarke, 2006). The codes were checked backed against each transcript to ensure it relates to the original text in a systematic way (Soilemezi, Drahota, Crossland, Stores & Costall, 2017). The codes were grouped to reveal a similar theme and the themes were revised when necessary.

The interviews ceased when there were no new data emerged during the data collection. Although 12 interviews already indicated a point of saturation in which no new codes identified, the researchers decided to conduct another interview to ensure the confidence and verification of data saturation. Evidently, interviews were ceased after 13 participants as the data provided clear evidence of the saturation point. Initially, 96 new codes were generated from the interviews. However, after several discussions and amendments, the number of new codes was decreased to 70 due to redundancy and similarities among the codes. The researchers were able to conceptualise 11 themes, including the relationship with co-workers,
salary, fairness, teamwork, fringe benefit, and equipment and facilities. The themes obtained in this study were similar to the previous research (e.g., Chin-Siang, Talib, Juhari & Madon 2014; Spector, 1985; Hackman & Oldham, 1974; Smith, Kendall & Hulin, 1969; Weiss, Dawis, England & Lofquist, 1967). Figure 1 illustrates the evidence of data saturation of the present study.

![Figure 1: New Codes Generated Across Data Analysis](image)

After analysing 13 transcripts, the codebook contained a total of 70 codes. At least one code had been found in all except last two interviews. From these codes, 55 (78.6%) new codes were identified within the first five interviews. It is shown that most of the new codes were created at the earlier stage of the analysis. An additional of 15 new codes (21.4%) was later identified in the next six interviews. Through the coding process, the number of new codes created was seemingly decreased, with a slight fall and rise irregularly between seventh and tenth interviews. However, the number of new codes decreased after the tenth interview, indicating not much happened to the number of codes. At the 12th interview, no new code was identified. Similarly, no new code was identified at the 13th interview.

The data reached its saturation point after the 12th interview, displaying no new code created from the interview. It demonstrated that the thematic analysis identified 70 codes from the 13 interviews, indicating no new
additional codes generated. The full range of thematic finding occurred completely within the first 11 interviews. This research made an effort by describing a point of estimation at which the development of codes saturated and made explicit the process was undertaken to ensure data saturation. The evidence provides a clear indication of data saturation, where no new substantive code was being added and identified. Thus, data saturation of this study is reached through a thorough and transparent process.

**DISCUSSION AND RECOMMENDATION**

The qualitative interviews showed that this study reached a point of data saturation after 12 interviews and proceeded with another interview to verify the evidence. The technique presented in this paper offers a practical guideline to qualitative researchers to report or display data saturation. Using a simple graphical chart, this study able to display how the saturation occurs based on purposive sampling technique. By definition, the saturation occurs when no new codes emerged from the interviews as conceptualised by Glaser and Strauss (1967). Therefore, in this study, it indicated that 12 interviews are enough to reach saturation point. The evidence of data saturation indicates that the findings from the thematic analysis provided a breadth and depth of job satisfaction attributes among offshore catering employees. Achieving data saturation is necessary in the context of this study because it assisted in ensuring the content validity of the quantitative phase of the full study. The researchers believed that failure to achieve data saturation might not provide comprehensive and quality findings on the phenomenon being examined. Thus, achieving saturation point is crucial in any qualitative research, regardless of traditions.

However, the evidence should be applied with caution. Several factors might differentiate this particular research from another and number of interviews might differ to reach saturation in different studies. First, this paper is a part of a mixed-method research in which the applicability of the qualitative components would not be extensive as a full-scale qualitative study. It is reasonable to think that the full study was a mixed-method project; however, application of data saturation in the current study is significant to indicate quality findings. If a study adopts a similar research design, 12 interviews might suffice. Use of other qualitative traditions such as grounded
theory, phenomenology or narrative might offer more profound variations and richness to the development of the data coding. Thus, the number of participants involve in the study might vary. Second, the data collection in this study was solely from qualitative interviews. Hence, a qualitative research that incorporates triangulation such as observation and focus group discussion should show a discrepancy of when the saturation occurs. Third, the sample of this study comprised of offshore catering employees in which the group was relatively homogenous. This might affect the richness of the data if a study focuses on participants with heterogeneous characteristics. Guest et al. (2006) suggest that a research might need a larger sample if the objective is to examine the variation among the participants, or else the data findings might not be adequate.

ACKNOWLEDGEMENTS

The researchers would like to thank the reviewers who contributed their feedback and advice upon submission. Financial support for funding this article for this conference was provided by Universiti Putra Malaysia with a grant under Geran Putra IPS.

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